

# **Attachment 2: Soil Resource Reports**



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 Flathead County Area and Part of Lincoln County, Montana, Kootenai National Forest Area, Montana- Idaho, and Sanders and Parts of Lincoln and Flathead Counties, Montana



# 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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# Contents

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<b>Preface</b> .....	2
<b>How Soil Surveys Are Made</b> .....	6
<b>Soil Map</b> .....	9
Soil Map.....	10
Legend.....	11
Map Unit Legend.....	13
Map Unit Descriptions.....	16
Flathead County Area and Part of Lincoln County, Montana.....	18
67C—Glaciercreek gravelly ashy silt loam, 0 to 8 percent slopes.....	18
222C—Pleasantvalley-Winfall, dry complex, 2 to 8 percent slopes.....	19
222E—Pleasantvalley-Winfall, dry complex, 8 to 30 percent slopes.....	21
W—Water.....	24
Kootenai National Forest Area, Montana-Idaho.....	25
67C—Glaciercreek gravelly ashy silt loam, 0 to 8 percent slopes.....	25
101—Fluvents, flood plains.....	26
103—Andic Dystrichrepts, alluvial terraces.....	27
105—Aquic Udifluvents, poorly drained.....	28
108—Andic Dystric Eutrochrepts, lacustrine terraces-Andic Dystrichrepts, glacial outwash terraces, complex.....	29
112—Eutric Glossoboralfs, lacustrine terraces.....	30
222E—Pleasantvalley-Winfall, dry complex, 8 to 30 percent slopes.....	31
252—Andic Dystrichrepts, breaklands.....	34
301—Dystric Eutrochrepts, glaciated mountain slopes.....	35
302—Typic Ustochrepts, glaciated mountain slopes, steep.....	36
303—Rock outcrop-Lithic Ustochrepts complex, glaciated mountain ridges.....	37
352—Andic Dystrichrepts, glaciated mountain slopes.....	38
W—Water.....	39
Sanders and Parts of Lincoln and Flathead Counties, Montana.....	40
6A—Murrstead mucky peat, 0 to 2 percent slopes.....	40
12C—Auggie silt loam, 2 to 8 percent slopes.....	41
22C—Courville gravelly ashy silt loam, 2 to 8 percent slopes.....	42
30F—Tevis gravelly loam, 35 to 60 percent slopes.....	43
32G—Mitten-Rubble land complex, 40 to 70 percent slopes.....	45
33F—Mitten gravelly ashy silt loam, dry, 35 to 60 percent slopes.....	46
35E—Courville gravelly ashy silt loam, 8 to 30 percent slopes.....	47
35F—Courville gravelly ashy silt loam, 30 to 50 percent slopes.....	49
36E—Rumblecreek gravelly loam, 15 to 30 percent slopes.....	50
40F—Holloway gravelly ashy silt loam, 35 to 60 percent slopes.....	52
48E—Ashworth gravelly ashy silt loam, 8 to 30 percent slopes.....	53
58F—Waldbillig gravelly ashy silt loam, moist, 30 to 50 percent slopes.....	55
67C—Glaciercreek gravelly ashy silt loam, cool, 0 to 8 percent slopes.....	56
68C—Upsata gravelly ashy silt loam, 2 to 8 percent slopes.....	57
68E—Upsata gravelly ashy silt loam, 8 to 30 percent slopes.....	59

Custom Soil Resource Report

69C—Tamarack ashy loam, 2 to 8 percent slopes.....	60
72A—Blacklake mucky peat, 0 to 1 percent slopes.....	62
73A—Meadowpeak silt loam, 0 to 2 percent slopes.....	63
74A—Blackcreek silt loam, 0 to 2 percent slopes.....	64
75B—Tallcreek ashy silt loam, 0 to 4 percent slopes.....	66
77E—Beeskove gravelly loam, moist, 15 to 35 percent slopes.....	67
77F—Beeskove gravelly loam, moist, 35 to 60 percent slopes.....	69
82F—Sharrott, cool-Rock outcrop-Rubble land complex, 15 to 60 percent slopes.....	70
92C—Oldtrail gravelly sandy loam, 0 to 8 percent slopes.....	71
98F—Bendahl gravelly ashy silt loam, 30 to 50 percent slopes.....	72
291B—Half Moon silt loam, cool, 2 to 8 percent slopes.....	74
291D—Half Moon silt loam, cool, 8 to 15 percent slopes.....	75
291E—Half Moon silt loam, cool, 15 to 35 percent slopes.....	77
291F—Half Moon silt loam, cool, 35 to 60 percent slopes.....	79
374F—Mitten-Rock outcrop complex, 40 to 70 percent slopes.....	80
582F—Waldbillig-Holloway gravelly ashy silt loams, moist, 30 to 50 percent slopes.....	81
691B—Tamarack-Crystalex complex, 0 to 4 percent slopes.....	83
691D—Tamarack-Crystalex complex, 4 to 15 percent slopes.....	85
691E—Tamarack-Crystalex complex, 15 to 30 percent slopes.....	87
691F—Tamarack-Crystalex complex, 30 to 60 percent slopes.....	89
731A—Meadowpeak-Firetower silt loams, 0 to 2 percent slopes.....	91
808A—Barzee mucky peat, 0 to 2 percent slopes.....	93
858E—Waldbillig gravelly ashy silt loam, moist, 8 to 30 percent slopes.....	94
867E—Glaciercreek gravelly ashy silt loam, cool, 8 to 30 percent slopes..	95
867F—Glaciercreek gravelly ashy silt loam, cool, 30 to 45 percent slopes.....	97
897C—Mollman gravelly loam, 2 to 8 percent slopes.....	98
897E—Mollman gravelly loam, 8 to 30 percent slopes.....	99
W—Water.....	101
<b>Soil Information for All Uses.....</b>	<b>102</b>
Soil Properties and Qualities.....	102
Soil Qualities and Features.....	102
Parent Material Name.....	102
Soil Reports.....	111
Land Classifications.....	111
Prime and other Important Farmlands.....	111
<b>References.....</b>	<b>115</b>

# 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

## Custom Soil Resource Report

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



## Custom Soil Resource Report

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

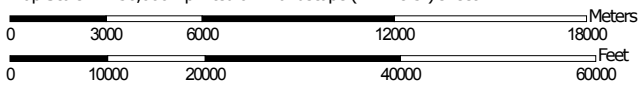
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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce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

# Custom Soil Resource Report Soil Map



Map Scale: 1:236,000 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N 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: Flathead County Area and Part of Lincoln County, Montana  
 Survey Area Data: Version 11, Sep 19, 2016

Soil Survey Area: Kootenai National Forest Area, Montana-Idaho  
 Survey Area Data: Version 15, Sep 20, 2016

Soil Survey Area: Sanders and Parts of Lincoln and Flathead Counties, Montana  
 Survey Area Data: Version 17, Sep 20, 2016

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

**MAP LEGEND**

**MAP INFORMATION**

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

Flathead County Area and Part of Lincoln County, Montana (MT618)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
67C	Glaciercreek gravelly ashy silt loam, 0 to 8 percent slopes	15.3	0.2%
222C	Pleasantvalley-Winfall, dry complex, 2 to 8 percent slopes	14.5	0.2%
222E	Pleasantvalley-Winfall, dry complex, 8 to 30 percent slopes	200.7	3.0%
W	Water	78.4	1.2%
<b>Subtotals for Soil Survey Area</b>		<b>308.9</b>	<b>4.6%</b>
<b>Totals for Area of Interest</b>		<b>6,650.2</b>	<b>100.0%</b>

Kootenai National Forest Area, Montana-Idaho (MT634)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
67C	Glaciercreek gravelly ashy silt loam, 0 to 8 percent slopes	87.0	1.3%
101	Fluvents, flood plains	588.4	8.8%
103	Andic Dystrichrepts, alluvial terraces	5.3	0.1%
105	Aquic Udifluvents, poorly drained	162.2	2.4%
108	Andic Dystric Eutrochrepts, lacustrine terraces-Andic Dystrichrepts, glacial outwash terraces, complex	1,313.9	19.8%
112	Eutric Glossoboralfs, lacustrine terraces	301.3	4.5%
222E	Pleasantvalley-Winfall, dry complex, 8 to 30 percent slopes	59.1	0.9%
252	Andic Dystrichrepts, breaklands	71.8	1.1%
301	Dystric Eutrochrepts, glaciated mountain slopes	38.5	0.6%
302	Typic Ustochrepts, glaciated mountain slopes, steep	25.4	0.4%
303	Rock outcrop-Lithic Ustochrepts complex, glaciated mountain ridges	22.2	0.3%
352	Andic Dystrichrepts, glaciated mountain slopes	62.1	0.9%
W	Water	5.7	0.1%
<b>Subtotals for Soil Survey Area</b>		<b>2,743.0</b>	<b>41.2%</b>

Custom Soil Resource Report

Kootenai National Forest Area, Montana-Idaho (MT634)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Totals for Area of Interest		6,650.2	100.0%

Sanders and Parts of Lincoln and Flathead Counties, Montana (MT651)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
6A	Murrstead mucky peat, 0 to 2 percent slopes	15.5	0.2%
12C	Auggie silt loam, 2 to 8 percent slopes	3.7	0.1%
22C	Courville gravelly ashy silt loam, 2 to 8 percent slopes	10.2	0.2%
30F	Tevis gravelly loam, 35 to 60 percent slopes	13.4	0.2%
32G	Mitten-Rubble land complex, 40 to 70 percent slopes	40.2	0.6%
33F	Mitten gravelly ashy silt loam, dry, 35 to 60 percent slopes	7.5	0.1%
35E	Courville gravelly ashy silt loam, 8 to 30 percent slopes	223.9	3.4%
35F	Courville gravelly ashy silt loam, 30 to 50 percent slopes	78.3	1.2%
36E	Rumblecreek gravelly loam, 15 to 30 percent slopes	3.3	0.0%
40F	Holloway gravelly ashy silt loam, 35 to 60 percent slopes	2.5	0.0%
48E	Ashworth gravelly ashy silt loam, 8 to 30 percent slopes	31.8	0.5%
58F	Waldbillig gravelly ashy silt loam, moist, 30 to 50 percent slopes	48.9	0.7%
67C	Glaciercreek gravelly ashy silt loam, cool, 0 to 8 percent slopes	591.8	8.9%
68C	Upsata gravelly ashy silt loam, 2 to 8 percent slopes	59.6	0.9%
68E	Upsata gravelly ashy silt loam, 8 to 30 percent slopes	24.8	0.4%
69C	Tamarack ashy loam, 2 to 8 percent slopes	33.4	0.5%
72A	Blacklake mucky peat, 0 to 1 percent slopes	64.7	1.0%
73A	Meadowpeak silt loam, 0 to 2 percent slopes	7.2	0.1%
74A	Blackcreek silt loam, 0 to 2 percent slopes	18.2	0.3%
75B	Tallcreek ashy silt loam, 0 to 4 percent slopes	164.3	2.5%
77E	Beeskove gravelly loam, moist, 15 to 35 percent slopes	1.0	0.0%

## Custom Soil Resource Report

<b>Sanders and Parts of Lincoln and Flathead Counties, Montana (MT651)</b>			
<b>Map Unit Symbol</b>	<b>Map Unit Name</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
77F	Beeskove gravelly loam, moist, 35 to 60 percent slopes	65.0	1.0%
82F	Sharrott, cool-Rock outcrop-Rubble land complex, 15 to 60 percent slopes	11.6	0.2%
92C	Oldtrail gravelly sandy loam, 0 to 8 percent slopes	8.2	0.1%
98F	Bendahl gravelly ashy silt loam, 30 to 50 percent slopes	2.1	0.0%
291B	Half Moon silt loam, cool, 2 to 8 percent slopes	241.7	3.6%
291D	Half Moon silt loam, cool, 8 to 15 percent slopes	69.6	1.0%
291E	Half Moon silt loam, cool, 15 to 35 percent slopes	129.5	1.9%
291F	Half Moon silt loam, cool, 35 to 60 percent slopes	57.0	0.9%
374F	Mitten-Rock outcrop complex, 40 to 70 percent slopes	5.7	0.1%
582F	Waldbillig-Holloway gravelly ashy silt loams, moist, 30 to 50 percent slopes	5.9	0.1%
691B	Tamarack-Crystalex complex, 0 to 4 percent slopes	310.3	4.7%
691D	Tamarack-Crystalex complex, 4 to 15 percent slopes	78.3	1.2%
691E	Tamarack-Crystalex complex, 15 to 30 percent slopes	20.9	0.3%
691F	Tamarack-Crystalex complex, 30 to 60 percent slopes	68.5	1.0%
731A	Meadowpeak-Firetower silt loams, 0 to 2 percent slopes	90.2	1.4%
808A	Barzee mucky peat, 0 to 2 percent slopes	10.0	0.2%
858E	Waldbillig gravelly ashy silt loam, moist, 8 to 30 percent slopes	238.5	3.6%
867E	Glaciercreek gravelly ashy silt loam, cool, 8 to 30 percent slopes	237.8	3.6%
867F	Glaciercreek gravelly ashy silt loam, cool, 30 to 45 percent slopes	234.9	3.5%
897C	Mollman gravelly loam, 2 to 8 percent slopes	2.2	0.0%
897E	Mollman gravelly loam, 8 to 30 percent slopes	68.9	1.0%
W	Water	197.2	3.0%
<b>Subtotals for Soil Survey Area</b>		<b>3,598.3</b>	<b>54.1%</b>



Custom Soil Resource Report

Sanders and Parts of Lincoln and Flathead Counties, Montana (MT651)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Totals for Area of Interest		6,650.2	100.0%

## Map Unit Descriptions

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

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

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

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

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

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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.

## Flathead County Area and Part of Lincoln County, Montana

### 67C—Glaciercreek gravelly ashy silt loam, 0 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 17n42  
*Elevation:* 2,000 to 4,200 feet  
*Mean annual precipitation:* 22 to 30 inches  
*Mean annual air temperature:* 38 to 45 degrees F  
*Frost-free period:* 70 to 95 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

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

#### Description of Glaciercreek

##### Setting

*Landform:* Stream terraces, outwash plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over alluvium or outwash

##### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*Bw - 1 to 15 inches:* gravelly ashy silt loam  
*2C - 15 to 60 inches:* extremely gravelly loamy sand

##### Properties and qualities

*Slope:* 0 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 3.4 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/twinflower (PK590)  
*Hydric soil rating:* No

#### Minor Components

##### Loonlake

*Percent of map unit:* 5 percent  
*Landform:* Outwash terraces, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

*Other vegetative classification:* grand fir/queencup beadlily (PK520)

*Hydric soil rating:* No

### **Glaciercreek, greater slope**

*Percent of map unit:* 5 percent

*Landform:* Stream terraces, outwash terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/  
twinflower (PK590)

*Hydric soil rating:* No

## **222C—Pleasantvalley-Winfall, dry complex, 2 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* mj89

*Elevation:* 3,500 to 4,260 feet

*Mean annual precipitation:* 22 to 28 inches

*Mean annual air temperature:* 38 to 45 degrees F

*Frost-free period:* 70 to 95 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Pleasantvalley and similar soils:* 50 percent

*Winfall and similar soils:* 20 percent

*Minor components:* 30 percent

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

### **Description of Pleasantvalley**

#### **Setting**

*Landform:* Moraines

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Volcanic ash over till derived from quartzite

#### **Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material

*E - 1 to 4 inches:* gravelly ashy silt loam

*Bw - 4 to 14 inches:* gravelly ashy silt loam

*2E - 14 to 26 inches:* very cobbly silt loam

*2E/Bw - 26 to 34 inches:* very cobbly silt loam

*2E/Bt - 34 to 60 inches:* very cobbly silt loam

#### **Properties and qualities**

*Slope:* 2 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to  
high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

## Custom Soil Resource Report

*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Moderate (about 6.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* Douglas-fir/dwarf huckleberry (PK250), Douglas-fir/pinegrass-kinnikinnick phase (PK322)  
*Hydric soil rating:* No

### Description of Winfall

#### Setting

*Landform:* Moraines  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Till

#### Typical profile

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material  
*E - 1 to 9 inches:* gravelly loam  
*E and B<sub>t</sub> - 9 to 60 inches:* very gravelly loam

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Moderate (about 6.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* Douglas-fir/pinegrass-kinnikinnick phase (PK322), Douglas-fir/dwarf huckleberry (PK250)  
*Hydric soil rating:* No

### Minor Components

#### Courville

*Percent of map unit:* 10 percent  
*Landform:* Moraines  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Other vegetative classification:* Douglas-fir/dwarf huckleberry (PK250)  
*Hydric soil rating:* No

#### Meadowpeak

*Percent of map unit:* 5 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Linear  
*Ecological site:* Riparian Meadow (RM) LRU 44A-Y (R044AY080MT)  
*Hydric soil rating:* Yes

### **Tallcreek**

*Percent of map unit:* 5 percent  
*Landform:* Outwash terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* spruce/dwarf huckleberry (PK450)  
*Hydric soil rating:* No

### **Lynchlake, dry**

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Douglas-fir/dwarf huckleberry (PK250)  
*Hydric soil rating:* No

### **Glaciercreek**

*Percent of map unit:* 5 percent  
*Landform:* Outwash terraces, moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Douglas-fir/pinegrass-kinnikinnick phase (PK322),  
Douglas-fir/dwarf huckleberry (PK250)  
*Hydric soil rating:* No

## **222E—Pleasantvalley-Winfall, dry complex, 8 to 30 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* mj76  
*Elevation:* 3,520 to 4,800 feet  
*Mean annual precipitation:* 22 to 28 inches  
*Mean annual air temperature:* 38 to 45 degrees F  
*Frost-free period:* 70 to 95 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Pleasantvalley and similar soils:* 50 percent  
*Winfall and similar soils:* 20 percent  
*Minor components:* 30 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Pleasantvalley**

#### **Setting**

*Landform:* Moraines  
*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Convex

*Parent material:* Volcanic ash over till derived from quartzite

### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material

*E - 1 to 4 inches:* gravelly ashy silt loam

*Bw - 4 to 14 inches:* gravelly ashy silt loam

*2E - 14 to 26 inches:* very cobbly silt loam

*2E/Bw - 26 to 34 inches:* very cobbly silt loam

*2E/Bt - 34 to 60 inches:* very cobbly silt loam

### Properties and qualities

*Slope:* 8 to 30 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water storage in profile:* Moderate (about 6.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* B

*Other vegetative classification:* Douglas-fir/dwarf huckleberry (PK250), Douglas-fir/pinegrass-kinnikinnick phase (PK322)

*Hydric soil rating:* No

## Description of Winfall

### Setting

*Landform:* Moraines

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Parent material:* Till

### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material

*E - 1 to 9 inches:* gravelly loam

*E and Bt - 9 to 60 inches:* very gravelly loam

### Properties and qualities

*Slope:* 8 to 30 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water storage in profile:* Moderate (about 6.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* B

## Custom Soil Resource Report

*Other vegetative classification:* Douglas-fir/dwarf huckleberry (PK250), Douglas-fir/pinegrass-kinnikinnick phase (PK322)  
*Hydric soil rating:* No

### Minor Components

#### **Courville, dry**

*Percent of map unit:* 10 percent

*Landform:* Moraines

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Other vegetative classification:* Douglas-fir/dwarf huckleberry (PK250), Douglas-fir/pinegrass-kinnikinnick phase (PK322)

*Hydric soil rating:* No

#### **Rock outcrop**

*Percent of map unit:* 5 percent

*Hydric soil rating:* Unranked

#### **Courville**

*Percent of map unit:* 5 percent

*Landform:* Moraines

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Other vegetative classification:* spruce/dwarf huckleberry (PK450), grand fir/twinflower (PK590)

*Hydric soil rating:* No

#### **Glaciercreek**

*Percent of map unit:* 5 percent

*Landform:* Moraines

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* Douglas-fir/pinegrass-kinnikinnick phase (PK322), Douglas-fir/dwarf huckleberry (PK250)

*Hydric soil rating:* No

#### **Combest**

*Percent of map unit:* 3 percent

*Landform:* Mountain slopes

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Other vegetative classification:* Douglas-fir/pinegrass-kinnikinnick phase (PK322)

*Hydric soil rating:* No

#### **Sharrott**

*Percent of map unit:* 2 percent

*Landform:* Ridges

*Down-slope shape:* Linear, convex

*Across-slope shape:* Linear, convex

*Other vegetative classification:* Douglas-fir/rough fescue (PK230)

*Hydric soil rating:* No



**W—Water**

**Map Unit Composition**

*Water: 100 percent*

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

## Kootenai National Forest Area, Montana-Idaho

### 67C—Glaciercreek gravelly ashy silt loam, 0 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2lwmq  
*Elevation:* 2,000 to 4,200 feet  
*Mean annual precipitation:* 22 to 30 inches  
*Mean annual air temperature:* 38 to 45 degrees F  
*Frost-free period:* 70 to 95 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

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

#### Description of Glaciercreek

##### Setting

*Landform:* Stream terraces, outwash plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over alluvium or outwash

##### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*Bw - 1 to 15 inches:* gravelly ashy silt loam  
*2C - 15 to 60 inches:* extremely gravelly loamy sand

##### Properties and qualities

*Slope:* 0 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 3.4 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/twinflower (PK590)  
*Hydric soil rating:* No

#### Minor Components

##### Loonlake

*Percent of map unit:* 5 percent  
*Landform:* Stream terraces, outwash terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

*Other vegetative classification:* grand fir/queencup beadlily (PK520)

*Hydric soil rating:* No

### **Glaciercreek, greater slope**

*Percent of map unit:* 5 percent

*Landform:* Stream terraces, outwash terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/  
twinflower (PK590)

*Hydric soil rating:* No

## **101—Fluents, flood plains**

### **Map Unit Setting**

*National map unit symbol:* nvch

*Elevation:* 1,800 to 4,200 feet

*Mean annual precipitation:* 20 to 35 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 70 to 110 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Fluents and similar soils:* 90 percent

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

### **Description of Fluents**

#### **Setting**

*Landform:* Flood plains

*Parent material:* Mixed alluvium

#### **Typical profile**

*A - 2 to 13 inches:* gravelly silt loam

*C1 - 13 to 23 inches:* very gravelly sandy loam

*C2 - 23 to 60 inches:* sand

#### **Properties and qualities**

*Slope:* 0 to 10 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Excessively drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to  
high (0.57 to 1.98 in/hr)

*Depth to water table:* About 24 to 60 inches

*Frequency of flooding:* Occasional

*Frequency of ponding:* None

*Available water storage in profile:* Low (about 5.2 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

## Custom Soil Resource Report

*Hydrologic Soil Group:* B

*Other vegetative classification:* western hemlock/queencup beadlily (CN570),  
western redcedar/queencup beadlily (PK530)

*Hydric soil rating:* No

### 103—Andic Dystrochrepts, alluvial terraces

#### Map Unit Setting

*National map unit symbol:* nvcq

*Elevation:* 2,000 to 3,500 feet

*Mean annual precipitation:* 30 to 50 inches

*Mean annual air temperature:* 43 to 46 degrees F

*Frost-free period:* 90 to 110 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Andic dystrochrepts and similar soils:* 90 percent

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

#### Description of Andic Dystrochrepts

##### Setting

*Landform:* Stream terraces

*Parent material:* Mixed sandy and gravelly alluvium

##### Typical profile

*Bs - 1 to 8 inches:* gravelly silt loam

*2A - 8 to 21 inches:* very gravelly fine sandy loam

*2Bw - 21 to 42 inches:* very gravelly fine sandy loam

*2Cd - 42 to 62 inches:* very cobbly loamy sand

##### Properties and qualities

*Slope:* 0 to 15 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water storage in profile:* Low (about 4.8 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* B

*Other vegetative classification:* western redcedar/queencup beadlily (PK530),  
western hemlock/queencup beadlily (PK570)

*Hydric soil rating:* No

## 105—Aquic Udifluents, poorly drained

### Map Unit Setting

*National map unit symbol:* nvcs  
*Elevation:* 2,000 to 4,000 feet  
*Mean annual precipitation:* 20 to 24 inches  
*Mean annual air temperature:* 41 to 45 degrees F  
*Frost-free period:* 70 to 110 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Aquic udifluents and similar soils:* 90 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Aquic Udifluents

#### Setting

*Landform:* Intermontane basins  
*Parent material:* Stratified sandy and silty alluvium

#### Typical profile

*A - 1 to 8 inches:* silt loam  
*C1 - 8 to 20 inches:* very gravelly sandy loam  
*2C2 - 20 to 25 inches:* silt loam  
*2C3 - 25 to 60 inches:* stratified fine sandy loam to silt loam to gravelly sandy loam

#### Properties and qualities

*Slope:* 0 to 5 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 1.98 in/hr)  
*Depth to water table:* About 0 inches  
*Frequency of flooding:* Frequent  
*Frequency of ponding:* None  
*Available water storage in profile:* Moderate (about 8.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3w  
*Hydrologic Soil Group:* B/D  
*Ecological site:* Wet Meadow (WM) 20"+ p.z. (R043XW154MT)  
*Hydric soil rating:* No

## **108—Andic Dystric Eutrochrepts, lacustrine terraces-Andic Dystrochrepts, glacial outwash terraces, complex**

### **Map Unit Setting**

*National map unit symbol:* nvcz  
*Elevation:* 2,000 to 4,000 feet  
*Mean annual precipitation:* 15 to 50 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 90 to 120 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Andic dystric eutrochrept and similar soils:* 60 percent  
*Andic dystrochrepts and similar soils:* 40 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Andic Dystric Eutrochrept**

#### **Setting**

*Landform:* Lake terraces  
*Parent material:* Silty glaciolacustrine deposits

#### **Typical profile**

*Bs - 1 to 10 inches:* silt loam  
*2A - 10 to 15 inches:* silt loam  
*2AB - 15 to 32 inches:* silt loam  
*2Bw - 32 to 57 inches:* very fine sandy loam  
*2BC - 57 to 60 inches:* very fine sandy loam

#### **Properties and qualities**

*Slope:* 0 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* High (about 10.2 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* western redcedar/queencup beadlily (PK530), western hemlock/queencup beadlily (PK570)  
*Hydric soil rating:* No

### **Description of Andic Dystrochrepts**

#### **Setting**

*Landform:* Outwash terraces

*Parent material:* Stratified sandy and gravelly outwash

#### **Typical profile**

*Bs - 1 to 8 inches:* gravelly silt loam

*2A - 8 to 21 inches:* very gravelly fine sandy loam

*2Bw - 21 to 42 inches:* very gravelly fine sandy loam

*2Cd - 42 to 62 inches:* very cobbly loamy sand

#### **Properties and qualities**

*Slope:* 0 to 15 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water storage in profile:* Low (about 4.8 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* B

*Other vegetative classification:* grand fir/twinflower (PK590), grand fir/queencup beadlily (PK520)

*Hydric soil rating:* No

### **112—Eutric Glossoboralfs, lacustrine terraces**

#### **Map Unit Setting**

*National map unit symbol:* nvd6

*Elevation:* 2,200 to 3,600 feet

*Mean annual precipitation:* 25 to 30 inches

*Mean annual air temperature:* 42 to 45 degrees F

*Frost-free period:* 100 to 135 days

*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

*Eutric glossoboralfs and similar soils:* 85 percent

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

### **Description of Eutric Glossoboralfs**

#### **Setting**

*Landform:* Terraces

*Down-slope shape:* Convex

## Custom Soil Resource Report

*Across-slope shape:* Linear

*Parent material:* Calcareous silty and clayey glaciolacustrine sediments with very minor amounts of volcanic ash in the surface layer

### Typical profile

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material

*E - 1 to 8 inches:* silty clay loam

*B/E - 8 to 19 inches:* silty clay loam

*B<sub>t</sub> - 19 to 31 inches:* silty clay loam

*C - 31 to 60 inches:* silty clay loam

### Properties and qualities

*Slope:* 0 to 25 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Moderately well drained

*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* 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 in profile:* 10 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 10.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Other vegetative classification:* western redcedar/queencup beadlily (PK530), western hemlock/queencup beadlily (PK570)

*Hydric soil rating:* No

## 222E—Pleasantvalley-Winfall, dry complex, 8 to 30 percent slopes

### Map Unit Setting

*National map unit symbol:* 2lwnm

*Elevation:* 3,520 to 4,800 feet

*Mean annual precipitation:* 22 to 28 inches

*Mean annual air temperature:* 38 to 45 degrees F

*Frost-free period:* 70 to 95 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Pleasantvalley and similar soils:* 50 percent

*Winfall and similar soils:* 20 percent

*Minor components:* 30 percent

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



## Description of Pleasantvalley

### Setting

*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Volcanic ash over till derived from quartzite

### Typical profile

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material  
*E - 1 to 4 inches:* gravelly ashy silt loam  
*B<sub>w</sub> - 4 to 14 inches:* gravelly ashy silt loam  
*2E - 14 to 26 inches:* very cobbly silt loam  
*2E/B<sub>w</sub> - 26 to 34 inches:* very cobbly silt loam  
*2E/B<sub>t</sub> - 34 to 60 inches:* very cobbly silt loam

### Properties and qualities

*Slope:* 8 to 30 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Moderate (about 6.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* Douglas-fir/dwarf huckleberry (PK250), Douglas-fir/pinegrass-kinnikinnick phase (PK322)  
*Hydric soil rating:* No

## Description of Winfall

### Setting

*Landform:* Moraines  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Till

### Typical profile

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material  
*E - 1 to 9 inches:* gravelly loam  
*E and B<sub>t</sub> - 9 to 60 inches:* very gravelly loam

### Properties and qualities

*Slope:* 8 to 30 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None

## Custom Soil Resource Report

*Available water storage in profile:* Moderate (about 6.0 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* B

*Other vegetative classification:* Douglas-fir/dwarf huckleberry (PK250), Douglas-fir/pinegrass-kinnikinnick phase (PK322)

*Hydric soil rating:* No

### **Minor Components**

#### **Courville, dry**

*Percent of map unit:* 10 percent

*Landform:* Moraines

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Other vegetative classification:* Douglas-fir/dwarf huckleberry (PK250), Douglas-fir/pinegrass-kinnikinnick phase (PK322)

*Hydric soil rating:* No

#### **Rock outcrop**

*Percent of map unit:* 5 percent

*Hydric soil rating:* Unranked

#### **Courville**

*Percent of map unit:* 5 percent

*Landform:* Moraines

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Other vegetative classification:* spruce/dwarf huckleberry (PK450), grand fir/twinflower (PK590)

*Hydric soil rating:* No

#### **Glaciercreek**

*Percent of map unit:* 5 percent

*Landform:* Moraines

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* Douglas-fir/pinegrass-kinnikinnick phase (PK322), Douglas-fir/dwarf huckleberry (PK250)

*Hydric soil rating:* No

#### **Combest**

*Percent of map unit:* 3 percent

*Landform:* Mountain slopes

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Other vegetative classification:* Douglas-fir/pinegrass-kinnikinnick phase (PK322)

*Hydric soil rating:* No

#### **Sharrott**

*Percent of map unit:* 2 percent

*Landform:* Ridges

*Down-slope shape:* Linear, convex

*Across-slope shape:* Linear, convex

*Other vegetative classification:* Douglas-fir/rough fescue (PK230)

*Hydric soil rating:* No

## 252—Andic Dystrochrepts, breaklands

### Map Unit Setting

*National map unit symbol:* nvdw  
*Elevation:* 3,100 to 5,000 feet  
*Mean annual precipitation:* 25 to 40 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 90 to 105 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Andic dystrochrepts and similar soils:* 80 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Andic Dystrochrepts

#### Setting

*Landform:* Hillslopes  
*Parent material:* Weathered metasedimentary loamy slope alluvium

#### Typical profile

*Bs - 1 to 8 inches:* gravelly silt loam  
*2A - 8 to 21 inches:* very gravelly very fine sandy loam  
*2Bw - 21 to 42 inches:* very gravelly very fine sandy loam  
*2Cd - 42 to 62 inches:* extremely gravelly fine sandy loam

#### Properties and qualities

*Slope:* 60 to 80 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 3.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* western redcedar/queencup beadlily (PK530), western hemlock/queencup beadlily (PK570), Douglas-fir/ninebark (PK260)  
*Hydric soil rating:* No

### **301—Dystric Eutrochrepts, glaciated mountain slopes**

#### **Map Unit Setting**

*National map unit symbol:* nvdz  
*Elevation:* 2,400 to 3,800 feet  
*Mean annual precipitation:* 25 to 30 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 100 to 120 days  
*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

*Dystric eutrochrept and similar soils:* 90 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Dystric Eutrochrept**

##### **Setting**

*Landform:* Mountain slopes  
*Parent material:* Alpine loamy till over dense glaciofluvial deposits

##### **Typical profile**

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material  
*A - 1 to 12 inches:* gravelly silt loam  
*B<sub>w</sub> - 12 to 29 inches:* very gravelly fine sandy loam  
*B<sub>t</sub> - 29 to 40 inches:* very gravelly fine sandy loam  
*2Cd - 40 to 60 inches:* very gravelly fine sandy loam

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

*Slope:* 15 to 35 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* 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  
*Available water storage in profile:* Low (about 6.0 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* Douglas-fir/snowberry (PK310)  
*Hydric soil rating:* No

### 302—Typic Ustochrepts, glaciated mountain slopes, steep

#### Map Unit Setting

*National map unit symbol:* nvff  
*Elevation:* 3,000 to 4,200 feet  
*Mean annual precipitation:* 25 to 30 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 100 to 120 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Typic ustochrept and similar soils:* 80 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Typic Ustochrept

##### Setting

*Landform:* Mountain slopes  
*Parent material:* Alpine loamy till over dense glaciofluvial deposits

##### Typical profile

*O<sub>i</sub> - 0 to 0 inches:* slightly decomposed plant material  
*A - 0 to 8 inches:* very gravelly very fine sandy loam  
*B<sub>w</sub> - 8 to 28 inches:* very gravelly very fine sandy loam  
*2Cd - 28 to 60 inches:* very gravelly very fine sandy loam

##### Properties and qualities

*Slope:* 30 to 60 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* 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  
*Available water storage in profile:* Low (about 3.3 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Other vegetative classification:* Douglas-fir/snowberry (PK310)  
*Hydric soil rating:* No

#### Minor Components

##### Rock outcrop

*Percent of map unit:* 10 percent

### **303—Rock outcrop-Lithic Ustochrepts complex, glaciated mountain ridges**

#### **Map Unit Setting**

*National map unit symbol:* nvjf  
*Elevation:* 3,500 to 4,700 feet  
*Mean annual precipitation:* 25 to 30 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 100 to 120 days  
*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

*Rock outcrop:* 50 percent  
*Lithic ustochrept and similar soils:* 40 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Lithic Ustochrept**

##### **Setting**

*Landform:* Ridges  
*Parent material:* Alpine loamy till over residuum weathered from igneous and metamorphic rock

##### **Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*A - 1 to 7 inches:* very cobbly sandy loam  
*Bw1 - 7 to 13 inches:* very cobbly sandy loam  
*Bw2 - 13 to 19 inches:* extremely cobbly fine sandy loam  
*R - 19 to 29 inches:* bedrock

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

*Slope:* 15 to 35 percent  
*Depth to restrictive feature:* 4 to 20 inches to lithic bedrock  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Very low (about 0.9 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* D  
*Other vegetative classification:* Douglas-fir/bluebunch wheatgrass (PK210)  
*Hydric soil rating:* No

## 352—Andic Dystrochrepts, glaciated mountain slopes

### Map Unit Setting

*National map unit symbol:* nvrj  
*Elevation:* 2,200 to 5,600 feet  
*Mean annual precipitation:* 25 to 40 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 90 to 105 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Andic dystrochrepts and similar soils:* 75 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Andic Dystrochrepts

#### Setting

*Landform:* Mountain slopes  
*Parent material:* Loamy till over dense basal till

#### Typical profile

*Bs - 1 to 8 inches:* gravelly silt loam  
*2A - 8 to 21 inches:* very gravelly very fine sandy loam  
*2Bw - 21 to 42 inches:* very gravelly very fine sandy loam  
*2Cd - 42 to 60 inches:* very gravelly very fine sandy loam

#### Properties and qualities

*Slope:* 20 to 60 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high (0.01 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 5.8 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* western hemlock/queencup beadlily (PK570),  
western redcedar/queencup beadlily (PK530), subalpine fir/queencup beadlily  
(PK620)  
*Hydric soil rating:* No

**W—Water**

**Map Unit Composition**

*Water:* 100 percent

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



## Sanders and Parts of Lincoln and Flathead Counties, Montana

### 6A—Murrstead mucky peat, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* 57m0  
*Elevation:* 2,300 to 3,800 feet  
*Mean annual precipitation:* 24 to 34 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 70 to 90 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

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

#### Description of Murrstead

##### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Organic material

##### Typical profile

*Oe1 - 0 to 12 inches:* mucky peat  
*Oe/C - 12 to 21 inches:* stratified mucky peat to mucky silt loam  
*Oe2 - 21 to 46 inches:* mucky peat  
*Cg - 46 to 54 inches:* stratified very fine sandy loam to silt  
*O'e - 54 to 60 inches:* mucky peat

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Very poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 5.95 in/hr)  
*Depth to water table:* About 0 to 12 inches  
*Frequency of flooding:* Frequent  
*Frequency of ponding:* None  
*Available water storage in profile:* Very high (about 18.7 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 5w  
*Hydrologic Soil Group:* A/D  
*Ecological site:* Wet Meadow (WM) 20"+ p.z. (R043XW154MT)  
*Hydric soil rating:* Yes

#### Minor Components

##### Mclangor

*Percent of map unit:* 7 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 20"+ p.z. (R043XW154MT)  
*Hydric soil rating:* Yes

### **Meadowpeak**

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Subirrigated (Sb) 20"+ p.z. (R043XW155MT)  
*Hydric soil rating:* Yes

## **12C—Auggie silt loam, 2 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 5748  
*Elevation:* 3,400 to 4,400 feet  
*Mean annual precipitation:* 24 to 36 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 40 to 105 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

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

### **Description of Auggie**

#### **Setting**

*Landform:* Lake terraces, lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Lacustrine deposits

#### **Typical profile**

*O<sub>i</sub> - 0 to 2 inches:* slightly decomposed plant material  
*E - 2 to 10 inches:* silt loam  
*B<sub>t</sub>/E - 10 to 30 inches:* silt loam  
*B<sub>t</sub> - 30 to 48 inches:* silty clay loam  
*C - 48 to 60 inches:* silt loam

#### **Properties and qualities**

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* 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

## Custom Soil Resource Report

*Calcium carbonate, maximum in profile:* 5 percent  
*Available water storage in profile:* High (about 10.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Other vegetative classification:* subalpine fir/queencup beadlily-dwarf huckleberry phase (PK623)  
*Hydric soil rating:* No

### Minor Components

#### Ashworth

*Percent of map unit:* 5 percent  
*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* western hemlock/queencup beadlily (CN570)  
*Hydric soil rating:* No

#### Half moon

*Percent of map unit:* 5 percent  
*Landform:* Lake plains, lake terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Douglas-fir/dwarf huckleberry (PK250)  
*Hydric soil rating:* No

## 22C—Courville gravelly ashy silt loam, 2 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* 5777  
*Elevation:* 3,000 to 7,000 feet  
*Mean annual precipitation:* 25 to 50 inches  
*Mean annual air temperature:* 37 to 43 degrees F  
*Frost-free period:* 30 to 90 days  
*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

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

### Description of Courville

#### Setting

*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over till or drift

## Custom Soil Resource Report

### Typical profile

*Oi - 0 to 2 inches:* slightly decomposed plant material  
*Bw - 2 to 18 inches:* gravelly ashy silt loam  
*2E - 18 to 40 inches:* very gravelly loam  
*2E/Bw - 40 to 60 inches:* very gravelly loam

### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Moderate (about 6.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/queencup beadlily-beargrass phase (PK523), grand fir/twinflower-beargrass phase (PK592)  
*Hydric soil rating:* No

### Minor Components

#### Courville, greater slope

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/queencup beadlily-beargrass phase (PK523), grand fir/twinflower (PK590), grand fir/twinflower-beargrass phase (PK592)  
*Hydric soil rating:* No

#### Waldbillig

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* subalpine fir/menziesia (PK670), subalpine fir/beargrass-blue huckleberry phase (PK691)  
*Hydric soil rating:* No

## 30F—Tevis gravelly loam, 35 to 60 percent slopes

### Map Unit Setting

*National map unit symbol:* 579c

## Custom Soil Resource Report

*Elevation:* 3,300 to 6,000 feet  
*Mean annual precipitation:* 24 to 30 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 40 to 95 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Tevis

#### Setting

*Landform:* Mountain slopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Colluvium

#### Typical profile

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material  
*A - 1 to 9 inches:* gravelly loam  
*E/Bw - 9 to 22 inches:* extremely gravelly loam  
*C - 22 to 60 inches:* extremely gravelly loam

#### Properties and qualities

*Slope:* 35 to 60 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat excessively drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 3.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* A  
*Other vegetative classification:* Douglas-fir/blue huckleberry-kinnikinnick phase (PK282), grand fir/twinflower-twinflower phase (PK591)  
*Hydric soil rating:* No

### Minor Components

#### Winkler

*Percent of map unit:* 5 percent  
*Landform:* Mountain slopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Douglas-fir/bluebunch wheatgrass (PK210), Douglas-fir/rough fescue (PK230), Douglas-fir/snowberry-pinegrass phase (PK312)  
*Hydric soil rating:* No

**Rubble land**

*Percent of map unit:* 5 percent  
*Hydric soil rating:* Unranked

**Holloway**

*Percent of map unit:* 5 percent  
*Landform:* Mountain slopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* subalpine fir/twinflower-beargrass phase (PK662),  
subalpine fir/beargrass-blue huckleberry phase (PK691)  
*Hydric soil rating:* No

**32G—Mitten-Rubble land complex, 40 to 70 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 579w  
*Elevation:* 4,200 to 7,000 feet  
*Mean annual precipitation:* 25 to 60 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 20 to 90 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

**Description of Mitten**

**Setting**

*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over colluvium

**Typical profile**

*Oi - 0 to 2 inches:* slightly decomposed plant material  
*Bw - 2 to 9 inches:* gravelly ashy silt loam  
*2E - 9 to 25 inches:* very gravelly loam  
*2E/Bw - 25 to 60 inches:* extremely gravelly loam

**Properties and qualities**

*Slope:* 40 to 70 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches

## Custom Soil Resource Report

*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 3.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/beargrass (PK510), grand fir/twinflower-twinflower phase (PK591), grand fir/twinflower-beargrass phase (PK592)  
*Hydric soil rating:* No

### Minor Components

#### Rock outcrop

*Percent of map unit:* 9 percent  
*Hydric soil rating:* No

#### Holloway

*Percent of map unit:* 6 percent  
*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* subalpine fir/twinflower-beargrass phase (PK662), subalpine fir/beargrass-blue huckleberry phase (PK691)  
*Hydric soil rating:* No

## 33F—Mitten gravelly ashy silt loam, dry, 35 to 60 percent slopes

### Map Unit Setting

*National map unit symbol:* 579z  
*Elevation:* 3,300 to 6,000 feet  
*Mean annual precipitation:* 25 to 40 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 70 to 90 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Mitten

#### Setting

*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over colluvium

## Custom Soil Resource Report

### Typical profile

*Oi - 0 to 2 inches:* slightly decomposed plant material  
*Bw - 2 to 12 inches:* gravelly ashy silt loam  
*2E - 12 to 30 inches:* very gravelly loam  
*2E/Bw - 30 to 60 inches:* extremely gravelly loam

### Properties and qualities

*Slope:* 35 to 60 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 4.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* Douglas-fir/ninebark-pinegrass phase (PK262),  
Douglas-fir/pinegrass-pinegrass phase (PK323)  
*Hydric soil rating:* No

### Minor Components

#### Tevis

*Percent of map unit:* 5 percent  
*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Douglas-fir/ninebark-ninebark phase (PK261),  
Douglas-fir/snowberry-pinegrass phase (PK312)  
*Hydric soil rating:* No

#### Rubble land

*Percent of map unit:* 5 percent  
*Hydric soil rating:* No

#### Rock outcrop

*Percent of map unit:* 5 percent  
*Hydric soil rating:* No

## 35E—Courville gravelly ashy silt loam, 8 to 30 percent slopes

### Map Unit Setting

*National map unit symbol:* 57bl  
*Elevation:* 3,000 to 7,000 feet  
*Mean annual precipitation:* 25 to 50 inches  
*Mean annual air temperature:* 37 to 43 degrees F



## Custom Soil Resource Report

*Frost-free period:* 30 to 90 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Courville

#### Setting

*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over till or drift

#### Typical profile

*O<sub>i</sub> - 0 to 2 inches:* slightly decomposed plant material  
*B<sub>w</sub> - 2 to 10 inches:* gravelly ashy silt loam  
*2E - 10 to 34 inches:* very gravelly loam  
*2E/B<sub>w</sub> - 34 to 60 inches:* very gravelly loam

#### Properties and qualities

*Slope:* 8 to 30 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 5.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/queencup beadrily-beargrass phase (PK523), grand fir/twinflower-beargrass phase (PK592)  
*Hydric soil rating:* No

### Minor Components

#### Courville, greater slope

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/queencup beadrily-beargrass phase (PK523), grand fir/twinflower (PK590), grand fir/twinflower-beargrass phase (PK592)  
*Hydric soil rating:* No

#### Waldbillig

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Linear  
*Other vegetative classification:* subalpine fir/menziesia (PK670), subalpine fir/  
beargrass-blue huckleberry phase (PK691)  
*Hydric soil rating:* No

### 35F—Courville gravelly ashy silt loam, 30 to 50 percent slopes

#### Map Unit Setting

*National map unit symbol:* 57bm  
*Elevation:* 3,000 to 7,000 feet  
*Mean annual precipitation:* 22 to 50 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 30 to 90 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

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

#### Description of Courville

##### Setting

*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over till or drift

##### Typical profile

*Oi - 0 to 2 inches:* slightly decomposed plant material  
*Bw - 2 to 10 inches:* gravelly ashy silt loam  
*2E - 10 to 34 inches:* very gravelly loam  
*2E/Bw - 34 to 60 inches:* very gravelly loam

##### Properties and qualities

*Slope:* 30 to 50 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 5.9 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

**Minor Components**

**Waldbillig**

*Percent of map unit:* 5 percent

*Landform:* Moraines

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* subalpine fir/menziesia (PK670), subalpine fir/  
beargrass-blue huckleberry phase (PK691)

*Hydric soil rating:* No

**Winfall**

*Percent of map unit:* 5 percent

*Landform:* Moraines

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* Douglas-fir/blue huckleberry-kinnikinnick phase  
(PK282), grand fir/twinflower (PK590), grand fir/twinflower-beargrass phase  
(PK592)

*Hydric soil rating:* No

**36E—Rumblecreek gravelly loam, 15 to 30 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 57bv

*Elevation:* 3,000 to 6,200 feet

*Mean annual precipitation:* 18 to 45 inches

*Mean annual air temperature:* 37 to 45 degrees F

*Frost-free period:* 30 to 105 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Rumblecreek and similar soils:* 85 percent

*Minor components:* 15 percent

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

**Description of Rumblecreek**

**Setting**

*Landform:* Moraines

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alpine till or drift derived from argillite or quartzite

**Typical profile**

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material

*E - 1 to 9 inches:* gravelly loam

*E/B<sub>t</sub> - 9 to 23 inches:* gravelly loam

*B<sub>t</sub> - 23 to 60 inches:* very gravelly clay loam

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 15 to 30 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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  
*Available water storage in profile:* Low (about 5.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Other vegetative classification:* grand fir/twinflower-twinflower phase (PK591), grand fir/twinflower-beargrass phase (PK592)  
*Hydric soil rating:* No

### Minor Components

#### Wildgen

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Douglas-fir/dwarf huckleberry (PK250), Douglas-fir/ninebark-ninebark phase (PK261), Douglas-fir/pinegrass-kinnikinnick phase (PK322)  
*Hydric soil rating:* No

#### Bata

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* subalpine fir/queencup beadlily (PK620)  
*Hydric soil rating:* No

#### Beeskove

*Percent of map unit:* 5 percent  
*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Douglas-fir/ninebark (PK260)  
*Hydric soil rating:* No

## **40F—Holloway gravelly ashy silt loam, 35 to 60 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 57cr  
*Elevation:* 3,800 to 7,000 feet  
*Mean annual precipitation:* 30 to 60 inches  
*Mean annual air temperature:* 37 to 43 degrees F  
*Frost-free period:* 20 to 60 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

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

### **Description of Holloway**

#### **Setting**

*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over colluvium derived from argillite or quartzite

#### **Typical profile**

*O<sub>i</sub> - 0 to 2 inches:* slightly decomposed plant material  
*A - 2 to 11 inches:* gravelly ashy silt loam  
*2E - 11 to 23 inches:* extremely gravelly fine sandy loam  
*2E/Bw - 23 to 43 inches:* extremely gravelly fine sandy loam  
*2C - 43 to 60 inches:* extremely gravelly sandy loam

#### **Properties and qualities**

*Slope:* 35 to 60 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 3.4 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* subalpine fir/menziesia (PK670), subalpine fir/  
beargrass-grouse whortleberry phase (PK692)  
*Hydric soil rating:* No

**Minor Components**

**Waldbillig**

*Percent of map unit:* 4 percent

*Landform:* Mountains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* subalpine fir/menziesia (PK670), subalpine fir/  
beargrass-blue huckleberry phase (PK691)

*Hydric soil rating:* No

**Holloway, greater slope**

*Percent of map unit:* 4 percent

*Landform:* Mountains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* subalpine fir/twinflower-beargrass phase (PK662),  
subalpine fir/beargrass-blue huckleberry phase (PK691)

*Hydric soil rating:* No

**Holloway, cool**

*Percent of map unit:* 4 percent

*Landform:* Mountains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

**Rubble land**

*Percent of map unit:* 2 percent

*Hydric soil rating:* No

**Rock outcrop**

*Percent of map unit:* 1 percent

*Hydric soil rating:* No

**48E—Ashworth gravelly ashy silt loam, 8 to 30 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 57fz

*Elevation:* 2,800 to 4,400 feet

*Mean annual precipitation:* 12 to 36 inches

*Mean annual air temperature:* 37 to 45 degrees F

*Frost-free period:* 40 to 115 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Ashworth and similar soils:* 90 percent

*Minor components:* 10 percent

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

## Description of Ashworth

### Setting

*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over till or drift

### Typical profile

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material  
*B<sub>w</sub> - 1 to 11 inches:* gravelly ashy silt loam  
*2E - 11 to 21 inches:* gravelly loam  
*2B<sub>k</sub> - 21 to 51 inches:* very gravelly loam  
*2C - 51 to 60 inches:* very cobbly sandy loam

### Properties and qualities

*Slope:* 8 to 30 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 35 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 6.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* western hemlock/queencup beadlily (CN570)  
*Hydric soil rating:* Unranked

## Minor Components

### Ashworth, greater slope

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* western hemlock/queencup beadlily (CN570)  
*Hydric soil rating:* No

### Mollman

*Percent of map unit:* 3 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty-Droughty (SiDr) 15-19" p.z. (R044XW186MT)  
*Hydric soil rating:* No

### Auggie

*Percent of map unit:* 2 percent  
*Landform:* Lake terraces

## Custom Soil Resource Report

*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

### **58F—Waldbillig gravelly ashy silt loam, moist, 30 to 50 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* 57jg  
*Elevation:* 3,200 to 7,000 feet  
*Mean annual precipitation:* 30 to 60 inches  
*Mean annual air temperature:* 37 to 43 degrees F  
*Frost-free period:* 20 to 60 days  
*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

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

#### **Description of Waldbillig**

##### **Setting**

*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over till or drift

##### **Typical profile**

*Oi - 0 to 2 inches:* slightly decomposed plant material  
*Bw - 2 to 12 inches:* gravelly ashy silt loam  
*2E - 12 to 28 inches:* very gravelly fine sandy loam  
*2E/Bw - 28 to 60 inches:* very gravelly loam

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

*Slope:* 30 to 50 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 5.8 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* western hemlock/queencup beadleily (CN570)  
*Hydric soil rating:* No



**Minor Components**

**Waldbillig, greater slope**

*Percent of map unit:* 5 percent

*Landform:* Mountains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* subalpine fir/menziesia (PK670), subalpine fir/  
beargrass-blue huckleberry phase (PK691)

*Hydric soil rating:* No

**Holloway**

*Percent of map unit:* 4 percent

*Landform:* Mountains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* western hemlock/queencup beadlily (CN570),  
subalpine fir/queencup beadlily (PK620), mountain hemlock/smooth wood-  
rush-grouse whortleberry phase (PK841), mountain hemlock/smooth wood-  
rush-menziesia phase (PK842)

*Hydric soil rating:* No

**Rock outcrop**

*Percent of map unit:* 1 percent

*Hydric soil rating:* No

**67C—Glaciercreek gravelly ashy silt loam, cool, 0 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 5715

*Elevation:* 2,000 to 4,200 feet

*Mean annual precipitation:* 22 to 30 inches

*Mean annual air temperature:* 38 to 45 degrees F

*Frost-free period:* 70 to 95 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Glaciercreek and similar soils:* 90 percent

*Minor components:* 10 percent

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

**Description of Glaciercreek**

**Setting**

*Landform:* Outwash plains, stream terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Volcanic ash over alluvium or outwash

## Custom Soil Resource Report

### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*Bw - 1 to 15 inches:* gravelly ashy silt loam  
*2C - 15 to 60 inches:* extremely gravelly loamy sand

### Properties and qualities

*Slope:* 0 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 3.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/twinflower (PK590)  
*Hydric soil rating:* No

### Minor Components

#### Loonlake

*Percent of map unit:* 5 percent  
*Landform:* Stream terraces, outwash terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/queencup beadlily (PK520)  
*Hydric soil rating:* No

#### Glaciercreek, greater slope

*Percent of map unit:* 5 percent  
*Landform:* Outwash terraces, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/twinflower (PK590)  
*Hydric soil rating:* No

## 68C—Upsata gravelly ashy silt loam, 2 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* 57ld  
*Elevation:* 2,200 to 5,000 feet  
*Mean annual precipitation:* 22 to 36 inches  
*Mean annual air temperature:* 36 to 45 degrees F

## Custom Soil Resource Report

*Frost-free period:* 40 to 90 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Upsata

#### Setting

*Landform:* Outwash plains, stream terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over alluvium or outwash

#### Typical profile

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material  
*B<sub>w</sub> - 1 to 14 inches:* gravelly ashy silt loam  
*2BC - 14 to 18 inches:* gravelly fine sandy loam  
*2C - 18 to 60 inches:* extremely gravelly sand

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Excessively drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 3.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* subalpine fir/menziesia (PK670)  
*Hydric soil rating:* No

### Minor Components

#### Upsata, greater slope

*Percent of map unit:* 5 percent  
*Landform:* Outwash plains, stream terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* subalpine fir/menziesia (PK670)  
*Hydric soil rating:* No

#### Tamarack

*Percent of map unit:* 3 percent  
*Landform:* Stream terraces, outwash plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

### **Ashworth**

*Percent of map unit:* 2 percent  
*Landform:* Outwash plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* western hemlock/queencup beadlily (CN570)  
*Hydric soil rating:* No

## **68E—Upsata gravelly ashy silt loam, 8 to 30 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 57lg  
*Elevation:* 2,200 to 5,000 feet  
*Mean annual precipitation:* 22 to 36 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 40 to 90 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

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

### **Description of Upsata**

#### **Setting**

*Landform:* Outwash plains, stream terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over alluvium or outwash

#### **Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*Bw - 1 to 14 inches:* gravelly ashy silt loam  
*2BC - 14 to 18 inches:* gravelly fine sandy loam  
*2C - 18 to 60 inches:* extremely gravelly sand

#### **Properties and qualities**

*Slope:* 8 to 30 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 3.3 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* subalpine fir/menziesia (PK670)  
*Hydric soil rating:* No

**Minor Components**

**Upsata, greater slope**

*Percent of map unit:* 5 percent  
*Landform:* Outwash plains, stream terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* subalpine fir/menziesia (PK670)  
*Hydric soil rating:* No

**Tamarack**

*Percent of map unit:* 3 percent  
*Landform:* Outwash plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

**Ashworth**

*Percent of map unit:* 2 percent  
*Landform:* Outwash plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* western hemlock/queencup beadlily (CN570)  
*Hydric soil rating:* No

**69C—Tamarack ashy loam, 2 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 57ly  
*Elevation:* 2,000 to 4,200 feet  
*Mean annual precipitation:* 22 to 34 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 70 to 90 days  
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

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

## Description of Tamarack

### Setting

*Landform:* Outwash plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over alluvium or outwash

### Typical profile

*O<sub>i</sub> - 0 to 2 inches:* slightly decomposed plant material  
*B<sub>w</sub> - 2 to 12 inches:* ashy loam  
*2E and B<sub>t</sub> - 12 to 44 inches:* loamy coarse sand  
*2C - 44 to 60 inches:* loamy coarse sand

### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Moderate (about 6.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

## Minor Components

### Glaciercreek

*Percent of map unit:* 5 percent  
*Landform:* Outwash plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/twinflower (PK590)  
*Hydric soil rating:* No

### Tamarack, greater slope

*Percent of map unit:* 5 percent  
*Landform:* Stream terraces, outwash plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

## 72A—Blacklake mucky peat, 0 to 1 percent slopes

### Map Unit Setting

*National map unit symbol:* 57md  
*Elevation:* 2,200 to 3,800 feet  
*Mean annual precipitation:* 24 to 34 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 70 to 90 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Blacklake

#### Setting

*Landform:* Closed depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*Oe - 0 to 9 inches:* mucky peat  
*Oe/C - 9 to 14 inches:* stratified mucky peat to mucky silt loam  
*C/Oa - 14 to 31 inches:* stratified muck to mucky silt loam  
*C - 31 to 60 inches:* stratified very fine sandy loam to silt loam

#### Properties and qualities

*Slope:* 0 to 1 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Very poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 5.95 in/hr)  
*Depth to water table:* About 0 to 12 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Available water storage in profile:* Very high (about 14.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 5w  
*Hydrologic Soil Group:* A/D  
*Ecological site:* Wet Meadow (WM) 20"+ p.z. (R043XW154MT)  
*Hydric soil rating:* Yes

**Minor Components**

**Mclangor**

*Percent of map unit:* 8 percent  
*Landform:* Closed depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 20"+ p.z. (R043XW154MT)  
*Hydric soil rating:* Yes

**Meadowpeak**

*Percent of map unit:* 2 percent  
*Landform:* Closed depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Subirrigated (Sb) 20"+ p.z. (R043XW155MT)  
*Hydric soil rating:* Yes

**73A—Meadowpeak silt loam, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 57mm  
*Elevation:* 2,200 to 3,800 feet  
*Mean annual precipitation:* 24 to 34 inches  
*Mean annual air temperature:* 43 to 45 degrees F  
*Frost-free period:* 70 to 90 days  
*Farmland classification:* Farmland of local importance

**Map Unit Composition**

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

**Description of Meadowpeak**

**Setting**

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

**Typical profile**

*A - 0 to 4 inches:* silt loam  
*C1 - 4 to 25 inches:* silt loam  
*C2 - 25 to 34 inches:* stratified loam to silt loam  
*C3 - 34 to 60 inches:* stratified very fine sandy loam to silt

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches



## Custom Soil Resource Report

*Natural drainage class:* Poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* About 12 to 24 inches  
*Frequency of flooding:* Occasional  
*Frequency of ponding:* None  
*Available water storage in profile:* High (about 10.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 5w  
*Hydrologic Soil Group:* B/D  
*Ecological site:* Wet Meadow (WM) 20"+ p.z. (R043XW154MT)  
*Hydric soil rating:* Yes

### Minor Components

#### Meadowpeak, freq flooded

*Percent of map unit:* 5 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 20"+ p.z. (R043XW154MT)  
*Hydric soil rating:* Yes

#### Firetower

*Percent of map unit:* 5 percent  
*Landform:* Stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Blacklake

*Percent of map unit:* 5 percent  
*Landform:* Closed depressions on flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 20"+ p.z. (R043XW154MT)  
*Hydric soil rating:* Yes

## 74A—Blackcreek silt loam, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* 57mp  
*Elevation:* 2,300 to 3,800 feet  
*Mean annual precipitation:* 24 to 34 inches  
*Mean annual air temperature:* 43 to 45 degrees F  
*Frost-free period:* 70 to 90 days  
*Farmland classification:* Farmland of local importance

**Map Unit Composition**

*Blackcreek and similar soils: 90 percent*

*Minor components: 10 percent*

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

**Description of Blackcreek**

**Setting**

*Landform: Outwash plains, stream terraces*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Alluvium*

**Typical profile**

*A - 0 to 4 inches: silt loam*

*Bw - 4 to 10 inches: silt loam*

*Bk - 10 to 36 inches: silt loam*

*C1 - 36 to 42 inches: silt*

*2C2 - 42 to 60 inches: loamy coarse sand, silt*

**Properties and qualities**

*Slope: 0 to 2 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural drainage class: Poorly drained*

*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)*

*Depth to water table: About 12 to 48 inches*

*Frequency of flooding: Rare*

*Frequency of ponding: None*

*Calcium carbonate, maximum in profile: 15 percent*

*Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)*

*Available water storage in profile: High (about 9.2 inches)*

**Interpretive groups**

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 5w*

*Hydrologic Soil Group: C*

*Other vegetative classification: spruce/common horsetail (PK410)*

*Hydric soil rating: Yes*

**Minor Components**

**Tallcreek**

*Percent of map unit: 5 percent*

*Landform: Stream terraces*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Other vegetative classification: spruce/queencup beadlily (PK420)*

*Hydric soil rating: No*

**Meadowpeak**

*Percent of map unit: 4 percent*

*Landform: Closed depressions*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Ecological site: Subirrigated (Sb) 20"+ p.z. (R043XW155MT)*

*Hydric soil rating:* Yes

**Blackcreek, greater slope**

*Percent of map unit:* 1 percent

*Landform:* Outwash plains, stream terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* spruce/common horsetail (PK410)

*Hydric soil rating:* Yes

**75B—Tallcreek ashy silt loam, 0 to 4 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 57mr

*Elevation:* 3,300 to 3,800 feet

*Mean annual precipitation:* 24 to 30 inches

*Mean annual air temperature:* 38 to 42 degrees F

*Frost-free period:* 70 to 90 days

*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

*Tallcreek and similar soils:* 90 percent

*Minor components:* 10 percent

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

**Description of Tallcreek**

**Setting**

*Landform:* Stream terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Volcanic ash over glaciolacustrine deposits

**Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material

*A - 1 to 5 inches:* ashy silt loam

*Bw - 5 to 19 inches:* ashy silt loam

*Bk - 19 to 29 inches:* silt loam

*C1 - 29 to 43 inches:* silty clay loam

*C2 - 43 to 60 inches:* very fine sandy loam

**Properties and qualities**

*Slope:* 0 to 4 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 48 to 72 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 15 percent

## Custom Soil Resource Report

*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Other vegetative classification:* spruce/queencup beadlily (PK420)  
*Hydric soil rating:* No

### Minor Components

#### Blackcreek

*Percent of map unit:* 7 percent  
*Landform:* Flood plains  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Other vegetative classification:* spruce/common horsetail (PK410)  
*Hydric soil rating:* Yes

#### Tallcreek, greater slope

*Percent of map unit:* 3 percent  
*Landform:* Stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* spruce/queencup beadlily (PK420)  
*Hydric soil rating:* No

## 77E—Beeskove gravelly loam, moist, 15 to 35 percent slopes

### Map Unit Setting

*National map unit symbol:* 57n2  
*Elevation:* 3,600 to 6,000 feet  
*Mean annual precipitation:* 25 to 50 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 30 to 90 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Beeskove

#### Setting

*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Colluvium derived from calcareous argillite or quartzite

## Custom Soil Resource Report

### Typical profile

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material  
*E - 1 to 9 inches:* gravelly loam  
*E/Bw - 9 to 24 inches:* very gravelly loam  
*Bw - 24 to 41 inches:* very gravelly loam  
*Bk - 41 to 60 inches:* extremely gravelly loam

### Properties and qualities

*Slope:* 15 to 35 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Low (about 4.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/twinflower (PK590), grand fir/twinflower-beargrass phase (PK592)  
*Hydric soil rating:* No

### Minor Components

#### Beeskove, bouldery

*Percent of map unit:* 3 percent  
*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/twinflower (PK590), grand fir/twinflower-beargrass phase (PK592)  
*Hydric soil rating:* No

#### Rock outcrop

*Percent of map unit:* 3 percent

#### Beeskove, greater slope

*Percent of map unit:* 2 percent  
*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/twinflower (PK590), grand fir/twinflower-beargrass phase (PK592)  
*Hydric soil rating:* No

#### Felan

*Percent of map unit:* 2 percent  
*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

*Other vegetative classification:* western hemlock/queencup beadlily (CN570)  
*Hydric soil rating:* No

### **77F—Beeskove gravelly loam, moist, 35 to 60 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* 57n4  
*Elevation:* 4,200 to 6,000 feet  
*Mean annual precipitation:* 25 to 40 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 60 to 90 days  
*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

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

#### **Description of Beeskove**

##### **Setting**

*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Colluvium derived from calcareous argillite or quartzite

##### **Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*E - 1 to 9 inches:* gravelly loam  
*E/Bw - 9 to 24 inches:* very gravelly loam  
*Bw - 24 to 41 inches:* very gravelly loam  
*Bk - 41 to 60 inches:* extremely gravelly loam

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

*Slope:* 35 to 60 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Low (about 4.9 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B

## Custom Soil Resource Report

*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/  
twinflower (PK590), grand fir/twinflower-beargrass phase (PK592)  
*Hydric soil rating:* No

### Minor Components

#### Mitten

*Percent of map unit:* 5 percent  
*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/beargrass (PK510), grand fir/twinflower-  
twinflower phase (PK591), grand fir/twinflower-beargrass phase (PK592)  
*Hydric soil rating:* No

#### Rock outcrop

*Percent of map unit:* 5 percent

## 82F—Sharrott, cool-Rock outcrop-Rubble land complex, 15 to 60 percent slopes

### Map Unit Setting

*National map unit symbol:* 57p9  
*Elevation:* 3,000 to 5,600 feet  
*Mean annual precipitation:* 17 to 30 inches  
*Mean annual air temperature:* 43 to 45 degrees F  
*Frost-free period:* 70 to 100 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Sharrott and similar soils:* 45 percent  
*Rock outcrop:* 25 percent  
*Rubble land:* 20 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Sharrott

#### Setting

*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Colluvium or residuum derived from argillite or quartzite

#### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*A - 1 to 3 inches:* gravelly loam  
*Bw - 3 to 7 inches:* very gravelly loam  
*BC - 7 to 16 inches:* extremely gravelly loam  
*R - 16 to 20 inches:* unweathered bedrock

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 15 to 60 percent  
*Depth to restrictive feature:* 10 to 20 inches to lithic bedrock  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Very low (about 1.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* D  
*Other vegetative classification:* Douglas-fir/ninebark-ninebark phase (PK261),  
Douglas-fir/pinegrass-ponderosa pine phase (PK324)  
*Hydric soil rating:* No

### Minor Components

#### Winkler, cool

*Percent of map unit:* 10 percent  
*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Douglas-fir/ninebark-ninebark phase (PK261),  
Douglas-fir/pinegrass-ponderosa pine phase (PK324)  
*Hydric soil rating:* No

## 92C—Oldtrail gravelly sandy loam, 0 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* 57r6  
*Elevation:* 2,200 to 3,500 feet  
*Mean annual precipitation:* 10 to 34 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 70 to 115 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Oldtrail

#### Setting

*Landform:* Drainageways  
*Down-slope shape:* Linear



## Custom Soil Resource Report

*Across-slope shape:* Linear

*Parent material:* Alluvium

### Typical profile

*A - 0 to 4 inches:* gravelly sandy loam

*C1 - 4 to 12 inches:* extremely gravelly loamy coarse sand

*C2 - 12 to 60 inches:* extremely cobbly loamy coarse sand

### Properties and qualities

*Slope:* 0 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Moderately well drained

*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

*Depth to water table:* About 24 to 42 inches

*Frequency of flooding:* Occasional

*Frequency of ponding:* None

*Available water storage in profile:* Very low (about 2.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* 7s

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* B

*Other vegetative classification:* grand fir/twinflower (PK590)

*Hydric soil rating:* Unranked

### Minor Components

#### Gardencreek

*Percent of map unit:* 4 percent

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) 10-14" p.z. (R044XW124MT)

*Hydric soil rating:* Yes

#### Oldtrail, cobbly

*Percent of map unit:* 4 percent

*Landform:* Drainageways

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* grand fir/twinflower (PK590)

*Hydric soil rating:* No

#### Riverwash

*Percent of map unit:* 2 percent

## 98F—Bendahl gravelly ashy silt loam, 30 to 50 percent slopes

### Map Unit Setting

*National map unit symbol:* 57s3

*Elevation:* 2,900 to 5,500 feet

## Custom Soil Resource Report

*Mean annual precipitation:* 25 to 45 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 70 to 90 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Bendahl

#### Setting

*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over till or drift

#### Typical profile

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material  
*B<sub>w</sub> - 1 to 8 inches:* gravelly ashy silt loam  
*2E/B<sub>w</sub> - 8 to 28 inches:* very gravelly loam  
*2B<sub>k</sub> - 28 to 60 inches:* very gravelly loam

#### Properties and qualities

*Slope:* 30 to 50 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 35 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Low (about 5.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/queencup beadlily (PK520)  
*Hydric soil rating:* Unranked

### Minor Components

#### Mollman

*Percent of map unit:* 5 percent  
*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Douglas-fir/ninebark (PK260)  
*Hydric soil rating:* No

#### Bendahl, greater slope

*Percent of map unit:* 5 percent

## Custom Soil Resource Report

*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/queencup beadlily (PK520)  
*Hydric soil rating:* No

### **291B—Half Moon silt loam, cool, 2 to 8 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* 578t  
*Elevation:* 2,300 to 4,800 feet  
*Mean annual precipitation:* 18 to 40 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 50 to 105 days  
*Farmland classification:* Farmland of statewide importance

#### **Map Unit Composition**

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

#### **Description of Half Moon**

##### **Setting**

*Landform:* Lake terraces, lake plains  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Lacustrine deposits

##### **Typical profile**

*O<sub>i</sub> - 0 to 2 inches:* slightly decomposed plant material  
*E/B<sub>t</sub> - 2 to 16 inches:* silt loam  
*B<sub>t</sub> - 16 to 28 inches:* silty clay loam  
*B<sub>k</sub> - 28 to 37 inches:* silt loam  
*C - 37 to 60 inches:* stratified very fine sandy loam to silty clay

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

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 3.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/  
twinflower (PK590)

*Hydric soil rating:* No

### Minor Components

#### Whitepine

*Percent of map unit:* 7 percent

*Landform:* Lake terraces, lake plains

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* Douglas-fir/ninebark-pinegrass phase (PK262),  
grand fir/twinflower (PK590)

*Hydric soil rating:* No

#### Rumblecreek

*Percent of map unit:* 3 percent

*Landform:* Moraines

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* Douglas-fir/dwarf huckleberry (PK250), Douglas-  
fir/blue huckleberry-kinnikinnick phase (PK282)

*Hydric soil rating:* No

#### Half moon, greater slope

*Percent of map unit:* 3 percent

*Landform:* Lake terraces, lake plains

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/  
twinflower (PK590)

*Hydric soil rating:* No

#### Auggie

*Percent of map unit:* 2 percent

*Landform:* Lake terraces, lake plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

## 291D—Half Moon silt loam, cool, 8 to 15 percent slopes

### Map Unit Setting

*National map unit symbol:* 578w

## Custom Soil Resource Report

*Elevation:* 2,500 to 4,500 feet  
*Mean annual precipitation:* 14 to 35 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 50 to 120 days  
*Farmland classification:* Farmland of local importance

### Map Unit Composition

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

### Description of Half Moon

#### Setting

*Landform:* Lake terraces, lake plains  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Lacustrine deposits

#### Typical profile

*O<sub>i</sub> - 0 to 2 inches:* slightly decomposed plant material  
*E/Bt - 2 to 16 inches:* silt loam  
*Bt - 16 to 28 inches:* silty clay loam  
*Bk - 28 to 37 inches:* silt loam  
*C - 37 to 60 inches:* stratified very fine sandy loam to silty clay

#### Properties and qualities

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 3.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/twinflower (PK590)  
*Hydric soil rating:* No

### Minor Components

#### Auggie

*Percent of map unit:* 3 percent  
*Landform:* Lake terraces, lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

**Crystalex**

*Percent of map unit:* 3 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

**Glaciercreek**

*Percent of map unit:* 2 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 15-19" p.z. (R044XW184MT)  
*Hydric soil rating:* No

**Half moon, greater slope**

*Percent of map unit:* 2 percent  
*Landform:* Lake terraces, lake plains  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/  
twinflower (PK590)  
*Hydric soil rating:* No

**291E—Half Moon silt loam, cool, 15 to 35 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 578y  
*Elevation:* 2,500 to 4,500 feet  
*Mean annual precipitation:* 18 to 35 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 50 to 105 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

**Description of Half Moon**

**Setting**

*Landform:* Lake terraces, lake plains  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Lacustrine deposits

## Custom Soil Resource Report

### Typical profile

*Oi - 0 to 2 inches:* slightly decomposed plant material  
*E/Bt - 2 to 16 inches:* silt loam  
*Bt - 16 to 28 inches:* silty clay loam  
*Bk - 28 to 37 inches:* silt loam  
*C - 37 to 60 inches:* stratified very fine sandy loam to silty clay

### Properties and qualities

*Slope:* 15 to 35 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 3.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/twinflower (PK590)  
*Hydric soil rating:* No

### Minor Components

#### Auggie

*Percent of map unit:* 5 percent  
*Landform:* Lake terraces, lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Half moon, greater slope

*Percent of map unit:* 5 percent  
*Landform:* Lake terraces, lake plains  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/twinflower (PK590)  
*Hydric soil rating:* No

## 291F—Half Moon silt loam, cool, 35 to 60 percent slopes

### Map Unit Setting

*National map unit symbol:* 5790  
*Elevation:* 2,200 to 4,500 feet  
*Mean annual precipitation:* 18 to 35 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 50 to 105 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Half Moon

#### Setting

*Landform:* Lake terraces, lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Lacustrine deposits

#### Typical profile

*O<sub>i</sub> - 0 to 2 inches:* slightly decomposed plant material  
*E/Bt - 2 to 16 inches:* silt loam  
*Bt - 16 to 28 inches:* silty clay loam  
*Bk - 28 to 37 inches:* silt loam  
*C - 37 to 60 inches:* stratified very fine sandy loam to silty clay

#### Properties and qualities

*Slope:* 35 to 60 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 3.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* C  
*Other vegetative classification:* grand fir/queencup beadleily (PK520), grand fir/twinflower (PK590)



*Hydric soil rating:* No

**Minor Components**

**Auggie**

*Percent of map unit:* 7 percent  
*Landform:* Lake terraces, lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

**Tamarack**

*Percent of map unit:* 3 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

**374F—Mitten-Rock outcrop complex, 40 to 70 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 57c1  
*Elevation:* 3,000 to 6,000 feet  
*Mean annual precipitation:* 17 to 40 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 70 to 90 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

**Description of Mitten**

**Setting**

*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over colluvium

**Typical profile**

*Oi - 0 to 2 inches:* slightly decomposed plant material  
*Bw - 2 to 9 inches:* gravelly ashy silt loam  
*2E - 9 to 23 inches:* very gravelly loam  
*2E/Bw - 23 to 60 inches:* extremely gravelly loam

**Properties and qualities**

*Slope:* 40 to 70 percent

## Custom Soil Resource Report

*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 3.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* Douglas-fir/ninebark-pinegrass phase (PK262)  
*Hydric soil rating:* No

### Minor Components

#### Sharrott

*Percent of map unit:* 5 percent  
*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Douglas-fir/ninebark-ninebark phase (PK261), Douglas-fir/pinegrass-ponderosa pine phase (PK324)  
*Hydric soil rating:* No

#### Mitten, lesser slope

*Percent of map unit:* 5 percent  
*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/beargrass (PK510), grand fir/twinflower-twinflower phase (PK591), grand fir/twinflower-beargrass phase (PK592)  
*Hydric soil rating:* No

## 582F—Waldbillig-Holloway gravelly ashy silt loams, moist, 30 to 50 percent slopes

### Map Unit Setting

*National map unit symbol:* 57j8  
*Elevation:* 3,200 to 7,000 feet  
*Mean annual precipitation:* 28 to 60 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 20 to 70 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Waldbillig and similar soils:* 50 percent  
*Holloway and similar soils:* 40 percent

## Custom Soil Resource Report

*Minor components: 10 percent*

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

### Description of Waldbillig

#### Setting

*Landform: Mountains*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Volcanic ash over till or drift*

#### Typical profile

*O<sub>i</sub> - 0 to 2 inches: slightly decomposed plant material*

*B<sub>w</sub> - 2 to 12 inches: gravelly ashy silt loam*

*2E - 12 to 28 inches: very gravelly fine sandy loam*

*2E/B<sub>w</sub> - 28 to 60 inches: very gravelly loam*

#### Properties and qualities

*Slope: 30 to 50 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural drainage class: Well drained*

*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>): Moderately high to high (0.57 to 1.98 in/hr)*

*Depth to water table: More than 80 inches*

*Frequency of flooding: None*

*Frequency of ponding: None*

*Available water storage in profile: Low (about 5.8 inches)*

#### Interpretive groups

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 7e*

*Hydrologic Soil Group: B*

*Other vegetative classification: western hemlock/queencup beadlily (CN570)*

*Hydric soil rating: No*

### Description of Holloway

#### Setting

*Landform: Mountains*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Volcanic ash over colluvium derived from argillite or quartzite*

#### Typical profile

*O<sub>i</sub> - 0 to 2 inches: slightly decomposed plant material*

*A - 2 to 12 inches: gravelly ashy silt loam*

*2E - 12 to 19 inches: extremely gravelly fine sandy loam*

*2E/B<sub>w</sub> - 19 to 54 inches: extremely gravelly fine sandy loam*

*2C - 54 to 60 inches: extremely gravelly sandy loam*

#### Properties and qualities

*Slope: 30 to 50 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural drainage class: Somewhat excessively drained*

*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>): Moderately high to high (0.57 to 1.98 in/hr)*

*Depth to water table: More than 80 inches*

*Frequency of flooding: None*

## Custom Soil Resource Report

*Frequency of ponding:* None

*Available water storage in profile:* Low (about 3.6 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* B

*Other vegetative classification:* subalpine fir/menziesia (PK670), subalpine fir/  
beargrass-grouse whortleberry phase (PK692)

*Hydric soil rating:* No

### **Minor Components**

#### **Waldbillig, greater slope**

*Percent of map unit:* 4 percent

*Landform:* Mountains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* subalpine fir/menziesia (PK670), subalpine fir/  
beargrass-blue huckleberry phase (PK691)

*Hydric soil rating:* No

#### **Ashworth**

*Percent of map unit:* 3 percent

*Landform:* Mountains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* western hemlock/queencup beadlily (CN570)

*Hydric soil rating:* No

#### **Rock outcrop**

*Percent of map unit:* 3 percent

*Hydric soil rating:* No

## **691B—Tamarack-Crystalex complex, 0 to 4 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 5711

*Elevation:* 2,000 to 4,200 feet

*Mean annual precipitation:* 22 to 34 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 70 to 90 days

*Farmland classification:* Farmland of local importance

### **Map Unit Composition**

*Tamarack and similar soils:* 50 percent

*Crystalex and similar soils:* 40 percent

*Minor components:* 10 percent

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

## Description of Tamarack

### Setting

*Landform:* Stream terraces, outwash plains  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over alluvium or outwash

### Typical profile

*Oi - 0 to 2 inches:* slightly decomposed plant material  
*Bw - 2 to 12 inches:* ashy loam  
*2E and Bt - 12 to 44 inches:* loamy coarse sand  
*2C - 44 to 60 inches:* loamy coarse sand

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Moderate (about 6.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

## Description of Crystalex

### Setting

*Landform:* Outwash plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*E - 1 to 22 inches:* loamy coarse sand  
*E and Bt - 22 to 60 inches:* stratified loamy sand to sandy loam

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (1.98 to 19.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 5.4 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* A  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

**Minor Components**

**Tamarack, greater slope**

*Percent of map unit:* 5 percent  
*Landform:* Outwash plains, stream terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

**Glaciercreek**

*Percent of map unit:* 5 percent  
*Landform:* Stream terraces, outwash plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/  
twinflower (PK590)  
*Hydric soil rating:* No

**691D—Tamarack-Crystalex complex, 4 to 15 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 57In  
*Elevation:* 2,000 to 4,500 feet  
*Mean annual precipitation:* 18 to 34 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 70 to 105 days  
*Farmland classification:* Farmland of local importance

**Map Unit Composition**

*Tamarack and similar soils:* 50 percent  
*Crystalex and similar soils:* 40 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Tamarack**

**Setting**

*Landform:* Outwash plains, stream terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over alluvium or outwash

### Typical profile

*Oi - 0 to 2 inches:* slightly decomposed plant material  
*Bw - 2 to 12 inches:* ashy loam  
*2E and Bt - 12 to 44 inches:* loamy coarse sand  
*2C - 44 to 60 inches:* loamy coarse sand

### Properties and qualities

*Slope:* 4 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Moderate (about 6.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

## Description of Crystalex

### Setting

*Landform:* Outwash plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*E - 1 to 22 inches:* loamy coarse sand  
*E and Bt - 22 to 60 inches:* stratified loamy sand to sandy loam

### Properties and qualities

*Slope:* 4 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (1.98 to 19.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 5.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* A  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

**Minor Components**

**Glaciercreek**

*Percent of map unit:* 4 percent

*Landform:* Stream terraces, outwash plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/  
twinflower (PK590)

*Hydric soil rating:* No

**Tamarack, greater slope**

*Percent of map unit:* 3 percent

*Landform:* Outwash plains, stream terraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* grand fir/twinflower (PK590)

*Hydric soil rating:* No

**Half moon**

*Percent of map unit:* 3 percent

*Landform:* Lake terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* grand fir/queencup beadlily (PK520), grand fir/  
twinflower (PK590)

*Hydric soil rating:* No

**691E—Tamarack-Crystalex complex, 15 to 30 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 57lq

*Elevation:* 2,200 to 3,800 feet

*Mean annual precipitation:* 14 to 34 inches

*Mean annual air temperature:* 41 to 45 degrees F

*Frost-free period:* 70 to 120 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Tamarack and similar soils:* 50 percent

*Crystalex and similar soils:* 40 percent

*Minor components:* 10 percent

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

**Description of Tamarack**

**Setting**

*Landform:* Outwash plains, stream terraces



## Custom Soil Resource Report

*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over alluvium or outwash

### Typical profile

*Oi - 0 to 2 inches:* slightly decomposed plant material  
*Bw - 2 to 12 inches:* ashy loam  
*2E and Bt - 12 to 44 inches:* loamy coarse sand  
*2C - 44 to 60 inches:* loamy coarse sand

### Properties and qualities

*Slope:* 15 to 30 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Moderate (about 6.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

## Description of Crystalex

### Setting

*Landform:* Outwash plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*E - 1 to 22 inches:* loamy coarse sand  
*E and Bt - 22 to 60 inches:* stratified loamy sand to sandy loam

### Properties and qualities

*Slope:* 15 to 30 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (1.98 to 19.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 5.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* A  
*Other vegetative classification:* grand fir/twinflower (PK590)

## Custom Soil Resource Report

*Hydric soil rating:* No

### Minor Components

#### **Crystalex, greater slope**

*Percent of map unit:* 5 percent

*Landform:* Outwash plains, stream terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* grand fir/twinflower (PK590)

*Hydric soil rating:* No

#### **Glaciercreek**

*Percent of map unit:* 5 percent

*Landform:* Outwash plains, stream terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 15-19" p.z. (R044XW184MT)

*Hydric soil rating:* No

## **691F—Tamarack-Crystalex complex, 30 to 60 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 57ls

*Elevation:* 2,200 to 3,800 feet

*Mean annual precipitation:* 24 to 34 inches

*Mean annual air temperature:* 43 to 45 degrees F

*Frost-free period:* 70 to 90 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Tamarack and similar soils:* 50 percent

*Crystalex and similar soils:* 40 percent

*Minor components:* 10 percent

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

### **Description of Tamarack**

#### **Setting**

*Landform:* Outwash plains, stream terraces

*Landform position (three-dimensional):* Riser

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Volcanic ash over alluvium or outwash

#### **Typical profile**

*Oi - 0 to 2 inches:* slightly decomposed plant material

*Bw - 2 to 12 inches:* ashy loam

*2E and Bt - 12 to 44 inches:* loamy coarse sand

*2C - 44 to 60 inches:* loamy coarse sand

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 30 to 60 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Moderate (about 6.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

### Description of Crystalex

#### Setting

*Landform:* Outwash plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*E - 1 to 22 inches:* loamy coarse sand  
*E and Bt - 22 to 60 inches:* stratified loamy sand to sandy loam

### Properties and qualities

*Slope:* 30 to 60 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (1.98 to 19.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 5.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* A  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

### Minor Components

#### Crystalex, greater slope

*Percent of map unit:* 5 percent  
*Landform:* Outwash plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/twinflower (PK590)

## Custom Soil Resource Report

*Hydric soil rating:* No

### **Glaciercreek**

*Percent of map unit:* 5 percent

*Landform:* Outwash plains, stream terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* grand fir/twinflower (PK590)

*Hydric soil rating:* No

## **731A—Meadowpeak-Firetower silt loams, 0 to 2 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 57mh

*Elevation:* 2,200 to 3,800 feet

*Mean annual precipitation:* 24 to 34 inches

*Mean annual air temperature:* 43 to 45 degrees F

*Frost-free period:* 70 to 90 days

*Farmland classification:* Farmland of local importance

### **Map Unit Composition**

*Meadowpeak and similar soils:* 60 percent

*Firetower and similar soils:* 30 percent

*Minor components:* 10 percent

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

### **Description of Meadowpeak**

#### **Setting**

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

#### **Typical profile**

*A - 0 to 4 inches:* silt loam

*C1 - 4 to 25 inches:* silt loam

*C2 - 25 to 34 inches:* stratified loam to silt loam

*C3 - 34 to 60 inches:* stratified very fine sandy loam to silt

#### **Properties and qualities**

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Poorly drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* About 12 to 24 inches

*Frequency of flooding:* Occasional

*Frequency of ponding:* None

*Available water storage in profile:* High (about 10.3 inches)

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 5w  
*Hydrologic Soil Group:* B/D  
*Ecological site:* Subirrigated (Sb) 20"+ p.z. (R043XW155MT)  
*Hydric soil rating:* Yes

### Description of Firetower

#### Setting

*Landform:* Stream terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 6 inches:* silt loam  
*Bw - 6 to 42 inches:* silt loam  
*C - 42 to 60 inches:* silt loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* About 36 to 60 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Available water storage in profile:* High (about 10.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4w  
*Hydrologic Soil Group:* B  
*Hydric soil rating:* No

### Minor Components

#### Blacklake

*Percent of map unit:* 5 percent  
*Landform:* Closed depressions on flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 20"+ p.z. (R043XW154MT)  
*Hydric soil rating:* Yes

#### Tallcreek

*Percent of map unit:* 3 percent  
*Landform:* Stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* spruce/queencup beadlily (PK420)  
*Hydric soil rating:* No

**Firetower, greater slope**

*Percent of map unit:* 2 percent  
*Landform:* Stream terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

**808A—Barzee mucky peat, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 57nv  
*Elevation:* 3,200 to 3,800 feet  
*Mean annual precipitation:* 24 to 30 inches  
*Mean annual air temperature:* 39 to 43 degrees F  
*Frost-free period:* 70 to 90 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

**Description of Barzee**

**Setting**

*Landform:* Closed depressions on moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Organic material

**Typical profile**

*Oi - 0 to 4 inches:* mucky peat  
*Oe - 4 to 60 inches:* mucky peat

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Very poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 5.95 in/hr)  
*Depth to water table:* About 0 to 12 inches  
*Frequency of flooding:* Occasional  
*Frequency of ponding:* None  
*Available water storage in profile:* Very high (about 20.9 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 5w

## Custom Soil Resource Report

*Hydrologic Soil Group:* A/D  
*Ecological site:* Wet Meadow (WM) 20"+ p.z. (R043XW154MT)  
*Hydric soil rating:* Yes

### Minor Components

#### Murrstead

*Percent of map unit:* 5 percent  
*Landform:* Closed depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 20"+ p.z. (R043XW154MT)  
*Hydric soil rating:* Yes

#### Mclangor

*Percent of map unit:* 5 percent  
*Landform:* Closed depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 20"+ p.z. (R043XW154MT)  
*Hydric soil rating:* Yes

## 858E—Waldbillig gravelly ashy silt loam, moist, 8 to 30 percent slopes

### Map Unit Setting

*National map unit symbol:* 57ps  
*Elevation:* 3,800 to 5,600 feet  
*Mean annual precipitation:* 30 to 50 inches  
*Mean annual air temperature:* 37 to 43 degrees F  
*Frost-free period:* 30 to 60 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Waldbillig

#### Setting

*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over till or drift

#### Typical profile

*O<sub>i</sub> - 0 to 2 inches:* slightly decomposed plant material  
*B<sub>w</sub> - 2 to 12 inches:* gravelly ashy silt loam  
*2E - 12 to 28 inches:* very gravelly fine sandy loam  
*2E/B<sub>w</sub> - 28 to 60 inches:* very gravelly loam

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 8 to 30 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 5.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* western hemlock/queencup beadlily (CN570)  
*Hydric soil rating:* No

### Minor Components

#### Waldbillig, greater slope

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* western hemlock/queencup beadlily (CN570)  
*Hydric soil rating:* No

#### Ashworth

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* western hemlock/queencup beadlily (CN570)  
*Hydric soil rating:* Unranked

## 867E—Glaciercreek gravelly ashy silt loam, cool, 8 to 30 percent slopes

### Map Unit Setting

*National map unit symbol:* 57q2  
*Elevation:* 2,000 to 4,200 feet  
*Mean annual precipitation:* 22 to 30 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 70 to 90 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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



## Description of Glaciercreek

### Setting

*Landform:* Stream terraces, outwash plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over alluvium or outwash

### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*Bw - 1 to 15 inches:* gravelly ashy silt loam  
*2C - 15 to 60 inches:* extremely gravelly loamy sand

### Properties and qualities

*Slope:* 8 to 30 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 3.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

## Minor Components

### Glaciercreek, greater slope

*Percent of map unit:* 5 percent  
*Landform:* Outwash plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

### Loonlake

*Percent of map unit:* 5 percent  
*Landform:* Outwash plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/queencup beadlily (PK520)  
*Hydric soil rating:* No

## 867F—Glaciercreek gravelly ashy silt loam, cool, 30 to 45 percent slopes

### Map Unit Setting

*National map unit symbol:* 57q3  
*Elevation:* 2,000 to 4,200 feet  
*Mean annual precipitation:* 22 to 30 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 70 to 90 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Glaciercreek

#### Setting

*Landform:* Stream terraces, outwash plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Volcanic ash over alluvium or outwash

#### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*Bw - 1 to 15 inches:* gravelly ashy silt loam  
*2C - 15 to 60 inches:* extremely gravelly loamy sand

#### Properties and qualities

*Slope:* 30 to 45 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Low (about 3.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

### Minor Components

#### Glaciercreek, greater slope

*Percent of map unit:* 5 percent

## Custom Soil Resource Report

*Landform:* Outwash plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

### **Tamarack**

*Percent of map unit:* 5 percent  
*Landform:* Outwash plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

## **897C—Mollman gravelly loam, 2 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 57qs  
*Elevation:* 2,900 to 5,500 feet  
*Mean annual precipitation:* 25 to 45 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 40 to 90 days  
*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

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

### **Description of Mollman**

#### **Setting**

*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alpine till or glacial drift

#### **Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*E - 1 to 11 inches:* gravelly loam  
*E/Bw - 11 to 21 inches:* very gravelly loam  
*Bk - 21 to 60 inches:* very gravelly loam

#### **Properties and qualities**

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None

## Custom Soil Resource Report

*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 35 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 6.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

### Minor Components

#### Mollman, greater slope

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

#### Ashworth

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* western hemlock/queencup beadlily (CN570)  
*Hydric soil rating:* No

## 897E—Mollman gravelly loam, 8 to 30 percent slopes

### Map Unit Setting

*National map unit symbol:* 57qt  
*Elevation:* 2,900 to 5,500 feet  
*Mean annual precipitation:* 25 to 45 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 70 to 90 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Mollman

#### Setting

*Landform:* Moraines  
*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Linear  
*Parent material:* Alpine till or glacial drift

### Typical profile

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material  
*E - 1 to 11 inches:* gravelly loam  
*E/Bw - 11 to 21 inches:* very gravelly loam  
*Bk - 21 to 60 inches:* very gravelly loam

### Properties and qualities

*Slope:* 8 to 30 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 35 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 6.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

### Minor Components

#### Mollman, greater slope

*Percent of map unit:* 5 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/twinflower (PK590)  
*Hydric soil rating:* No

#### Bendahl

*Percent of map unit:* 3 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* grand fir/queencup beadlily (PK520)  
*Hydric soil rating:* Unranked

#### Mollman, dry

*Percent of map unit:* 2 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Douglas-fir/ninebark (PK260)  
*Hydric soil rating:* No

**W—Water**

**Map Unit Composition**

*Water:* 100 percent

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

# **Soil Information for All Uses**

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## **Soil Properties and Qualities**

The Soil Properties and Qualities section includes various soil properties and qualities 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 property or quality.

## **Soil Qualities and Features**

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

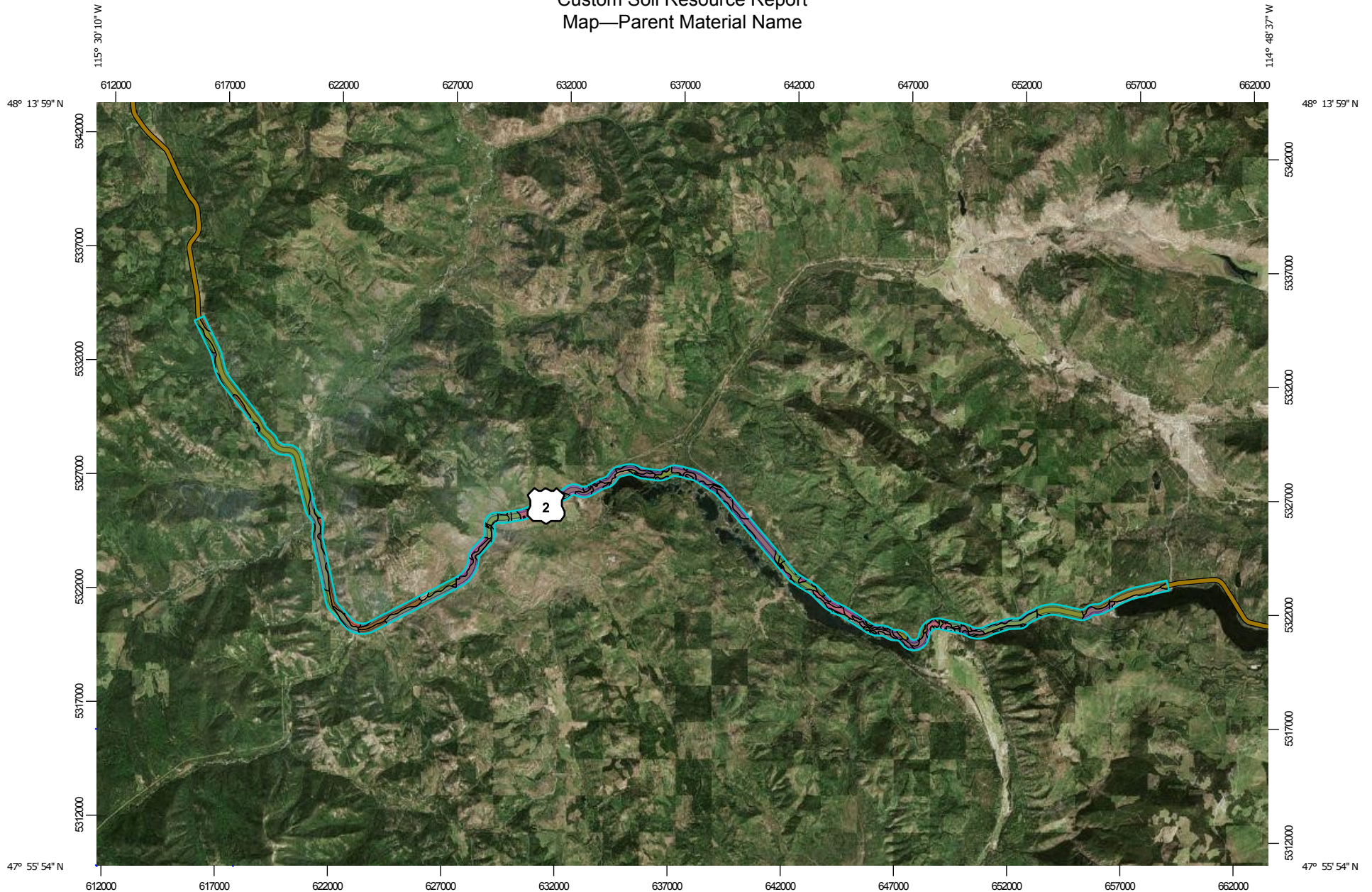
## **Parent Material Name**

Parent material name is a term for the general physical, chemical, and mineralogical composition of the unconsolidated material, mineral or organic, in which the soil forms. Mode of deposition and/or weathering may be implied by the name.

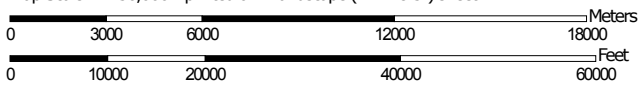
The soil surveyor uses parent material to develop a model used for soil mapping. Soil scientists and specialists in other disciplines use parent material to help interpret soil boundaries and project performance of the material below the soil. Many soil properties relate to parent material. Among these properties are proportions of sand, silt, and clay; chemical content; bulk density; structure; and the kinds and amounts of rock fragments. These properties affect interpretations and may be criteria used to separate soil series. Soil properties and landscape information may imply the kind of parent material.

For each soil in the database, one or more parent materials may be identified. One is marked as the representative or most commonly occurring. The representative parent material name is presented here.

# Custom Soil Resource Report Map—Parent Material Name



Map Scale: 1:236,000 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84



# Custom Soil Resource Report










## MAP LEGEND






### Area of Interest (AOI)

 Area of Interest (AOI)












### Soils













#### Soil Rating Polygons

-  alluvium
-  alpine loamy till over dense glaciofluvial deposits
-  alpine till or drift derived from argillite or quartzite
-  alpine till or glacial drift
-  calcareous silty and clayey glaciolacustrine sediments with very minor amounts of volcanic ash in the surface layer
-  colluvium
-  colluvium derived from calcareous argillite or quartzite
-  colluvium or residuum derived from argillite or quartzite
-  lacustrine deposits


-  loamy till over dense basal till
-  mixed alluvium
-  mixed sandy and gravelly alluvium
-  organic material
-  silty glaciolacustrine deposits
-  stratified sandy and silty alluvium
-  volcanic ash over alluvium or outwash
-  volcanic ash over colluvium
-  volcanic ash over colluvium derived from argillite or quartzite
-  volcanic ash over glaciolacustrine deposits
-  volcanic ash over till derived from quartzite
-  volcanic ash over till or drift
-  weathered metasedimentary loamy slope alluvium
-  Not rated or not available












#### Soil Rating Lines

-  alluvium
-  alpine loamy till over dense glaciofluvial deposits
-  alpine till or drift derived from argillite or quartzite
-  alpine till or glacial drift
-  calcareous silty and clayey glaciolacustrine sediments with very minor amounts of volcanic ash in the surface layer
-  colluvium
-  colluvium derived from calcareous argillite or quartzite
-  colluvium or residuum derived from argillite or quartzite
-  lacustrine deposits
-  loamy till over dense basal till
-  mixed alluvium

-  mixed sandy and gravelly alluvium
-  organic material
-  silty glaciolacustrine deposits
-  stratified sandy and silty alluvium
-  volcanic ash over alluvium or outwash
-  volcanic ash over colluvium
-  volcanic ash over colluvium derived from argillite or quartzite
-  volcanic ash over glaciolacustrine deposits
-  volcanic ash over till derived from quartzite
-  volcanic ash over till or drift
-  weathered metasedimentary loamy slope alluvium
-  Not rated or not available















#### Soil Rating Points

-  alluvium


-  alpine loamy till over dense glaciofluvial deposits
-  alpine till or drift derived from argillite or quartzite
-  alpine till or glacial drift
-  calcareous silty and clayey glaciolacustrine sediments with very minor amounts of volcanic ash in the surface layer
-  colluvium
-  colluvium derived from calcareous argillite or quartzite
-  colluvium or residuum derived from argillite or quartzite
-  lacustrine deposits
-  loamy till over dense basal till
-  mixed alluvium
-  mixed sandy and gravelly alluvium

# Custom Soil Resource Report




## MAP INFORMATION

- |   |   |   |                    |
|---|---|---|--------------------|
|  | organic material  |  | Major Roads        |
|  | silty glaciolacustrine deposits                                 |  | Local Roads        |
|  | stratified sandy and silty alluvium                             | <b>Background</b>   |                    |
|  | volcanic ash over alluvium or outwash                           |  | Aerial Photography |
|  | volcanic ash over colluvium                                     |   |                    |
|  | volcanic ash over colluvium derived from argillite or quartzite |   |                    |
|  | volcanic ash over glaciolacustrine deposits                     |   |                    |
|  | volcanic ash over till derived from quartzite                   |   |                    |
|  | volcanic ash over till or drift                                 |   |                    |
|  | weathered metasedimentary loamy slope alluvium                  |   |                    |
|  | Not rated or not available                                      |   |                    |

### Water Features

-  Streams and Canals

### Transportation

-  Rails
-  Interstate Highways
-  US Routes

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: Flathead County Area and Part of Lincoln County, Montana  
 Survey Area Data: Version 11, Sep 19, 2016

Soil Survey Area: Kootenai National Forest Area, Montana-Idaho  
 Survey Area Data: Version 15, Sep 20, 2016

Soil Survey Area: Sanders and Parts of Lincoln and Flathead Counties, Montana  
 Survey Area Data: Version 17, Sep 20, 2016

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

**MAP INFORMATION**

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

**Table—Parent Material Name**

<b>Parent Material Name— Summary by Map Unit — Flathead County Area and Part of Lincoln County, Montana (MT618)</b>				
<b>Map unit symbol</b>	<b>Map unit name</b>	<b>Rating</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
67C	Glaciercreek gravelly ashy silt loam, 0 to 8 percent slopes	volcanic ash over alluvium or outwash	15.3	0.2%
222C	Pleasantvalley-Winfall, dry complex, 2 to 8 percent slopes	volcanic ash over till derived from quartzite	14.5	0.2%
222E	Pleasantvalley-Winfall, dry complex, 8 to 30 percent slopes	volcanic ash over till derived from quartzite	200.7	3.0%
W	Water		78.4	1.2%
<b>Subtotals for Soil Survey Area</b>			<b>308.9</b>	<b>4.6%</b>
<b>Totals for Area of Interest</b>			<b>6,650.2</b>	<b>100.0%</b>

<b>Parent Material Name— Summary by Map Unit — Kootenai National Forest Area, Montana-Idaho (MT634)</b>				
<b>Map unit symbol</b>	<b>Map unit name</b>	<b>Rating</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
67C	Glaciercreek gravelly ashy silt loam, 0 to 8 percent slopes	volcanic ash over alluvium or outwash	87.0	1.3%
101	Fluents, flood plains	mixed alluvium	588.4	8.8%
103	Andic Dystrochrepts, alluvial terraces	mixed sandy and gravelly alluvium	5.3	0.1%
105	Aquic Udifluents, poorly drained	stratified sandy and silty alluvium	162.2	2.4%
108	Andic Dystric Eutrochrepts, lacustrine terraces-Andic Dystrochrepts, glacial outwash terraces, complex	silty glaciolacustrine deposits	1,313.9	19.8%
112	Eutric Glossoboralfs, lacustrine terraces	calcareous silty and clayey glaciolacustrine sediments with very minor amounts of volcanic ash in the surface layer	301.3	4.5%
222E	Pleasantvalley-Winfall, dry complex, 8 to 30 percent slopes	volcanic ash over till derived from quartzite	59.1	0.9%
252	Andic Dystrochrepts, breaklands	weathered metasedimentary loamy slope alluvium	71.8	1.1%
301	Dystric Eutrochrepts, glaciated mountain slopes	alpine loamy till over dense glaciofluvial deposits	38.5	0.6%
302	Typic Ustochrepts, glaciated mountain slopes, steep	alpine loamy till over dense glaciofluvial deposits	25.4	0.4%

Custom Soil Resource Report

Parent Material Name— Summary by Map Unit — Kootenai National Forest Area, Montana-Idaho (MT634)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
303	Rock outcrop-Lithic Ustochrepts complex, glaciated mountain ridges		22.2	0.3%
352	Andic Dystrichrepts, glaciated mountain slopes	loamy till over dense basal till	62.1	0.9%
W	Water		5.7	0.1%
<b>Subtotals for Soil Survey Area</b>			<b>2,743.0</b>	<b>41.2%</b>
<b>Totals for Area of Interest</b>			<b>6,650.2</b>	<b>100.0%</b>

Parent Material Name— Summary by Map Unit — Sanders and Parts of Lincoln and Flathead Counties, Montana (MT651)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
6A	Murrstead mucky peat, 0 to 2 percent slopes	organic material	15.5	0.2%
12C	Auggie silt loam, 2 to 8 percent slopes	lacustrine deposits	3.7	0.1%
22C	Courville gravelly ashy silt loam, 2 to 8 percent slopes	volcanic ash over till or drift	10.2	0.2%
30F	Tevis gravelly loam, 35 to 60 percent slopes	colluvium	13.4	0.2%
32G	Mitten-Rubble land complex, 40 to 70 percent slopes	volcanic ash over colluvium	40.2	0.6%
33F	Mitten gravelly ashy silt loam, dry, 35 to 60 percent slopes	volcanic ash over colluvium	7.5	0.1%
35E	Courville gravelly ashy silt loam, 8 to 30 percent slopes	volcanic ash over till or drift	223.9	3.4%
35F	Courville gravelly ashy silt loam, 30 to 50 percent slopes	volcanic ash over till or drift	78.3	1.2%
36E	Rumblecreek gravelly loam, 15 to 30 percent slopes	alpine till or drift derived from argillite or quartzite	3.3	0.0%
40F	Holloway gravelly ashy silt loam, 35 to 60 percent slopes	volcanic ash over colluvium derived from argillite or quartzite	2.5	0.0%
48E	Ashworth gravelly ashy silt loam, 8 to 30 percent slopes	volcanic ash over till or drift	31.8	0.5%
58F	Waldbillig gravelly ashy silt loam, moist, 30 to 50 percent slopes	volcanic ash over till or drift	48.9	0.7%
67C	Glaciercreek gravelly ashy silt loam, cool, 0 to 8 percent slopes	volcanic ash over alluvium or outwash	591.8	8.9%

Custom Soil Resource Report

Parent Material Name— Summary by Map Unit — Sanders and Parts of Lincoln and Flathead Counties, Montana (MT651)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
68C	Upsata gravelly ashy silt loam, 2 to 8 percent slopes	volcanic ash over alluvium or outwash	59.6	0.9%
68E	Upsata gravelly ashy silt loam, 8 to 30 percent slopes	volcanic ash over alluvium or outwash	24.8	0.4%
69C	Tamarack ashy loam, 2 to 8 percent slopes	volcanic ash over alluvium or outwash	33.4	0.5%
72A	Blacklake mucky peat, 0 to 1 percent slopes	alluvium	64.7	1.0%
73A	Meadowpeak silt loam, 0 to 2 percent slopes	alluvium	7.2	0.1%
74A	Blackcreek silt loam, 0 to 2 percent slopes	alluvium	18.2	0.3%
75B	Tallcreek ashy silt loam, 0 to 4 percent slopes	volcanic ash over glaciolacustrine deposits	164.3	2.5%
77E	Beeskove gravelly loam, moist, 15 to 35 percent slopes	colluvium derived from calcareous argillite or quartzite	1.0	0.0%
77F	Beeskove gravelly loam, moist, 35 to 60 percent slopes	colluvium derived from calcareous argillite or quartzite	65.0	1.0%
82F	Sharrott, cool-Rock outcrop-Rubble land complex, 15 to 60 percent slopes	colluvium or residuum derived from argillite or quartzite	11.6	0.2%
92C	Oldtrail gravelly sandy loam, 0 to 8 percent slopes	alluvium	8.2	0.1%
98F	Bendahl gravelly ashy silt loam, 30 to 50 percent slopes	volcanic ash over till or drift	2.1	0.0%
291B	Half Moon silt loam, cool, 2 to 8 percent slopes	lacustrine deposits	241.7	3.6%
291D	Half Moon silt loam, cool, 8 to 15 percent slopes	lacustrine deposits	69.6	1.0%
291E	Half Moon silt loam, cool, 15 to 35 percent slopes	lacustrine deposits	129.5	1.9%
291F	Half Moon silt loam, cool, 35 to 60 percent slopes	lacustrine deposits	57.0	0.9%
374F	Mitten-Rock outcrop complex, 40 to 70 percent slopes	volcanic ash over colluvium	5.7	0.1%
582F	Waldbillig-Holloway gravelly ashy silt loams, moist, 30 to 50 percent slopes	volcanic ash over till or drift	5.9	0.1%

## Custom Soil Resource Report

<b>Parent Material Name— Summary by Map Unit — Sanders and Parts of Lincoln and Flathead Counties, Montana (MT651)</b>				
<b>Map unit symbol</b>	<b>Map unit name</b>	<b>Rating</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
691B	Tamarack-Crystalex complex, 0 to 4 percent slopes	volcanic ash over alluvium or outwash	310.3	4.7%
691D	Tamarack-Crystalex complex, 4 to 15 percent slopes	volcanic ash over alluvium or outwash	78.3	1.2%
691E	Tamarack-Crystalex complex, 15 to 30 percent slopes	volcanic ash over alluvium or outwash	20.9	0.3%
691F	Tamarack-Crystalex complex, 30 to 60 percent slopes	volcanic ash over alluvium or outwash	68.5	1.0%
731A	Meadowpeak-Firetower silt loams, 0 to 2 percent slopes	alluvium	90.2	1.4%
808A	Barzee mucky peat, 0 to 2 percent slopes	organic material	10.0	0.2%
858E	Waldbillig gravelly ashy silt loam, moist, 8 to 30 percent slopes	volcanic ash over till or drift	238.5	3.6%
867E	Glaciercreek gravelly ashy silt loam, cool, 8 to 30 percent slopes	volcanic ash over alluvium or outwash	237.8	3.6%
867F	Glaciercreek gravelly ashy silt loam, cool, 30 to 45 percent slopes	volcanic ash over alluvium or outwash	234.9	3.5%
897C	Mollman gravelly loam, 2 to 8 percent slopes	alpine till or glacial drift	2.2	0.0%
897E	Mollman gravelly loam, 8 to 30 percent slopes	alpine till or glacial drift	68.9	1.0%
W	Water		197.2	3.0%
<b>Subtotals for Soil Survey Area</b>			<b>3,598.3</b>	<b>54.1%</b>
<b>Totals for Area of Interest</b>			<b>6,650.2</b>	<b>100.0%</b>

### Rating Options—Parent Material Name

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Lower

## 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.

## Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

## Prime and other Important Farmlands

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

*Prime farmland* is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate



## Custom Soil Resource Report

quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

*Unique farmland* is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

### Report—Prime and other Important Farmlands

Prime and other Important Farmlands—Flathead County Area and Part of Lincoln County, Montana		
Map Symbol	Map Unit Name	Farmland Classification
67C	Glaciercreek gravelly ashy silt loam, 0 to 8 percent slopes	Not prime farmland
222C	Pleasantvalley-Winfall, dry complex, 2 to 8 percent slopes	Not prime farmland
222E	Pleasantvalley-Winfall, dry complex, 8 to 30 percent slopes	Not prime farmland
W	Water	Not prime farmland

## Custom Soil Resource Report

<b>Prime and other Important Farmlands—Kootenai National Forest Area, Montana-Idaho</b>		
<b>Map Symbol</b>	<b>Map Unit Name</b>	<b>Farmland Classification</b>
67C	Glaciercreek gravelly ashy silt loam, 0 to 8 percent slopes	Not prime farmland
101	Fluvents, flood plains	Not prime farmland
103	Andic Dystrochrepts, alluvial terraces	Farmland of statewide importance
105	Aquic Udifluvents, poorly drained	Not prime farmland
108	Andic Dystric Eutrochrepts, lacustrine terraces-Andic Dystrochrepts, glacial outwash terraces, complex	Not prime farmland
112	Eutric Glossoboralfs, lacustrine terraces	Not prime farmland
222E	Pleasantvalley-Winfall, dry complex, 8 to 30 percent slopes	Not prime farmland
252	Andic Dystrochrepts, breaklands	Not prime farmland
301	Dystric Eutrochrepts, glaciated mountain slopes	Not prime farmland
302	Typic Ustochrepts, glaciated mountain slopes, steep	Not prime farmland
303	Rock outcrop-Lithic Ustochrepts complex, glaciated mountain ridges	Not prime farmland
352	Andic Dystrochrepts, glaciated mountain slopes	Not prime farmland
W	Water	Not prime farmland

<b>Prime and other Important Farmlands—Sanders and Parts of Lincoln and Flathead Counties, Montana</b>		
<b>Map Symbol</b>	<b>Map Unit Name</b>	<b>Farmland Classification</b>
6A	Murrstead mucky peat, 0 to 2 percent slopes	Not prime farmland
12C	Auggie silt loam, 2 to 8 percent slopes	Not prime farmland
22C	Courville gravelly ashy silt loam, 2 to 8 percent slopes	Prime farmland if irrigated
30F	Tevis gravelly loam, 35 to 60 percent slopes	Not prime farmland
32G	Mitten-Rubble land complex, 40 to 70 percent slopes	Not prime farmland
33F	Mitten gravelly ashy silt loam, dry, 35 to 60 percent slopes	Not prime farmland
35E	Courville gravelly ashy silt loam, 8 to 30 percent slopes	Not prime farmland
35F	Courville gravelly ashy silt loam, 30 to 50 percent slopes	Not prime farmland
36E	Rumblecreek gravelly loam, 15 to 30 percent slopes	Not prime farmland
40F	Holloway gravelly ashy silt loam, 35 to 60 percent slopes	Not prime farmland
48E	Ashworth gravelly ashy silt loam, 8 to 30 percent slopes	Not prime farmland
58F	Waldbillig gravelly ashy silt loam, moist, 30 to 50 percent slopes	Not prime farmland
67C	Glaciercreek gravelly ashy silt loam, cool, 0 to 8 percent slopes	Not prime farmland
68C	Upsata gravelly ashy silt loam, 2 to 8 percent slopes	Not prime farmland
68E	Upsata gravelly ashy silt loam, 8 to 30 percent slopes	Not prime farmland
69C	Tamarack ashy loam, 2 to 8 percent slopes	Farmland of statewide importance
72A	Blacklake mucky peat, 0 to 1 percent slopes	Not prime farmland
73A	Meadowpeak silt loam, 0 to 2 percent slopes	Farmland of local importance
74A	Blackcreek silt loam, 0 to 2 percent slopes	Farmland of local importance
75B	Tallcreek ashy silt loam, 0 to 4 percent slopes	Farmland of statewide importance
77E	Beeskove gravelly loam, moist, 15 to 35 percent slopes	Not prime farmland
77F	Beeskove gravelly loam, moist, 35 to 60 percent slopes	Not prime farmland

## Custom Soil Resource Report

<b>Prime and other Important Farmlands—Sanders and Parts of Lincoln and Flathead Counties, Montana</b>		
<b>Map Symbol</b>	<b>Map Unit Name</b>	<b>Farmland Classification</b>
82F	Sharrott, cool-Rock outcrop-Rubble land complex, 15 to 60 percent slopes	Not prime farmland
92C	Oldtrail gravelly sandy loam, 0 to 8 percent slopes	Not prime farmland
98F	Bendahl gravelly ashy silt loam, 30 to 50 percent slopes	Not prime farmland
291B	Half Moon silt loam, cool, 2 to 8 percent slopes	Farmland of statewide importance
291D	Half Moon silt loam, cool, 8 to 15 percent slopes	Farmland of local importance
291E	Half Moon silt loam, cool, 15 to 35 percent slopes	Not prime farmland
291F	Half Moon silt loam, cool, 35 to 60 percent slopes	Not prime farmland
374F	Mitten-Rock outcrop complex, 40 to 70 percent slopes	Not prime farmland
582F	Waldbillig-Holloway gravelly ashy silt loams, moist, 30 to 50 percent slopes	Not prime farmland
691B	Tamarack-Crystalex complex, 0 to 4 percent slopes	Farmland of local importance
691D	Tamarack-Crystalex complex, 4 to 15 percent slopes	Farmland of local importance
691E	Tamarack-Crystalex complex, 15 to 30 percent slopes	Not prime farmland
691F	Tamarack-Crystalex complex, 30 to 60 percent slopes	Not prime farmland
731A	Meadowpeak-Firetower silt loams, 0 to 2 percent slopes	Farmland of local importance
808A	Barzee mucky peat, 0 to 2 percent slopes	Not prime farmland
858E	Waldbillig gravelly ashy silt loam, moist, 8 to 30 percent slopes	Not prime farmland
867E	Glaciercreek gravelly ashy silt loam, cool, 8 to 30 percent slopes	Not prime farmland
867F	Glaciercreek gravelly ashy silt loam, cool, 30 to 45 percent slopes	Not prime farmland
897C	Mollman gravelly loam, 2 to 8 percent slopes	Farmland of statewide importance
897E	Mollman gravelly loam, 8 to 30 percent slopes	Not prime farmland
W	Water	Not prime farmland

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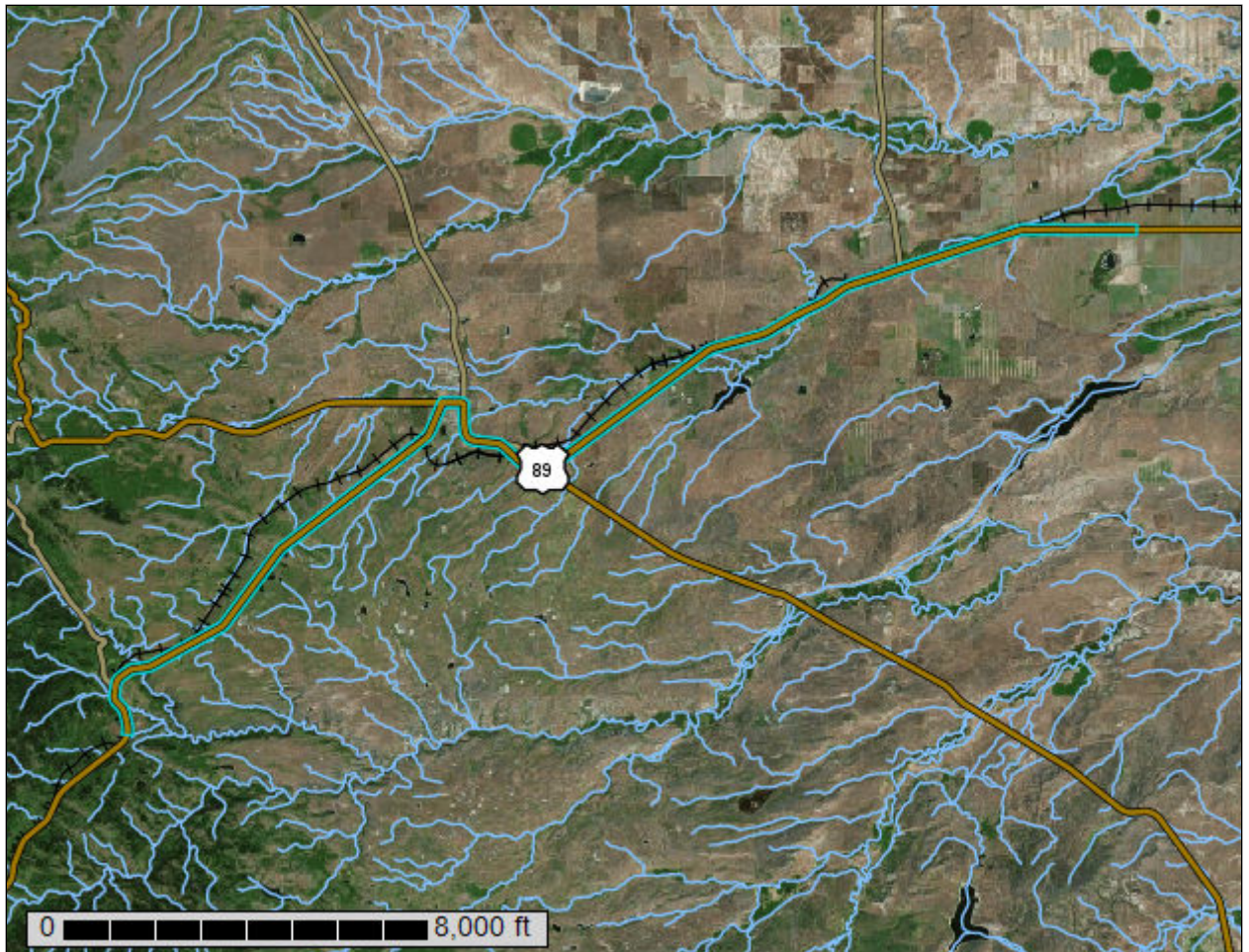
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**NRCS**

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 Glacier County Area and Part of Pondera County, Montana



# 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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# Contents

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<b>Preface</b> .....	2
<b>How Soil Surveys Are Made</b> .....	6
<b>Soil Map</b> .....	9
Soil Map.....	10
Legend.....	11
Map Unit Legend.....	12
Map Unit Descriptions.....	13
Glacier County Area and Part of Pondera County, Montana.....	15
Ah—Arnegard loam, 2 to 8 percent slopes.....	15
BC—Babb cobbly loam, hilly.....	16
Bg—Bearmouth gravelly loam, 0 to 4 percent slopes.....	17
Bh—Beaverton gravelly loam, 0 to 4 percent slopes.....	18
BP—Burnette stony loam, hilly.....	19
DH—Doby-Burnette complex, hilly.....	21
DS—Doby-Shale outcrop complex, very steep.....	23
Fd—Fairfield gravelly loam, 0 to 2 percent slopes.....	24
Fe—Fairfield gravelly loam, 2 to 4 percent slopes.....	25
Ff—Fairfield gravelly loam, 4 to 8 percent slopes.....	27
FU—Fifer-Cheadle-Rock outcrop complex, very steep.....	28
Gp—Gravel pits.....	30
Le—Leavitt complex, undulating.....	30
Mz—Mord loam, sloping.....	32
NB—Nettleton-Burnette association, undulating.....	33
No—Novary loam.....	35
RT—Rock outcrop.....	37
SA—Saline land.....	37
SP—Seeped alluvial land.....	38
SV—Swifton-Mikesell association, hilly.....	39
SW—Swifton-Mord-Rockland association, very steep.....	41
TL—Terrace escarpments and Fairfield soils.....	42
To—Turner loam, 0 to 4 percent slopes.....	44
Tr—Turner cobbly loam, 0 to 4 percent slopes.....	45
W—Lakes and streams.....	47
WF—Wet land.....	47
Wk—Williams cobbly loam, gently sloping.....	48
Wm—Williams cobbly loam, undulating.....	49
WN—Williams complex, hilly.....	51
WO—Williams complex, steep.....	53
<b>Soil Information for All Uses</b> .....	55
Soil Properties and Qualities.....	55
Soil Qualities and Features.....	55
Parent Material Name.....	55
Soil Reports.....	60
Land Classifications.....	60

## Custom Soil Resource Report

Prime and other Important Farmlands.....	60
<b>References</b> .....	<b>63</b>

# 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

## Custom Soil Resource Report

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

## Custom Soil Resource Report

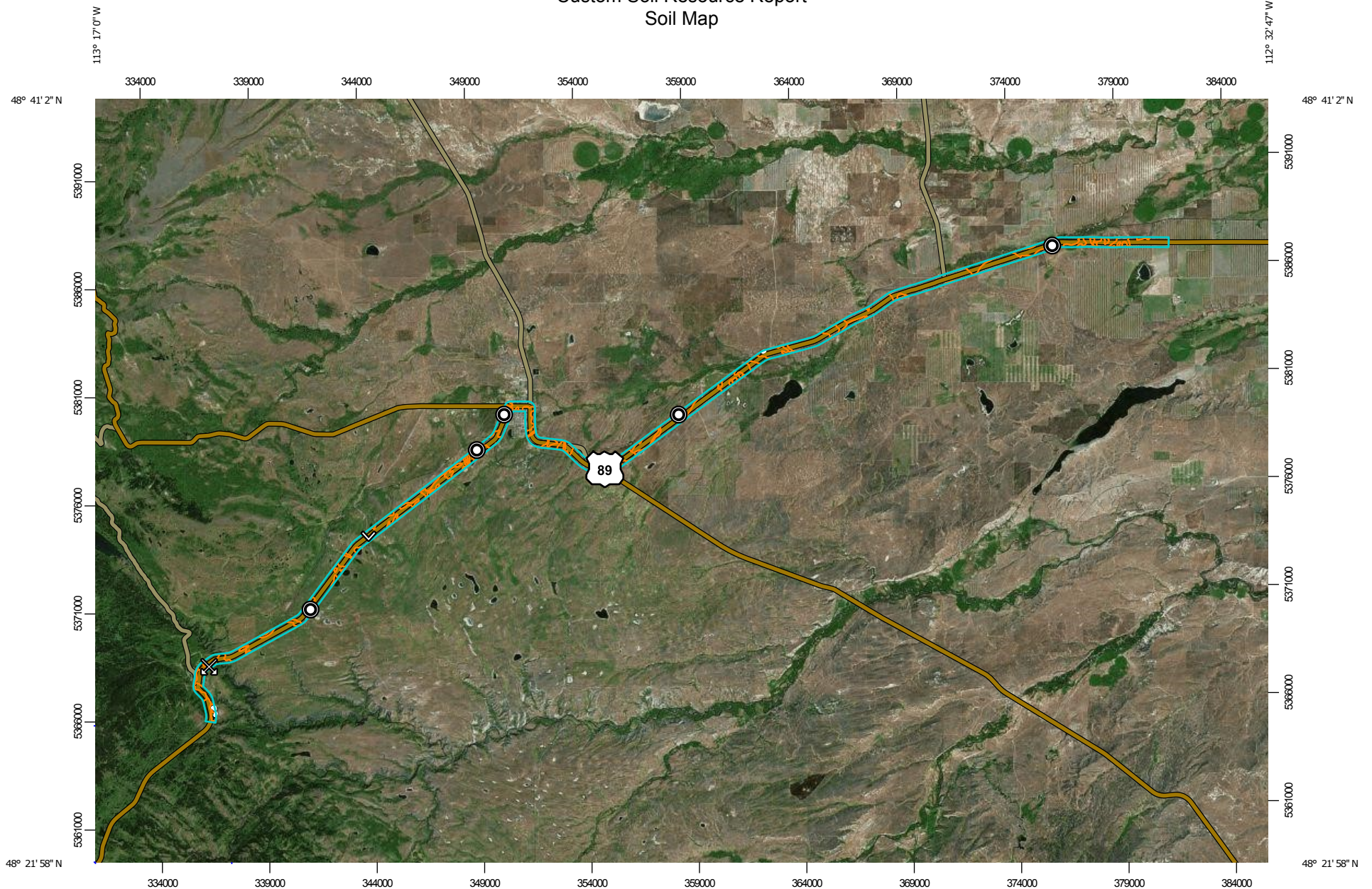
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

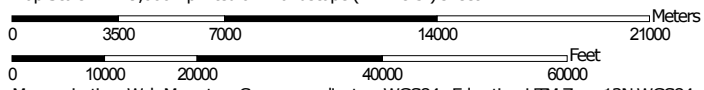
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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce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

# Custom Soil Resource Report Soil Map




Map Scale: 1:249,000 if printed on A landscape (11" x 8.5") sheet.



### 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: Glacier County Area and Part of Pondera County, Montana  
 Survey Area Data: Version 11, Sep 28, 2015

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

Glacier County Area and Part of Pondera County, Montana (MT600)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ah	Arnegard loam, 2 to 8 percent slopes	0.9	0.0%
BC	Babb cobbly loam, hilly	533.6	8.3%
Bg	Bearmouth gravelly loam, 0 to 4 percent slopes	28.5	0.4%
Bh	Beaverton gravelly loam, 0 to 4 percent slopes	684.5	10.6%
BP	Burnette stony loam, hilly	174.4	2.7%
DH	Doby-Burnette complex, hilly	132.0	2.0%
DS	Doby-Shale outcrop complex, very steep	117.0	1.8%
Fd	Fairfield gravelly loam, 0 to 2 percent slopes	195.6	3.0%
Fe	Fairfield gravelly loam, 2 to 4 percent slopes	87.8	1.4%
Ff	Fairfield gravelly loam, 4 to 8 percent slopes	12.7	0.2%
FU	Fifer-Cheadle-Rock outcrop complex, very steep	11.0	0.2%
Gp	Gravel pits	82.9	1.3%
Le	Leavitt complex, undulating	132.2	2.1%
Mz	Mord loam, sloping	65.5	1.0%
NB	Nettleton-Burnette association, undulating	503.6	7.8%
No	Novary loam	193.7	3.0%
RT	Rock outcrop	20.4	0.3%
SA	Saline land	331.1	5.1%
SP	Seeped alluvial land	3.1	0.0%
SV	Swifton-Mikesell association, hilly	55.6	0.9%
SW	Swifton-Mord-Rockland association, very steep	68.2	1.1%
TL	Terrace escarpments and Fairfield soils	94.9	1.5%
To	Turner loam, 0 to 4 percent slopes	42.8	0.7%
Tr	Turner cobbly loam, 0 to 4 percent slopes	211.0	3.3%
W	Lakes and streams	88.5	1.4%
WF	Wet land	601.9	9.3%

## Custom Soil Resource Report

<b>Glacier County Area and Part of Pondera County, Montana (MT600)</b>			
<b>Map Unit Symbol</b>	<b>Map Unit Name</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
Wk	Williams cobbly loam, gently sloping	208.3	3.2%
Wm	Williams cobbly loam, undulating	938.8	14.6%
WN	Williams complex, hilly	817.3	12.7%
WO	Williams complex, steep	3.6	0.1%
<b>Totals for Area of Interest</b>		<b>6,441.5</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 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,

## Custom Soil Resource Report

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.

## Glacier County Area and Part of Pondera County, Montana

### Ah—Arnegard loam, 2 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 4xq5

*Elevation:* 3,600 to 4,500 feet

*Mean annual precipitation:* 14 to 16 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 90 to 110 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Arnegard and similar soils:* 90 percent

*Minor components:* 10 percent

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

#### Description of Arnegard

##### Setting

*Landform:* Hillslopes

*Down-slope shape:* Linear

*Across-slope shape:* Linear

##### Typical profile

*A - 0 to 11 inches:* loam

*Bw - 11 to 36 inches:* loam

*Bk - 36 to 60 inches:* loam

##### Properties and qualities

*Slope:* 2 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 15 percent

*Available water storage in profile:* High (about 10.3 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* B

*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)

*Hydric soil rating:* No

#### Minor Components

##### Reeder

*Percent of map unit:* 10 percent

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

## Custom Soil Resource Report

*Hydric soil rating:* No

### **BC—Babb cobbly loam, hilly**

#### **Map Unit Setting**

*National map unit symbol:* 4xqb  
*Elevation:* 4,500 to 6,000 feet  
*Mean annual precipitation:* 15 to 20 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 60 to 90 days  
*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

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

#### **Description of Babb**

##### **Setting**

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

##### **Typical profile**

*A - 0 to 7 inches:* cobbly loam  
*Bw - 7 to 21 inches:* gravelly loam  
*Bk - 21 to 60 inches:* gravelly loam

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

*Slope:* 10 to 20 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 40 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 9.0 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)  
*Hydric soil rating:* No

**Minor Components**

**Cheadle**

*Percent of map unit:* 8 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow (Sw) 15-19" p.z. (R044XC469MT)  
*Hydric soil rating:* No

**Gapo**

*Percent of map unit:* 2 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Draft Subirrigated (Sb) RRU 46-N 13-19" p.z. (R046XN256MT)  
*Hydric soil rating:* Yes

**Bg—Bearmouth gravelly loam, 0 to 4 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 4xqq  
*Elevation:* 4,400 to 5,000 feet  
*Mean annual precipitation:* 15 to 20 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 60 to 90 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

**Description of Bearmouth**

**Setting**

*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

**Typical profile**

*A - 0 to 5 inches:* gravelly loam  
*Bw - 5 to 13 inches:* very gravelly loam  
*2C - 13 to 60 inches:* extremely gravelly sand

**Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained

## Custom Soil Resource Report

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 5 percent

*Available water storage in profile:* Very low (about 2.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6s

*Hydrologic Soil Group:* B

*Ecological site:* Shallow to Gravel (SwGr) RRU 46-N 13-19" p.z. (R046XN251MT)

*Hydric soil rating:* No

### Minor Components

#### Tinsley

*Percent of map unit:* 10 percent

*Landform:* Terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Draft Gravel (Gr) RRU 46-N 13-19" p.z. (R046XN601MT)

*Hydric soil rating:* No

## Bh—Beaverton gravelly loam, 0 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* 4xqr

*Elevation:* 3,900 to 5,000 feet

*Mean annual precipitation:* 14 to 16 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 90 to 110 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Beaverton and similar soils:* 90 percent

*Minor components:* 10 percent

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

### Description of Beaverton

#### Setting

*Landform:* Terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 7 inches:* gravelly loam

*Bt - 7 to 14 inches:* very gravelly clay loam

*2C - 14 to 60 inches:* extremely gravelly sand

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Low (about 3.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* B  
*Ecological site:* Shallow to Gravel (SwGr) 10-14" p.z. (R052XN176MT)  
*Hydric soil rating:* No

### Minor Components

#### Turner

*Percent of map unit:* 8 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Novary

*Percent of map unit:* 2 percent  
*Landform:* Swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Draft Subirrigated (Sb) RRU 46-N 13-19" p.z. (R046XN256MT)  
*Hydric soil rating:* Yes

## BP—Burnette stony loam, hilly

### Map Unit Setting

*National map unit symbol:* 4xqj  
*Elevation:* 4,500 to 5,200 feet  
*Mean annual precipitation:* 16 to 24 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 60 to 110 days  
*Farmland classification:* Not prime farmland



**Map Unit Composition**

*Burnette and similar soils:* 90 percent

*Minor components:* 10 percent

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

**Description of Burnette**

**Setting**

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

**Typical profile**

*A1 - 0 to 5 inches:* stony loam

*A2 - 5 to 15 inches:* clay loam

*Bt - 15 to 32 inches:* clay

*Bk - 32 to 50 inches:* clay

*BC - 50 to 66 inches:* clay

**Properties and qualities**

*Slope:* 8 to 25 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 9.5 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* C

*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)

*Hydric soil rating:* No

**Minor Components**

**Burnette**

*Percent of map unit:* 3 percent

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)

*Hydric soil rating:* No

**Nettleton**

*Percent of map unit:* 2 percent

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

## Custom Soil Resource Report

### **Doby**

*Percent of map unit:* 2 percent

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Draft Shallow (Sw) RRU 46-N 13-19" p.z. (R046XN250MT)

*Hydric soil rating:* No

### **Adel**

*Percent of map unit:* 2 percent

*Landform:* Alluvial fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)

*Hydric soil rating:* No

### **Gapo**

*Percent of map unit:* 1 percent

*Landform:* Terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Draft Subirrigated (Sb) RRU 46-N 13-19" p.z. (R046XN256MT)

*Hydric soil rating:* Yes

## **DH—Doby-Burnette complex, hilly**

### **Map Unit Setting**

*National map unit symbol:* 4xr9

*Elevation:* 4,600 to 5,600 feet

*Mean annual precipitation:* 16 to 24 inches

*Mean annual air temperature:* 37 to 43 degrees F

*Frost-free period:* 60 to 90 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Doby and similar soils:* 50 percent

*Burnette and similar soils:* 45 percent

*Minor components:* 5 percent

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

### **Description of Doby**

#### **Setting**

*Landform:* Ridges

*Down-slope shape:* Linear

*Across-slope shape:* Linear

#### **Typical profile**

*A - 0 to 5 inches:* clay loam

*Bw - 5 to 13 inches:* clay

## Custom Soil Resource Report

*C - 13 to 19 inches:* clay

*Cr - 19 to 60 inches:* unweathered bedrock

### Properties and qualities

*Slope:* 8 to 35 percent

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

*Natural 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

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Very low (about 2.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* D

*Ecological site:* Draft Shallow (Sw) RRU 46-N 13-19" p.z. (R046XN250MT)

*Hydric soil rating:* No

## Description of Burnette

### Setting

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

### Typical profile

*A1 - 0 to 5 inches:* stony loam

*A2 - 5 to 15 inches:* clay loam

*Bt - 15 to 32 inches:* clay

*Bk - 32 to 50 inches:* clay

*BC - 50 to 66 inches:* clay

### Properties and qualities

*Slope:* 8 to 25 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 9.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* C

*Ecological site:* Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)

*Hydric soil rating:* No

## Minor Components

### Gapo

*Percent of map unit:* 5 percent

*Landform:* Terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Draft Subirrigated (Sb) RRU 46-N 13-19" p.z. (R046XN256MT)

*Hydric soil rating:* Yes

## DS—Doby-Shale outcrop complex, very steep

### Map Unit Setting

*National map unit symbol:* 4xrc

*Elevation:* 4,600 to 5,600 feet

*Mean annual precipitation:* 16 to 24 inches

*Mean annual air temperature:* 37 to 43 degrees F

*Frost-free period:* 60 to 90 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Doby and similar soils:* 50 percent

*Shale outcrop:* 30 percent

*Minor components:* 20 percent

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

### Description of Doby

#### Setting

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 5 inches:* clay loam

*Bw - 5 to 13 inches:* clay

*C - 13 to 19 inches:* clay

*Cr - 19 to 60 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 20 to 60 percent

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

*Natural 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

## Custom Soil Resource Report

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Very low (about 2.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* D

*Ecological site:* Draft Shallow (Sw) RRU 46-N 13-19" p.z. (R046XN250MT)

*Hydric soil rating:* No

### Minor Components

#### Burnette

*Percent of map unit:* 10 percent

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)

*Hydric soil rating:* No

#### Hanson

*Percent of map unit:* 10 percent

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)

*Hydric soil rating:* No

## Fd—Fairfield gravelly loam, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* 4xrv

*Elevation:* 3,700 to 4,700 feet

*Mean annual precipitation:* 12 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 90 to 110 days

*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Fairfield and similar soils:* 90 percent

*Minor components:* 10 percent

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

### Description of Fairfield

#### Setting

*Landform:* Terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

## Custom Soil Resource Report

### Typical profile

*A - 0 to 4 inches:* gravelly loam

*Bt - 4 to 17 inches:* clay loam

*Bk - 17 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 35 percent

*Salinity, maximum in profile:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)

*Available water storage in profile:* High (about 9.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

*Hydric soil rating:* No

### Minor Components

#### Martinsdale

*Percent of map unit:* 5 percent

*Landform:* Terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)

*Hydric soil rating:* No

#### Fairfield

*Percent of map unit:* 5 percent

*Landform:* Terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

*Hydric soil rating:* No

## Fe—Fairfield gravelly loam, 2 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* 4xrw

*Elevation:* 3,700 to 4,700 feet

*Mean annual precipitation:* 12 to 14 inches

## Custom Soil Resource Report

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 90 to 110 days

*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Fairfield and similar soils:* 90 percent

*Minor components:* 10 percent

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

### Description of Fairfield

#### Setting

*Landform:* Terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 4 inches:* gravelly loam

*Bt - 4 to 17 inches:* clay loam

*Bk - 17 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 2 to 4 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 35 percent

*Salinity, maximum in profile:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)

*Available water storage in profile:* High (about 9.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

*Hydric soil rating:* No

### Minor Components

#### Fairfield

*Percent of map unit:* 10 percent

*Landform:* Terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

*Hydric soil rating:* No

## **Ff—Fairfield gravelly loam, 4 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 4rxr

*Elevation:* 3,700 to 4,700 feet

*Mean annual precipitation:* 12 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 90 to 110 days

*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

*Fairfield and similar soils:* 90 percent

*Minor components:* 10 percent

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

### **Description of Fairfield**

#### **Setting**

*Landform:* Terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

#### **Typical profile**

*A - 0 to 4 inches:* gravelly loam

*Bt - 4 to 17 inches:* clay loam

*Bk - 17 to 52 inches:* clay loam

*Cr - 52 to 60 inches:* weathered bedrock

#### **Properties and qualities**

*Slope:* 4 to 8 percent

*Depth to restrictive feature:* 48 to 72 inches to paralithic bedrock

*Natural 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 in profile:* 35 percent

*Salinity, maximum in profile:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)

*Available water storage in profile:* Moderate (about 7.9 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

*Hydric soil rating:* No



**Minor Components**

**Fairfield**

*Percent of map unit:* 4 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

**Martinsdale**

*Percent of map unit:* 3 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

**Arnegard**

*Percent of map unit:* 3 percent  
*Landform:* Hillslopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)  
*Hydric soil rating:* No

**FU—Fifer-Cheadle-Rock outcrop complex, very steep**

**Map Unit Setting**

*National map unit symbol:* 4xrn  
*Elevation:* 4,500 to 6,000 feet  
*Mean annual precipitation:* 16 to 24 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 60 to 110 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Fifer and similar soils:* 35 percent  
*Cheadle and similar soils:* 30 percent  
*Rock outcrop:* 30 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Fifer**

**Setting**

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

### Typical profile

*A - 0 to 6 inches:* loam  
*Bk - 6 to 20 inches:* silty clay loam  
*Cr - 20 to 60 inches:* unweathered bedrock

### Properties and qualities

*Slope:* 15 to 60 percent  
*Depth to restrictive feature:* 10 to 20 inches to paralithic bedrock  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Low (about 3.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* C  
*Ecological site:* Draft Shallow (Sw) RRU 46-N 13-19" p.z. (R046XN250MT)  
*Hydric soil rating:* No

## Description of Cheadle

### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

### Typical profile

*A - 0 to 7 inches:* flaggy sandy loam  
*C - 7 to 20 inches:* very flaggy sandy loam  
*R - 20 to 60 inches:* unweathered bedrock

### Properties and qualities

*Slope:* 15 to 60 percent  
*Depth to restrictive feature:* 10 to 20 inches to lithic bedrock  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Very low (about 1.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* C  
*Ecological site:* Draft Shallow (Sw) RRU 46-N 13-19" p.z. (R046XN250MT)

## Custom Soil Resource Report

*Hydric soil rating:* No

### Minor Components

#### Doby

*Percent of map unit:* 2 percent

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Draft Shallow (Sw) RRU 46-N 13-19" p.z. (R046XN250MT)

*Hydric soil rating:* No

#### Adel

*Percent of map unit:* 2 percent

*Landform:* Alluvial fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)

*Hydric soil rating:* No

#### Pishkun

*Percent of map unit:* 1 percent

*Landform:* Escarpments

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)

*Hydric soil rating:* No

### Gp—Gravel pits

#### Map Unit Setting

*National map unit symbol:* 4xsc

*Elevation:* 3,600 to 5,500 feet

*Mean annual precipitation:* 12 to 14 inches

*Frost-free period:* 90 to 110 days

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Gravel pits:* 100 percent

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

### Le—Leavitt complex, undulating

#### Map Unit Setting

*National map unit symbol:* 4xtg

*Elevation:* 4,200 to 6,000 feet

## Custom Soil Resource Report

*Mean annual precipitation:* 15 to 20 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 60 to 110 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Leavitt

#### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 7 inches:* loam  
*Bt - 7 to 20 inches:* clay loam  
*Bk - 20 to 62 inches:* loam

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)  
*Hydric soil rating:* No

### Description of Leavitt

#### Setting

*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 7 inches:* cobbly loam  
*Bt - 7 to 20 inches:* gravelly clay loam  
*Bk - 20 to 62 inches:* clay loam

#### Properties and qualities

*Slope:* 2 to 8 percent

## Custom Soil Resource Report

*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 8.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)  
*Hydric soil rating:* No

### Minor Components

#### Adel

*Percent of map unit:* 18 percent  
*Landform:* Alluvial fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)  
*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 2 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XN166MT)  
*Hydric soil rating:* Yes

## Mz—Mord loam, sloping

### Map Unit Setting

*National map unit symbol:* 4xvj  
*Elevation:* 4,800 to 6,200 feet  
*Mean annual precipitation:* 20 to 35 inches  
*Mean annual air temperature:* 39 to 41 degrees F  
*Frost-free period:* 60 to 90 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Mord 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 Mord

#### Setting

*Landform: Hills*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

#### Typical profile

*A - 0 to 16 inches: loam*

*E/B - 16 to 21 inches: gravelly clay loam*

*Bt - 21 to 60 inches: cobbly clay*

#### Properties and qualities

*Slope: 4 to 8 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural 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*

*Available water storage in profile: High (about 10.6 inches)*

#### Interpretive groups

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 6e*

*Hydrologic Soil Group: C*

*Ecological site: Silty (Si) 20"+ p.z. (R043XN417MT)*

*Hydric soil rating: No*

### Minor Components

#### Mord

*Percent of map unit: 10 percent*

*Landform: Hills*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Ecological site: Silty (Si) 20"+ p.z. (R043XN417MT)*

*Hydric soil rating: No*

## NB—Nettleton-Burnette association, undulating

### Map Unit Setting

*National map unit symbol: 4xvk*

*Elevation: 4,600 to 5,600 feet*

*Mean annual precipitation: 20 to 35 inches*

*Mean annual air temperature: 34 to 45 degrees F*

*Frost-free period: 60 to 90 days*

## Custom Soil Resource Report

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Nettleton and similar soils:* 60 percent

*Burnette and similar soils:* 35 percent

*Minor components:* 5 percent

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

### Description of Nettleton

#### Setting

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 19 inches:* loam

*E - 19 to 22 inches:* clay

*Bt - 22 to 50 inches:* clay

*Cr - 50 to 60 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 2 to 8 percent

*Depth to restrictive feature:* 40 to 60 inches to paralithic bedrock

*Natural 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:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 15 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Moderate (about 7.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* C

*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)

*Hydric soil rating:* No

### Description of Burnette

#### Setting

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

#### Typical profile

*A1 - 0 to 5 inches:* loam

*A2 - 5 to 15 inches:* clay loam

*Bt - 15 to 32 inches:* clay

*Bk - 32 to 50 inches:* clay

*BC - 50 to 66 inches:* clay

#### Properties and qualities

*Slope:* 2 to 8 percent

## Custom Soil Resource Report

*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)  
*Hydric soil rating:* No

### Minor Components

#### Mikesell

*Percent of map unit:* 4 percent  
*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Gapo

*Percent of map unit:* 1 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Draft Subirrigated (Sb) RRU 46-N 13-19" p.z. (R046XN256MT)  
*Hydric soil rating:* Yes

### No—Novary loam

#### Map Unit Setting

*National map unit symbol:* 4xvn  
*Elevation:* 3,900 to 5,100 feet  
*Mean annual precipitation:* 14 to 19 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 80 to 100 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Novary and similar soils:* 95 percent  
*Minor components:* 5 percent



## Custom Soil Resource Report

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

### Description of Novary

#### Setting

*Landform:* Swales

*Down-slope shape:* Linear

*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 26 inches:* loam

*Cg1 - 26 to 42 inches:* stratified loam to silty clay

*Cg2 - 42 to 60 inches:* gravelly sandy loam

#### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Poorly drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* About 0 to 24 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 9.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 5w

*Hydrologic Soil Group:* B/D

*Ecological site:* Draft Subirrigated (Sb) RRU 46-N 13-19" p.z. (R046XN256MT)

*Hydric soil rating:* Yes

### Minor Components

#### Bear lake

*Percent of map unit:* 3 percent

*Landform:* Terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Draft Subirrigated (Sb) RRU 46-N 13-19" p.z. (R046XN256MT)

*Hydric soil rating:* Yes

#### Saline soils

*Percent of map unit:* 2 percent

*Hydric soil rating:* No

## **RT—Rock outcrop**

### **Map Unit Setting**

*National map unit symbol:* 4xw1  
*Elevation:* 3,300 to 7,200 feet  
*Mean annual precipitation:* 12 to 14 inches  
*Mean annual air temperature:* 36 to 43 degrees F  
*Frost-free period:* 90 to 110 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Rock outcrop:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Minor Components**

#### **Cheadle**

*Percent of map unit:* 5 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Draft Shallow (Sw) RRU 46-N 13-19" p.z. (R046XN250MT)  
*Hydric soil rating:* No

## **SA—Saline land**

### **Map Unit Setting**

*National map unit symbol:* 4xw9  
*Elevation:* 3,300 to 5,400 feet  
*Mean annual precipitation:* 12 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 90 to 110 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Saline land:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Saline Land**

#### **Typical profile**

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

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6w  
*Ecological site:* Saline Lowland (SL) RRU 46-N 15-19" p.z. (R046XN600MT)  
*Hydric soil rating:* No

### Minor Components

#### Bigzag

*Percent of map unit:* 5 percent  
*Landform:* Swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XN171MT)  
*Hydric soil rating:* Yes

## SP—Seeped alluvial land

### Map Unit Setting

*National map unit symbol:* 4xwc  
*Elevation:* 3,700 to 5,000 feet  
*Mean annual precipitation:* 12 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 90 to 110 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Seeped alluvial land:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Seeped Alluvial Land

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 5w  
*Ecological site:* Draft Subirrigated (Sb) RRU 46-N 13-19" p.z. (R046XN256MT)  
*Hydric soil rating:* No

### Minor Components

#### Novary

*Percent of map unit:* 5 percent  
*Landform:* Swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Draft Subirrigated (Sb) RRU 46-N 13-19" p.z. (R046XN256MT)  
*Hydric soil rating:* Yes

## **SV—Swifton-Mikesell association, hilly**

### **Map Unit Setting**

*National map unit symbol:* 4xwh  
*Elevation:* 4,900 to 6,200 feet  
*Mean annual precipitation:* 20 to 35 inches  
*Mean annual air temperature:* 34 to 43 degrees F  
*Frost-free period:* 60 to 90 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

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

### **Description of Swifton**

#### **Setting**

*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### **Typical profile**

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material  
*E - 1 to 23 inches:* gravelly loam  
*B/E - 23 to 72 inches:* gravelly sandy clay loam

#### **Properties and qualities**

*Slope:* 8 to 35 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Moderate (about 7.1 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Hydric soil rating:* No

### **Description of Mikesell**

#### **Setting**

*Landform:* Mountains  
*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Linear

### Typical profile

*Oi - 0 to 3 inches:* slightly decomposed plant material

*E - 3 to 9 inches:* clay loam

*B/E - 9 to 24 inches:* clay loam

*Bt - 24 to 30 inches:* clay

*Bk1 - 30 to 52 inches:* clay loam

*Bk2 - 52 to 60 inches:* silty clay loam

### Properties and qualities

*Slope:* 8 to 35 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 9.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

### Minor Components

#### Mord

*Percent of map unit:* 5 percent

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 20"+ p.z. (R043XN417MT)

*Hydric soil rating:* No

#### Nettleton

*Percent of map unit:* 4 percent

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Gapo

*Percent of map unit:* 1 percent

*Landform:* Terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Draft Subirrigated (Sb) RRU 46-N 13-19" p.z. (R046XN256MT)

*Hydric soil rating:* Yes

## **SW—Swifton-Mord-Rockland association, very steep**

### **Map Unit Setting**

*National map unit symbol:* 4xwj  
*Elevation:* 4,900 to 6,200 feet  
*Mean annual precipitation:* 20 to 35 inches  
*Mean annual air temperature:* 37 to 43 degrees F  
*Frost-free period:* 60 to 90 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Swifton and similar soils:* 35 percent  
*Mord and similar soils:* 35 percent  
*Rockland:* 30 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Swifton**

#### **Setting**

*Landform:* Mountains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### **Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*E - 1 to 23 inches:* gravelly loam  
*B/E - 23 to 72 inches:* gravelly sandy clay loam

#### **Properties and qualities**

*Slope:* 15 to 40 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Moderate (about 7.1 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Hydric soil rating:* No

### **Description of Mord**

#### **Setting**

*Landform:* Hills

## Custom Soil Resource Report

*Down-slope shape:* Linear

*Across-slope shape:* Linear

### Typical profile

*A - 0 to 16 inches:* stony loam

*E/B - 16 to 21 inches:* gravelly clay loam

*Bt - 21 to 60 inches:* cobbly clay

### Properties and qualities

*Slope:* 15 to 35 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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

*Available water storage in profile:* High (about 10.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* C

*Ecological site:* Silty (Si) 20"+ p.z. (R043XN417MT)

*Hydric soil rating:* No

## TL—Terrace escarpments and Fairfield soils

### Map Unit Setting

*National map unit symbol:* 4xx0

*Elevation:* 3,600 to 4,700 feet

*Mean annual precipitation:* 12 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 90 to 110 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Terrace escarpments and similar soils:* 40 percent

*Fairfield and similar soils:* 40 percent

*Minor components:* 20 percent

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

### Description of Terrace Escarpments

#### Setting

*Landform:* Stream terraces

*Landform position (three-dimensional):* Riser

*Parent material:* Alluvium

#### Properties and qualities

*Slope:* 10 to 40 percent

## Custom Soil Resource Report

*Depth to restrictive feature:* 10 to 20 inches to paralithic bedrock  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 5.0

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* D  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Description of Fairfield

#### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 4 inches:* gravelly loam  
*Bt - 4 to 17 inches:* clay loam  
*Bk - 17 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 10 to 35 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 35 percent  
*Salinity, maximum in profile:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Minor Components

#### Arnegard

*Percent of map unit:* 5 percent  
*Landform:* Hillslopes  
*Down-slope shape:* Linear



## Custom Soil Resource Report

*Across-slope shape:* Linear  
*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)  
*Hydric soil rating:* No

### **Castner**

*Percent of map unit:* 5 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow (Sw) 10-14" p.z. (R052XN178MT)  
*Hydric soil rating:* No

### **Cabba**

*Percent of map unit:* 5 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow (Sw) 10-14" p.z. (R052XN178MT)  
*Hydric soil rating:* No

### **Wayden**

*Percent of map unit:* 5 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow (Sw) 10-14" p.z. (R052XN178MT)  
*Hydric soil rating:* No

## **To—Turner loam, 0 to 4 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 4xxc  
*Elevation:* 3,700 to 4,900 feet  
*Mean annual precipitation:* 12 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 90 to 110 days  
*Farmland classification:* Prime farmland if irrigated

### **Map Unit Composition**

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

### **Description of Turner**

#### **Setting**

*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

### Typical profile

*A - 0 to 4 inches:* loam  
*Bt - 4 to 12 inches:* clay loam  
*Bk - 12 to 26 inches:* gravelly loam  
*2C - 26 to 60 inches:* extremely gravelly sand

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Available water storage in profile:* Low (about 5.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Minor Components

#### Beaverton

*Percent of map unit:* 10 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow to Gravel (SwGr) 10-14" p.z. (R052XN176MT)  
*Hydric soil rating:* No

### Tr—Turner cobbly loam, 0 to 4 percent slopes

#### Map Unit Setting

*National map unit symbol:* 4xxd  
*Elevation:* 3,700 to 4,900 feet  
*Mean annual precipitation:* 12 to 14 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 90 to 110 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

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

## Description of Turner

### Setting

*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

### Typical profile

*A - 0 to 4 inches:* cobbly loam  
*Bt - 4 to 12 inches:* clay loam  
*Bk - 12 to 26 inches:* gravelly loam  
*2C - 26 to 60 inches:* extremely gravelly loamy sand

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Low (about 5.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

## Minor Components

### Turner

*Percent of map unit:* 5 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Beaverton

*Percent of map unit:* 5 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow to Gravel (SwGr) 10-14" p.z. (R052XN176MT)  
*Hydric soil rating:* No

## W—Lakes and streams

### Map Unit Setting

*National map unit symbol:* 4xxj  
*Mean annual precipitation:* 12 to 14 inches  
*Frost-free period:* 90 to 110 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

## WF—Wet land

### Map Unit Setting

*National map unit symbol:* 4xxm  
*Elevation:* 3,600 to 5,200 feet  
*Mean annual precipitation:* 12 to 14 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 90 to 110 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Wet land and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Wet Land

#### Setting

*Landform:* Channels  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Properties and qualities

*Slope:* 0 to 20 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Poorly 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

#### Interpretive groups

*Land capability classification (irrigated):* None specified

## Custom Soil Resource Report

*Land capability classification (nonirrigated):* 5w  
*Hydrologic Soil Group:* C  
*Ecological site:* Draft Subirrigated (Sb) RRU 46-N 13-19" p.z. (R046XN256MT)  
*Hydric soil rating:* Yes

### Minor Components

#### Babb

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)  
*Hydric soil rating:* No

### Wk—Williams cobbly loam, gently sloping

#### Map Unit Setting

*National map unit symbol:* 4xxz  
*Elevation:* 3,800 to 4,600 feet  
*Mean annual precipitation:* 14 to 16 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 90 to 110 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Williams and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Williams

##### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

##### Typical profile

*A - 0 to 3 inches:* cobbly loam  
*Bt - 3 to 15 inches:* clay loam  
*Bk - 15 to 60 inches:* gravelly clay loam

##### Properties and qualities

*Slope:* 2 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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

## Custom Soil Resource Report

*Calcium carbonate, maximum in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Available water storage in profile:* High (about 10.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Minor Components

#### Williams

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 1 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XN166MT)  
*Hydric soil rating:* Yes

## Wm—Williams cobbly loam, undulating

### Map Unit Setting

*National map unit symbol:* 4xy0  
*Elevation:* 3,800 to 4,600 feet  
*Mean annual precipitation:* 14 to 16 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 90 to 110 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Williams

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

### Typical profile

*A - 0 to 3 inches:* cobbly loam  
*Bt - 3 to 15 inches:* clay loam  
*Bk - 15 to 60 inches:* gravelly clay loam

### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Available water storage in profile:* High (about 10.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Minor Components

#### Arnegard

*Percent of map unit:* 4 percent  
*Landform:* Hillslopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)  
*Hydric soil rating:* No

#### Zahl

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 2 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XN166MT)  
*Hydric soil rating:* Yes

## **WN—Williams complex, hilly**

### **Map Unit Setting**

*National map unit symbol:* 4xxr  
*Elevation:* 3,800 to 4,600 feet  
*Mean annual precipitation:* 14 to 16 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 90 to 110 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Williams and similar soils:* 50 percent  
*Williams and similar soils:* 30 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Williams**

#### **Setting**

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### **Typical profile**

*A - 0 to 3 inches:* cobbly loam  
*Bt - 3 to 15 inches:* clay loam  
*Bk - 15 to 60 inches:* gravelly clay loam

#### **Properties and qualities**

*Slope:* 4 to 35 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Available water storage in profile:* High (about 10.1 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No



## Description of Williams

### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

### Typical profile

*A - 0 to 3 inches:* loam  
*Bt - 3 to 15 inches:* clay loam  
*Bk - 15 to 60 inches:* gravelly clay loam

### Properties and qualities

*Slope:* 4 to 25 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Available water storage in profile:* High (about 10.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

## Minor Components

### Zahl

*Percent of map unit:* 9 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Arnegard

*Percent of map unit:* 9 percent  
*Landform:* Hillslopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)  
*Hydric soil rating:* No

### Nishon

*Percent of map unit:* 2 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XN166MT)  
*Hydric soil rating:* Yes

## **WO—Williams complex, steep**

### **Map Unit Setting**

*National map unit symbol:* 4xxs  
*Elevation:* 3,800 to 4,600 feet  
*Mean annual precipitation:* 14 to 16 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 90 to 110 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Williams and similar soils:* 70 percent  
*Williams and similar soils:* 20 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Williams**

#### **Setting**

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### **Typical profile**

*A - 0 to 3 inches:* cobbly loam  
*Bt - 3 to 15 inches:* clay loam  
*Bk - 15 to 60 inches:* gravelly clay loam

#### **Properties and qualities**

*Slope:* 15 to 35 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Available water storage in profile:* High (about 10.1 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

## Description of Williams

### Setting

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

### Typical profile

*A - 0 to 3 inches:* loam

*Bt - 3 to 15 inches:* clay loam

*Bk - 15 to 60 inches:* gravelly clay loam

### Properties and qualities

*Slope:* 15 to 25 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Gypsum, maximum in profile:* 2 percent

*Available water storage in profile:* High (about 10.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* C

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

*Hydric soil rating:* No

## Minor Components

### Zahl

*Percent of map unit:* 5 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

*Hydric soil rating:* No

### Rock outcrop

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

# Soil Information for All Uses

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## Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities 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 property or quality.

## Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

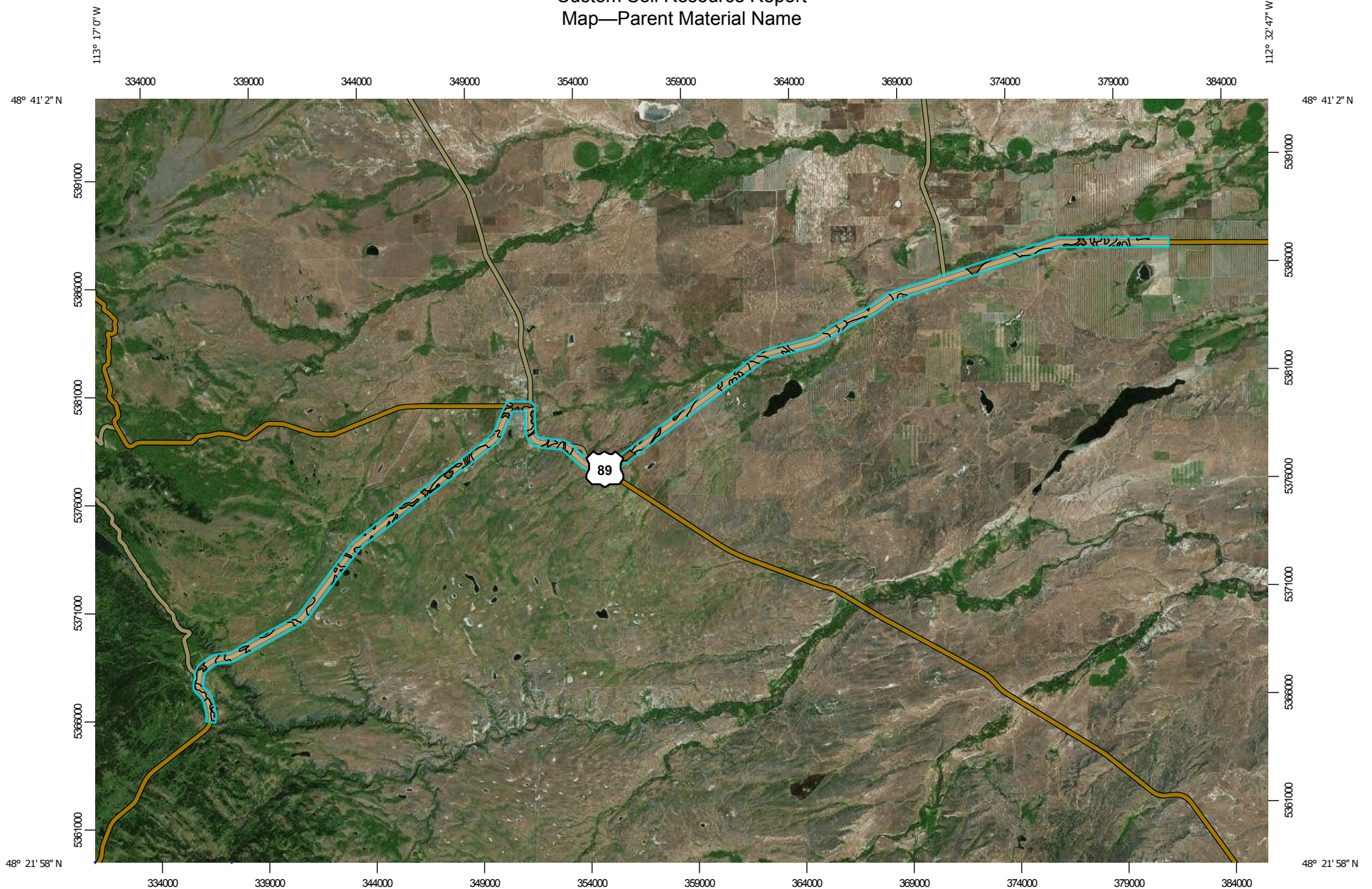
## Parent Material Name

Parent material name is a term for the general physical, chemical, and mineralogical composition of the unconsolidated material, mineral or organic, in which the soil forms. Mode of deposition and/or weathering may be implied by the name.

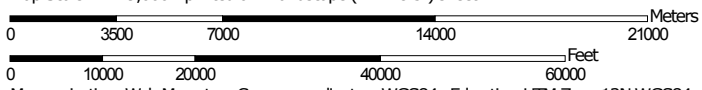
The soil surveyor uses parent material to develop a model used for soil mapping. Soil scientists and specialists in other disciplines use parent material to help interpret soil boundaries and project performance of the material below the soil. Many soil properties relate to parent material. Among these properties are proportions of sand, silt, and clay; chemical content; bulk density; structure; and the kinds and amounts of rock fragments. These properties affect interpretations and may be criteria used to separate soil series. Soil properties and landscape information may imply the kind of parent material.

For each soil in the database, one or more parent materials may be identified. One is marked as the representative or most commonly occurring. The representative parent material name is presented here.

# Custom Soil Resource Report Map—Parent Material Name



Map Scale: 1:249,000 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84





## MAP LEGEND

### Area of Interest (AOI)



 Area of Interest (AOI)

### Soils



#### Soil Rating Polygons

 alluvium  
 Not rated or not available


#### Soil Rating Lines

 alluvium  
 Not rated or not available






#### Soil Rating Points

 alluvium  
 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: Glacier County Area and Part of Pondera County, Montana  
Survey Area Data: Version 11, Sep 28, 2015

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

**Table—Parent Material Name**

Parent Material Name— Summary by Map Unit — Glacier County Area and Part of Pondera County, Montana (MT600)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Ah	Arnegard loam, 2 to 8 percent slopes		0.9	0.0%
BC	Babb cobbly loam, hilly		533.6	8.3%
Bg	Bearmouth gravelly loam, 0 to 4 percent slopes		28.5	0.4%
Bh	Beaverton gravelly loam, 0 to 4 percent slopes		684.5	10.6%
BP	Burnette stony loam, hilly		174.4	2.7%
DH	Doby-Burnette complex, hilly		132.0	2.0%
DS	Doby-Shale outcrop complex, very steep		117.0	1.8%
Fd	Fairfield gravelly loam, 0 to 2 percent slopes		195.6	3.0%
Fe	Fairfield gravelly loam, 2 to 4 percent slopes		87.8	1.4%
Ff	Fairfield gravelly loam, 4 to 8 percent slopes		12.7	0.2%
FU	Fifer-Cheadle-Rock outcrop complex, very steep		11.0	0.2%
Gp	Gravel pits		82.9	1.3%
Le	Leavitt complex, undulating		132.2	2.1%
Mz	Mord loam, sloping		65.5	1.0%
NB	Nettleton-Burnette association, undulating		503.6	7.8%
No	Novary loam		193.7	3.0%
RT	Rock outcrop		20.4	0.3%
SA	Saline land		331.1	5.1%
SP	Seeped alluvial land		3.1	0.0%
SV	Swifton-Mikesell association, hilly		55.6	0.9%
SW	Swifton-Mord-Rockland association, very steep		68.2	1.1%
TL	Terrace escarpments and Fairfield soils		94.9	1.5%
To	Turner loam, 0 to 4 percent slopes		42.8	0.7%
Tr	Turner cobbly loam, 0 to 4 percent slopes		211.0	3.3%
W	Lakes and streams		88.5	1.4%

## Custom Soil Resource Report

<b>Parent Material Name— Summary by Map Unit — Glacier County Area and Part of Pondera County, Montana (MT600)</b>				
<b>Map unit symbol</b>	<b>Map unit name</b>	<b>Rating</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
WF	Wet land	alluvium	601.9	9.3%
Wk	Williams cobbly loam, gently sloping		208.3	3.2%
Wm	Williams cobbly loam, undulating		938.8	14.6%
WN	Williams complex, hilly		817.3	12.7%
WO	Williams complex, steep		3.6	0.1%
<b>Totals for Area of Interest</b>			<b>6,441.5</b>	<b>100.0%</b>

### **Rating Options—Parent Material Name**

*Aggregation Method: Dominant Condition*

*Component Percent Cutoff: None Specified*

*Tie-break Rule: Lower*



## 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.

## Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

## Prime and other Important Farmlands

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

*Prime farmland* is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate

## Custom Soil Resource Report

quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

*Unique farmland* is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

### Report—Prime and other Important Farmlands

Prime and other Important Farmlands—Glacier County Area and Part of Pondera County, Montana		
Map Symbol	Map Unit Name	Farmland Classification
Ah	Arnegard loam, 2 to 8 percent slopes	Farmland of statewide importance
BC	Babb cobbly loam, hilly	Not prime farmland
Bg	Bearmouth gravelly loam, 0 to 4 percent slopes	Not prime farmland
Bh	Beaverton gravelly loam, 0 to 4 percent slopes	Not prime farmland
BP	Burnette stony loam, hilly	Not prime farmland

## Custom Soil Resource Report

<b>Prime and other Important Farmlands—Glacier County Area and Part of Pondera County, Montana</b>		
<b>Map Symbol</b>	<b>Map Unit Name</b>	<b>Farmland Classification</b>
DH	Doby-Burnette complex, hilly	Not prime farmland
DS	Doby-Shale outcrop complex, very steep	Not prime farmland
Fd	Fairfield gravelly loam, 0 to 2 percent slopes	Farmland of statewide importance
Fe	Fairfield gravelly loam, 2 to 4 percent slopes	Farmland of statewide importance
Ff	Fairfield gravelly loam, 4 to 8 percent slopes	Farmland of statewide importance
FU	Fifer-Cheadle-Rock outcrop complex, very steep	Not prime farmland
Gp	Gravel pits	Not prime farmland
Le	Leavitt complex, undulating	Not prime farmland
Mz	Mord loam, sloping	Not prime farmland
NB	Nettleton-Burnette association, undulating	Not prime farmland
No	Novary loam	Not prime farmland
RT	Rock outcrop	Not prime farmland
SA	Saline land	Not prime farmland
SP	Seeped alluvial land	Not prime farmland
SV	Swifton-Mikesell association, hilly	Not prime farmland
SW	Swifton-Mord-Rockland association, very steep	Not prime farmland
TL	Terrace escarpments and Fairfield soils	Not prime farmland
To	Turner loam, 0 to 4 percent slopes	Prime farmland if irrigated
Tr	Turner cobbly loam, 0 to 4 percent slopes	Not prime farmland
W	Lakes and streams	Not prime farmland
WF	Wet land	Not prime farmland
Wk	Williams cobbly loam, gently sloping	Not prime farmland
Wm	Williams cobbly loam, undulating	Not prime farmland
WN	Williams complex, hilly	Not prime farmland
WO	Williams complex, steep	Not prime farmland

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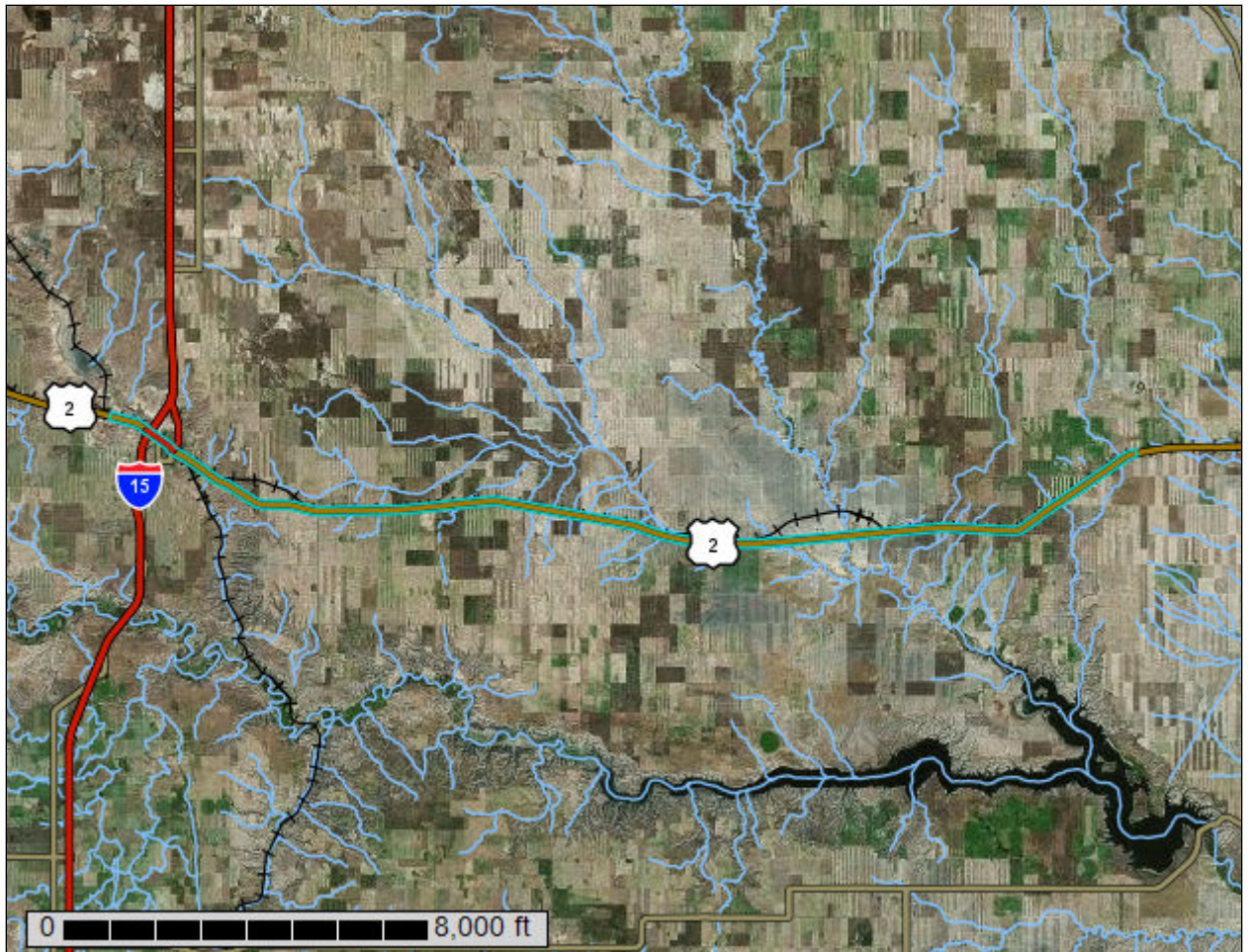
United States  
Department of  
Agriculture

**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 Liberty County, Montana, and Toole County, Montana



# 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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# Contents

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<b>Preface</b> .....	2
<b>How Soil Surveys Are Made</b> .....	6
<b>Soil Map</b> .....	9
Soil Map.....	10
Legend.....	11
Map Unit Legend.....	13
Map Unit Descriptions.....	15
Liberty County, Montana.....	18
35B—Assinniboine fine sandy loam, 0 to 4 percent slopes.....	18
224E—Hillon-Joplin loams, 8 to 25 percent slopes.....	19
331B—Phillips-Elloam complex, 0 to 4 percent slopes.....	21
421C—Joplin-Hillon loams, 2 to 8 percent slopes.....	23
442C—Kevin-Elloam clay loams, 2 to 8 percent slopes.....	26
503B—Telstad-Joplin loams, 0 to 4 percent slopes.....	28
561B—Scobey-Kevin clay loams, 0 to 4 percent slopes.....	31
561C—Scobey-Kevin clay loams, 2 to 8 percent slopes.....	33
605C—Yamacall-Havre loams, 0 to 8 percent slopes.....	36
Toole County, Montana.....	39
16B—Degrand loam, 0 to 4 percent slopes.....	39
19B—Kenilworth loam, 0 to 4 percent slopes.....	40
22E—Hillon clay loam, 8 to 25 percent slopes.....	41
23A—Acel silty clay loam, 0 to 2 percent slopes.....	43
28A—Nishon clay loam, 0 to 1 percent slopes.....	44
29B—Nunemaker silty clay loam, 0 to 4 percent slopes.....	46
29C—Nunemaker silty clay loam, 4 to 8 percent slopes.....	47
30B—Marvan silty clay, 0 to 4 percent slopes.....	49
30C—Marvan silty clay, 4 to 8 percent slopes.....	50
32B—Kobase silty clay loam, 0 to 4 percent slopes.....	51
32C—Kobase silty clay loam, 4 to 8 percent slopes.....	53
37B—Evanston clay loam, 0 to 4 percent slopes.....	55
38B—Ethridge clay loam, 0 to 4 percent slopes.....	56
39B—Ferd loam, 0 to 4 percent slopes.....	57
42B—Joplin clay loam, 0 to 4 percent slopes.....	59
44B—Kevin clay loam, 0 to 4 percent slopes.....	60
44C—Kevin clay loam, 4 to 8 percent slopes.....	62
47B—Marias silty clay, 0 to 4 percent slopes.....	63
48B—Vanda silty clay, 0 to 4 percent slopes.....	65
53E—Sunburst clay loam, 15 to 25 percent slopes.....	66
53F—Sunburst clay loam, 25 to 70 percent slopes.....	68
54B—Trudau loam, 0 to 4 percent slopes.....	69
62A—Vaeda silty clay loam, 0 to 2 percent slopes.....	70
79B—Yamacall loam, 0 to 4 percent slopes.....	72
141A—McKenzie clay, saline, 0 to 2 percent slopes.....	73
222E—Hillon-Neldore complex, 8 to 25 percent slopes.....	74

Custom Soil Resource Report

222F—Hillon-Neldore complex, 25 to 70 percent slopes.....	76
311B—Creed-Gerdrum-Absher complex, 0 to 4 percent slopes.....	78
321B—Kobase silty clay loam, calcareous, 0 to 4 percent slopes.....	81
321C—Kobase silty clay loam, calcareous, 4 to 8 percent slopes.....	82
332B—Phillips-Kevin complex, 0 to 4 percent slopes.....	84
364C—Chinook fine sandy loam, 0 to 8 percent slopes.....	86
372B—Evanston fine sandy loam, 0 to 4 percent slopes.....	88
391B—Ferd-Creed-Gerdrum complex, 0 to 4 percent slopes.....	89
402A—Gerdrum-Absher complex, 0 to 2 percent slopes.....	92
421C—Joplin-Hillon loams, 2 to 8 percent slopes.....	94
421D—Joplin-Hillon clay loams, 8 to 15 percent slopes.....	97
423B—Joplin-Hillon clay loams, 0 to 3 percent slopes.....	99
427B—Joplin complex, 0 to 4 percent slopes.....	101
441C—Kevin-Hillon clay loams, 2 to 8 percent slopes.....	103
445B—Kevin complex, 0 to 4 percent slopes.....	105
446C—Kevin-Elloam clay loams, 2 to 8 percent slopes.....	107
521B—Elloam-Absher clay loams, 0 to 4 percent slopes.....	110
561B—Scobey-Kevin clay loams, 0 to 4 percent slopes.....	112
601A—Havre-Glendive complex, 0 to 2 percent slopes, rarely flooded....	114
793B—Yamacall loam, calcareous, 0 to 4 percent slopes.....	116
971C—Neldore-Bascovy clays, 2 to 8 percent slopes.....	118
W—Water.....	120
<b>Soil Information for All Uses</b> .....	121
Soil Properties and Qualities.....	121
Soil Qualities and Features.....	121
Parent Material Name.....	121
Soil Reports.....	128
Land Classifications.....	128
Prime and other Important Farmlands.....	128
<b>References</b> .....	132

# 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

## Custom Soil Resource Report

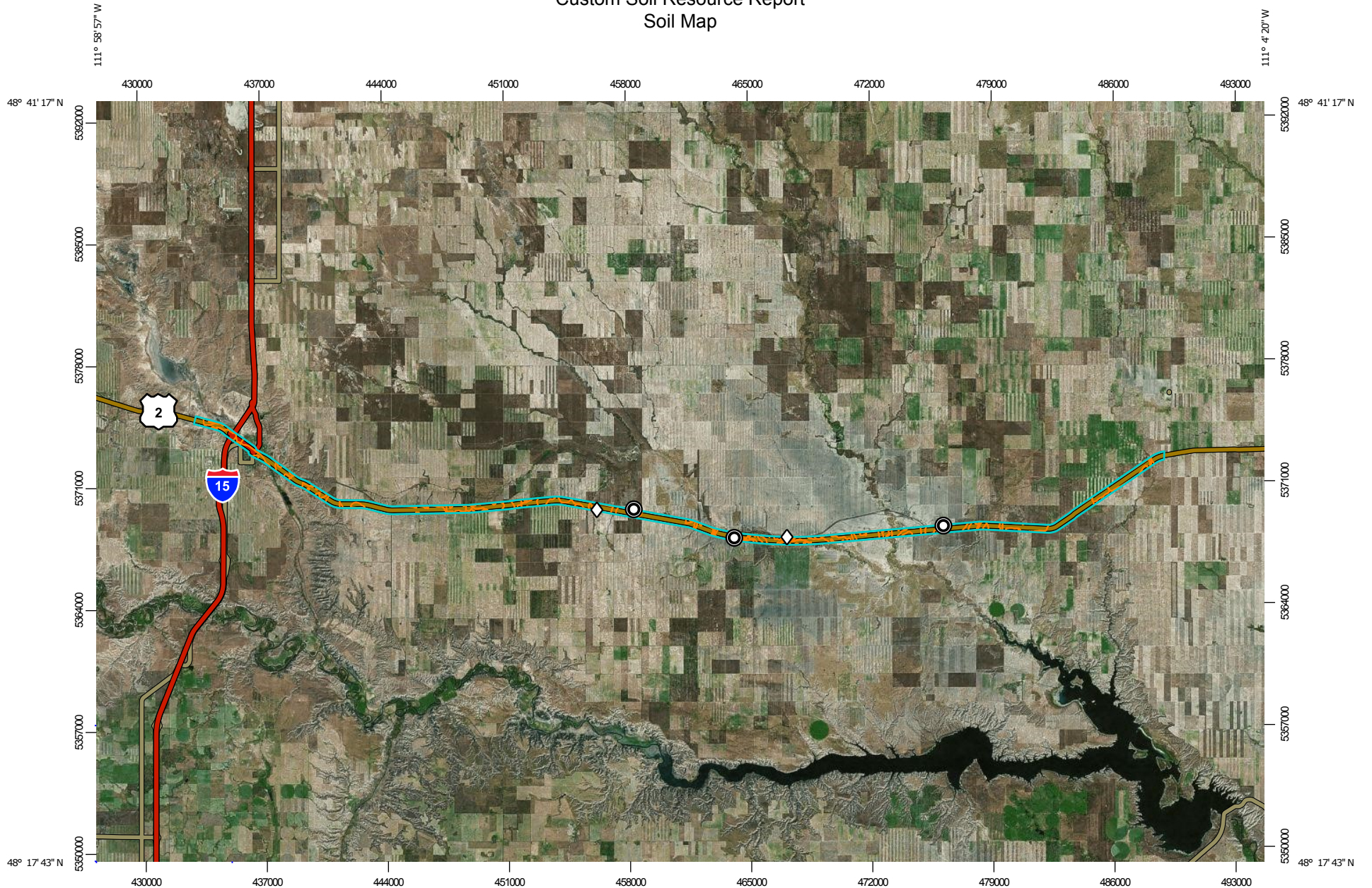
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

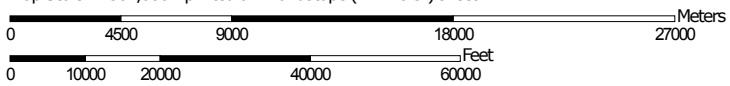
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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce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

# Custom Soil Resource Report Soil Map



Map Scale: 1:307,000 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N 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: Liberty County, Montana  
 Survey Area Data: Version 12, Sep 28, 2015

Soil Survey Area: Toole County, Montana  
 Survey Area Data: Version 11, Sep 28, 2015

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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



**MAP LEGEND**

**MAP INFORMATION**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Liberty County, Montana (MT051)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
35B	Assinniboine fine sandy loam, 0 to 4 percent slopes	1.5	0.0%
224E	Hillon-Joplin loams, 8 to 25 percent slopes	11.0	0.2%
331B	Phillips-Elloam complex, 0 to 4 percent slopes	86.6	1.3%
421C	Joplin-Hillon loams, 2 to 8 percent slopes	464.8	7.0%
442C	Kevin-Elloam clay loams, 2 to 8 percent slopes	295.0	4.4%
503B	Telstad-Joplin loams, 0 to 4 percent slopes	21.8	0.3%
561B	Scobey-Kevin clay loams, 0 to 4 percent slopes	282.1	4.2%
561C	Scobey-Kevin clay loams, 2 to 8 percent slopes	28.6	0.4%
605C	Yamacall-Havre loams, 0 to 8 percent slopes	11.7	0.2%
<b>Subtotals for Soil Survey Area</b>		<b>1,203.2</b>	<b>18.0%</b>
<b>Totals for Area of Interest</b>		<b>6,672.3</b>	<b>100.0%</b>

Toole County, Montana (MT101)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
16B	Degrad loam, 0 to 4 percent slopes	0.0	0.0%
19B	Kenilworth loam, 0 to 4 percent slopes	25.5	0.4%
22E	Hillon clay loam, 8 to 25 percent slopes	21.8	0.3%
23A	Acel silty clay loam, 0 to 2 percent slopes	3.9	0.1%
28A	Nishon clay loam, 0 to 1 percent slopes	3.6	0.1%
29B	Nunemaker silty clay loam, 0 to 4 percent slopes	246.7	3.7%
29C	Nunemaker silty clay loam, 4 to 8 percent slopes	60.1	0.9%
30B	Marvan silty clay, 0 to 4 percent slopes	381.0	5.7%
30C	Marvan silty clay, 4 to 8 percent slopes	13.5	0.2%
32B	Kobase silty clay loam, 0 to 4 percent slopes	334.1	5.0%

## Custom Soil Resource Report

<b>Toole County, Montana (MT101)</b>			
<b>Map Unit Symbol</b>	<b>Map Unit Name</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
32C	Kobase silty clay loam, 4 to 8 percent slopes	115.8	1.7%
37B	Evanston clay loam, 0 to 4 percent slopes	128.6	1.9%
38B	Ethridge clay loam, 0 to 4 percent slopes	45.3	0.7%
39B	Ferd loam, 0 to 4 percent slopes	93.3	1.4%
42B	Joplin clay loam, 0 to 4 percent slopes	159.1	2.4%
44B	Kevin clay loam, 0 to 4 percent slopes	13.4	0.2%
44C	Kevin clay loam, 4 to 8 percent slopes	22.2	0.3%
47B	Marias silty clay, 0 to 4 percent slopes	223.0	3.3%
48B	Vanda silty clay, 0 to 4 percent slopes	56.1	0.8%
53E	Sunburst clay loam, 15 to 25 percent slopes	90.0	1.3%
53F	Sunburst clay loam, 25 to 70 percent slopes	84.2	1.3%
54B	Trudau loam, 0 to 4 percent slopes	37.0	0.6%
62A	Vaeda silty clay loam, 0 to 2 percent slopes	130.5	2.0%
79B	Yamacall loam, 0 to 4 percent slopes	3.5	0.1%
141A	McKenzie clay, saline, 0 to 2 percent slopes	49.9	0.7%
222E	Hillon-Neldore complex, 8 to 25 percent slopes	48.4	0.7%
222F	Hillon-Neldore complex, 25 to 70 percent slopes	159.0	2.4%
311B	Creed-Gerdrum-Absher complex, 0 to 4 percent slopes	159.5	2.4%
321B	Kobase silty clay loam, calcareous, 0 to 4 percent slopes	214.5	3.2%
321C	Kobase silty clay loam, calcareous, 4 to 8 percent slopes	30.4	0.5%
332B	Phillips-Kevin complex, 0 to 4 percent slopes	834.0	12.5%
364C	Chinook fine sandy loam, 0 to 8 percent slopes	0.7	0.0%
372B	Evanston fine sandy loam, 0 to 4 percent slopes	246.8	3.7%

## Custom Soil Resource Report

<b>Toole County, Montana (MT101)</b>			
<b>Map Unit Symbol</b>	<b>Map Unit Name</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
391B	Ferd-Creed-Gerdrum complex, 0 to 4 percent slopes	19.8	0.3%
402A	Gerdrum-Absher complex, 0 to 2 percent slopes	9.4	0.1%
421C	Joplin-Hillon loams, 2 to 8 percent slopes	21.6	0.3%
421D	Joplin-Hillon clay loams, 8 to 15 percent slopes	8.4	0.1%
423B	Joplin-Hillon clay loams, 0 to 3 percent slopes	78.0	1.2%
427B	Joplin complex, 0 to 4 percent slopes	612.1	9.2%
441C	Kevin-Hillon clay loams, 2 to 8 percent slopes	32.3	0.5%
445B	Kevin complex, 0 to 4 percent slopes	26.9	0.4%
446C	Kevin-Elloam clay loams, 2 to 8 percent slopes	17.7	0.3%
521B	Elloam-Absher clay loams, 0 to 4 percent slopes	26.3	0.4%
561B	Scobey-Kevin clay loams, 0 to 4 percent slopes	249.8	3.7%
601A	Havre-Glendive complex, 0 to 2 percent slopes, rarely flooded	233.7	3.5%
793B	Yamacall loam, calcareous, 0 to 4 percent slopes	2.4	0.0%
971C	Neldore-Bascovy clays, 2 to 8 percent slopes	86.4	1.3%
W	Water	8.9	0.1%
<b>Subtotals for Soil Survey Area</b>		<b>5,469.1</b>	<b>82.0%</b>
<b>Totals for Area of Interest</b>		<b>6,672.3</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

## Custom Soil Resource Report

up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

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

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

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

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

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

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

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

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

## Custom Soil Resource Report

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.

## Liberty County, Montana

### 35B—Assinniboine fine sandy loam, 0 to 4 percent slopes

#### Map Unit Setting

*National map unit symbol:* ck4t  
*Elevation:* 2,750 to 3,460 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Assinniboine and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Assinniboine

##### Setting

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

##### Typical profile

*A - 0 to 7 inches:* fine sandy loam  
*Bt - 7 to 15 inches:* sandy clay loam  
*Bk - 15 to 43 inches:* fine sandy loam  
*BC - 43 to 60 inches:* stratified fine sandy loam to fine sand

##### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Available water storage in profile:* Moderate (about 7.6 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XN163MT)  
*Hydric soil rating:* No

#### Minor Components

##### Assinniboine

*Percent of map unit:* 3 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### **Slopes more than 4 percent**

*Percent of map unit:* 2 percent  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XN163MT)  
*Hydric soil rating:* No

## **224E—Hillon-Joplin loams, 8 to 25 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* ck3t  
*Elevation:* 2,750 to 3,460 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Hillon and similar soils:* 65 percent  
*Joplin and similar soils:* 30 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Hillon**

#### **Setting**

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### **Typical profile**

*A - 0 to 6 inches:* loam  
*Bk - 6 to 27 inches:* loam  
*Bky - 27 to 60 inches:* loam

#### **Properties and qualities**

*Slope:* 8 to 25 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)



## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Description of Joplin

#### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 4 inches:* loam  
*Bt - 4 to 9 inches:* clay loam  
*Bk - 9 to 20 inches:* loam  
*Bky - 20 to 60 inches:* loam

#### Properties and qualities

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Minor Components

#### Rock outcrop

*Percent of map unit:* 2 percent  
*Hydric soil rating:* No

#### Hillon

*Percent of map unit:* 2 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XC223MT)  
*Hydric soil rating:* No

**Slopes more than 25 percent**

*Percent of map unit:* 1 percent

*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XN168MT)

*Hydric soil rating:* No

**331B—Phillips-Elloam complex, 0 to 4 percent slopes**

**Map Unit Setting**

*National map unit symbol:* ck4p

*Elevation:* 2,750 to 3,460 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 105 to 120 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Phillips and similar soils:* 60 percent

*Elloam and similar soils:* 30 percent

*Minor components:* 10 percent

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

**Description of Phillips**

**Setting**

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

**Typical profile**

*E - 0 to 7 inches:* loam

*Bt - 7 to 16 inches:* clay

*Bk - 16 to 50 inches:* clay loam

*Bky - 50 to 60 inches:* clay loam

**Properties and qualities**

*Slope:* 0 to 4 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Gypsum, maximum in profile:* 3 percent

*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 13.0

*Available water storage in profile:* High (about 9.6 inches)

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Description of Elloam

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### Typical profile

*E - 0 to 2 inches:* clay loam  
*B<sub>tn</sub> - 2 to 9 inches:* clay  
*B<sub>kn</sub> - 9 to 15 inches:* clay  
*B<sub>knyz</sub> - 15 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 25.0  
*Available water storage in profile:* Moderate (about 6.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

### Minor Components

#### Phillips

*Percent of map unit:* 3 percent  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 3 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XN166MT)  
*Hydric soil rating:* Yes

**Joplin, calcareous surface**

*Percent of map unit:* 2 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

**Hillon**

*Percent of map unit:* 2 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

**421C—Joplin-Hillon loams, 2 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2t07b  
*Elevation:* 2,000 to 3,870 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 100 to 140 days  
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

*Joplin and similar soils:* 50 percent  
*Hillon and similar soils:* 40 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Joplin**

**Setting**

*Landform:* Moraines  
*Landform position (two-dimensional):* Footslope, toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Fine-loamy till

**Typical profile**

*Ap - 0 to 6 inches:* loam  
*Bt - 6 to 9 inches:* clay loam  
*Bk1 - 9 to 22 inches:* clay loam  
*Bk2 - 22 to 41 inches:* clay loam  
*BCyz - 41 to 57 inches:* loam  
*Cz - 57 to 79 inches:* loam

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 14 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 9.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating:* No

### Description of Hillon

#### Setting

*Landform:* Moraines  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Fine-loamy till

#### Typical profile

*Ap - 0 to 6 inches:* loam  
*Bk1 - 6 to 14 inches:* loam  
*Bk2 - 14 to 29 inches:* loam  
*BCyz - 29 to 41 inches:* loam  
*Cz - 41 to 79 inches:* loam

### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 12 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* Moderate (about 8.8 inches)

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)

*Hydric soil rating:* No

### Minor Components

#### Evanston

*Percent of map unit:* 4 percent

*Landform:* Moraines

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

*Microfeatures of landform position:* Swales

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Ecological site:* Overflow (Ov) LRU 52-A (R052XA060MT)

*Hydric soil rating:* No

#### Fortbenton

*Percent of map unit:* 2 percent

*Landform:* Moraines

*Landform position (two-dimensional):* Shoulder, backslope, summit

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

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Ecological site:* Sandy (Sy) LRU 52-A (R052XA110MT)

*Hydric soil rating:* No

#### Hillon, gravelly surface

*Percent of map unit:* 2 percent

*Landform:* Moraines

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

*Landform position (three-dimensional):* Crest

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)

*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 1 percent

*Landform:* Moraines

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

*Microfeatures of landform position:* Closed depressions

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Ecological site:* Closed Depression (CD) LRU 52-A (R052XA071MT)

*Hydric soil rating:* Yes

#### Delpoint

*Percent of map unit:* 1 percent

*Landform:* Moraines

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

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

*Down-slope shape:* Convex

*Across-slope shape:* Convex

## Custom Soil Resource Report

*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XN168MT)  
*Hydric soil rating:* No

### 442C—Kevin-Elloam clay loams, 2 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* ck5h  
*Elevation:* 2,750 to 3,460 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

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

#### Description of Kevin

##### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

##### Typical profile

*A - 0 to 3 inches:* clay loam  
*Bt - 3 to 8 inches:* clay  
*Bk1 - 8 to 25 inches:* clay loam  
*Bk2 - 25 to 60 inches:* clay loam

##### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.8 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e

## Custom Soil Resource Report

*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Description of Elloam

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### Typical profile

*E - 0 to 2 inches:* clay loam  
*Btn - 2 to 9 inches:* clay  
*Bkn - 9 to 15 inches:* clay  
*Bknyz - 15 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 25.0  
*Available water storage in profile:* Moderate (about 6.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

### Minor Components

#### Slopes more than 8 percent

*Percent of map unit:* 2 percent  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 2 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XN166MT)  
*Hydric soil rating:* Yes

#### Kevin

*Percent of map unit:* 2 percent  
*Landform:* Till plains



## Custom Soil Resource Report

*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### **Joplin**

*Percent of map unit:* 2 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### **Slopes less than 2 percent**

*Percent of map unit:* 2 percent  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

## **503B—Telstad-Joplin loams, 0 to 4 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2v55g  
*Elevation:* 2,000 to 3,870 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 100 to 140 days  
*Farmland classification:* Prime farmland if irrigated

### **Map Unit Composition**

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

### **Description of Telstad**

#### **Setting**

*Landform:* Ground moraines  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Fine-loamy till

#### **Typical profile**

*Ap - 0 to 6 inches:* loam  
*Bt - 6 to 15 inches:* clay loam  
*Bk1 - 15 to 30 inches:* clay loam  
*Bk2 - 30 to 45 inches:* clay loam  
*BCyz - 45 to 61 inches:* loam  
*Cz - 61 to 79 inches:* loam

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 14 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 10.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating:* No

### Description of Joplin

#### Setting

*Landform:* Ground moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Fine-loamy till

#### Typical profile

*Ap - 0 to 6 inches:* loam  
*Bt - 6 to 9 inches:* clay loam  
*Bk1 - 9 to 22 inches:* clay loam  
*Bk2 - 22 to 41 inches:* clay loam  
*BCyz - 41 to 57 inches:* loam  
*Cz - 57 to 79 inches:* loam

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 14 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 9.8 inches)

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated): 3e*

*Land capability classification (nonirrigated): 3e*

*Hydrologic Soil Group: C*

*Ecological site: Loamy (Lo) LRU 52-A (R052XA032MT)*

*Hydric soil rating: No*

### Minor Components

#### Hillon

*Percent of map unit: 6 percent*

*Landform: Ground moraines*

*Landform position (three-dimensional): Rise*

*Down-slope shape: Convex*

*Across-slope shape: Convex*

*Ecological site: Loamy (Lo) LRU 52-A (R052XA032MT)*

*Hydric soil rating: No*

#### Fortbenton

*Percent of map unit: 5 percent*

*Landform: Ground moraines*

*Landform position (three-dimensional): Rise*

*Down-slope shape: Linear*

*Across-slope shape: Convex*

*Ecological site: Sandy (Sy) LRU 52-A (R052XA110MT)*

*Hydric soil rating: No*

#### Ferd

*Percent of map unit: 2 percent*

*Landform: Ground moraines*

*Microfeatures of landform position: Swales*

*Down-slope shape: Linear*

*Across-slope shape: Concave*

*Ecological site: Overflow (Ov) LRU 52-A (R052XA060MT)*

*Hydric soil rating: No*

#### Nishon

*Percent of map unit: 1 percent*

*Landform: Ground moraines*

*Microfeatures of landform position: Closed depressions*

*Down-slope shape: Concave*

*Across-slope shape: Concave*

*Ecological site: Closed Depression (CD) LRU 52-A (R052XA071MT)*

*Hydric soil rating: Yes*

#### Elloam

*Percent of map unit: 1 percent*

*Landform: Ground moraines*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Ecological site: Claypan (Cp) LRU 52-A (R052XA006MT)*

*Hydric soil rating: No*

## 561B—Scobey-Kevin clay loams, 0 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* 2t3kb  
*Elevation:* 2,490 to 3,800 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

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

### Description of Scobey

#### Setting

*Landform:* Flats  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey till

#### Typical profile

*Ap - 0 to 6 inches:* clay loam  
*Bt - 6 to 15 inches:* clay  
*Bk1 - 15 to 29 inches:* clay loam  
*Bk2 - 29 to 43 inches:* clay loam  
*BCyz - 43 to 61 inches:* clay loam  
*Cz - 61 to 79 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 14 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 9.8 inches)

**Interpretive groups**

*Land capability classification (irrigated): 2e*  
*Land capability classification (nonirrigated): 3e*  
*Hydrologic Soil Group: C*  
*Ecological site: Loamy (Lo) LRU 52-A (R052XA032MT)*  
*Hydric soil rating: No*

**Description of Kevin**

**Setting**

*Landform: Flats*  
*Landform position (three-dimensional): Rise*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Parent material: Fine-loamy till*

**Typical profile**

*Ap - 0 to 6 inches: clay loam*  
*Bt - 6 to 9 inches: clay loam*  
*Bk1 - 9 to 23 inches: clay loam*  
*Bk2 - 23 to 41 inches: clay loam*  
*BCyz - 41 to 58 inches: clay loam*  
*Cz - 58 to 79 inches: clay loam*

**Properties and qualities**

*Slope: 0 to 4 percent*  
*Depth to restrictive feature: More than 80 inches*  
*Natural 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 in profile: 14 percent*  
*Gypsum, maximum in profile: 5 percent*  
*Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)*  
*Sodium adsorption ratio, maximum in profile: 12.0*  
*Available water storage in profile: High (about 10.0 inches)*

**Interpretive groups**

*Land capability classification (irrigated): 2e*  
*Land capability classification (nonirrigated): 3e*  
*Hydrologic Soil Group: C*  
*Ecological site: Loamy (Lo) LRU 52-A (R052XA032MT)*  
*Hydric soil rating: No*

**Minor Components**

**Hillon**

*Percent of map unit: 8 percent*  
*Landform: Rises*  
*Landform position (two-dimensional): Summit, shoulder*  
*Down-slope shape: Convex*  
*Across-slope shape: Linear*  
*Ecological site: Loamy (Lo) LRU 52-A (R052XA032MT)*

## Custom Soil Resource Report

*Hydric soil rating:* No

### **Elloam**

*Percent of map unit:* 3 percent

*Landform:* Flats

*Landform position (three-dimensional):* Dip

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Claypan (Cp) LRU 52-A (R052XA006MT)

*Hydric soil rating:* No

### **Acel**

*Percent of map unit:* 2 percent

*Landform:* Swales

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)

*Hydric soil rating:* No

### **Nishon**

*Percent of map unit:* 2 percent

*Landform:* Depressions

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Ecological site:* Overflow (Ov) LRU 52-A (R052XA060MT)

*Hydric soil rating:* Yes

## **561C—Scobey-Kevin clay loams, 2 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2t3k4

*Elevation:* 2,000 to 3,870 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 46 degrees F

*Frost-free period:* 100 to 140 days

*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

*Scobey and similar soils:* 45 percent

*Kevin and similar soils:* 40 percent

*Minor components:* 15 percent

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

### **Description of Scobey**

#### **Setting**

*Landform:* Moraines

*Landform position (two-dimensional):* Footslope, toeslope

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

*Down-slope shape:* Concave

## Custom Soil Resource Report

*Across-slope shape:* Linear  
*Parent material:* Clayey till

### Typical profile

*Ap - 0 to 6 inches:* clay loam  
*Bt - 6 to 15 inches:* clay  
*Bk1 - 15 to 29 inches:* clay loam  
*Bk2 - 29 to 44 inches:* clay loam  
*BCyz - 44 to 61 inches:* clay loam  
*Cz - 61 to 79 inches:* clay loam

### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 14 percent  
*Gypsum, maximum in profile:* 4 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 9.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

### Description of Kevin

#### Setting

*Landform:* Moraines  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Clayey till

#### Typical profile

*Ap - 0 to 6 inches:* clay loam  
*Bt - 6 to 9 inches:* clay loam  
*Bk1 - 9 to 23 inches:* clay loam  
*Bk2 - 23 to 41 inches:* clay loam  
*BCyz - 41 to 57 inches:* clay loam  
*Cz - 57 to 79 inches:* clay loam

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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)

## Custom Soil Resource Report

*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 14 percent  
*Gypsum, maximum in profile:* 4 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 10.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

### Minor Components

#### Hillon

*Percent of map unit:* 8 percent  
*Landform:* Moraines  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Crest  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Eloam

*Percent of map unit:* 3 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Acel

*Percent of map unit:* 2 percent  
*Landform:* Moraines  
*Microfeatures of landform position:* Swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 2 percent  
*Landform:* Depressions on moraines  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes



## 605C—Yamacall-Havre loams, 0 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* ck6b

*Elevation:* 2,750 to 3,460 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 37 to 45 degrees F

*Frost-free period:* 105 to 120 days

*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Yamacall and similar soils:* 50 percent

*Havre and similar soils:* 40 percent

*Minor components:* 10 percent

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

### Description of Yamacall

#### Setting

*Landform:* Fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 5 inches:* loam

*Bw - 5 to 12 inches:* loam

*Bk - 12 to 27 inches:* loam

*Bky - 27 to 60 inches:* loam

#### Properties and qualities

*Slope:* 0 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 15 percent

*Gypsum, maximum in profile:* 1 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 3.9 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 5.0

*Available water storage in profile:* High (about 9.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* B

## Custom Soil Resource Report

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Description of Havre

#### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 5 inches:* loam  
*C - 5 to 60 inches:* stratified fine sandy loam to clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Occasional  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* B  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XN166MT)  
*Hydric soil rating:* No

### Minor Components

#### Slopes more than 8 percent

*Percent of map unit:* 2 percent  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Bigsandy

*Percent of map unit:* 2 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Draft Subirrigated (Sb) RRU 46-N 13-19" p.z. (R046XN256MT)  
*Hydric soil rating:* Yes

#### Benz

*Percent of map unit:* 2 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)  
*Hydric soil rating:* No

## Custom Soil Resource Report

### **Beaverell**

*Percent of map unit:* 2 percent

*Landform:* Eskers

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Shallow to Gravel (SwGr) 10-14" p.z. (R052XC216MT)

*Hydric soil rating:* No

### **Glendive**

*Percent of map unit:* 2 percent

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XN163MT)

*Hydric soil rating:* No

## Toole County, Montana

### 16B—Degrand loam, 0 to 4 percent slopes

#### Map Unit Setting

*National map unit symbol:* cl2k  
*Elevation:* 3,200 to 3,680 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Prime farmland if irrigated

#### Map Unit Composition

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

#### Description of Degrand

##### Setting

*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

##### Typical profile

*A - 0 to 5 inches:* loam  
*Bt - 5 to 14 inches:* clay loam  
*Bk - 14 to 24 inches:* sandy clay loam  
*2C - 24 to 60 inches:* loamy sand

##### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Available water storage in profile:* Low (about 5.2 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Minor Components

##### Slopes more than 4 percent

*Percent of map unit:* 10 percent  
*Hydric soil rating:* No

**Degrad**

*Percent of map unit:* 5 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XN163MT)  
*Hydric soil rating:* No

**19B—Kenilworth loam, 0 to 4 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cl2s  
*Elevation:* 3,080 to 3,400 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

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

**Description of Kenilworth**

**Setting**

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

**Typical profile**

*A - 0 to 6 inches:* loam  
*Bt - 6 to 11 inches:* sandy clay loam  
*Bk1 - 11 to 15 inches:* sandy clay loam  
*2Bk2 - 15 to 24 inches:* clay loam  
*2C - 24 to 60 inches:* clay loam

**Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent

## Custom Soil Resource Report

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 10.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

*Hydric soil rating:* No

### Minor Components

#### Nunemaker

*Percent of map unit:* 7 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)

*Hydric soil rating:* No

#### Elloam

*Percent of map unit:* 7 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)

*Hydric soil rating:* No

#### Mckenzie

*Percent of map unit:* 1 percent

*Landform:* Depressions

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)

*Hydric soil rating:* Yes

## 22E—Hillon clay loam, 8 to 25 percent slopes

### Map Unit Setting

*National map unit symbol:* cl3c

*Elevation:* 3,000 to 4,000 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 46 degrees F

*Frost-free period:* 105 to 125 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Hillon and similar soils:* 85 percent

*Minor components:* 15 percent

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

## Description of Hillon

### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

### Typical profile

*A - 0 to 5 inches:* clay loam  
*Bk - 5 to 30 inches:* clay loam  
*Bky - 30 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 8 to 25 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XN168MT)  
*Hydric soil rating:* No

## Minor Components

### Slopes more than 25 percent

*Percent of map unit:* 5 percent  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XN168MT)  
*Hydric soil rating:* No

### Kevin

*Percent of map unit:* 4 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Neldore

*Percent of map unit:* 2 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow Clay (SwC) 10-14" p.z. (R052XN179MT)  
*Hydric soil rating:* No

**Bascovy**

*Percent of map unit:* 2 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey-Steep (CyStp) 10-14" p.z. (R052XN164MT)  
*Hydric soil rating:* No

**Cabbart**

*Percent of map unit:* 2 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow (Sw) 10-14" p.z. (R052XN178MT)  
*Hydric soil rating:* No

**23A—Acel silty clay loam, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2sy7l  
*Elevation:* 2,590 to 3,940 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 100 to 125 days  
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

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

**Description of Acel**

**Setting**

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Glaciofluvial deposits

**Typical profile**

*A - 0 to 6 inches:* silty clay loam  
*Bt - 6 to 20 inches:* silty clay  
*Bk - 20 to 66 inches:* silty clay loam  
*2By - 66 to 79 inches:* clay loam

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent

*Gypsum, maximum in profile:* 3 percent

*Salinity, maximum in profile:* Slightly saline (4.0 to 6.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 8.0

*Available water storage in profile:* High (about 9.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* 2e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)

*Hydric soil rating:* No

### Minor Components

#### Nishon

*Percent of map unit:* 6 percent

*Landform:* Potholes

*Landform position (three-dimensional):* Dip

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XN166MT)

*Hydric soil rating:* Yes

#### Ethridge

*Percent of map unit:* 3 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Gerdrum

*Percent of map unit:* 1 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)

*Hydric soil rating:* No

## 28A—Nishon clay loam, 0 to 1 percent slopes

### Map Unit Setting

*National map unit symbol:* cl3r

*Elevation:* 3,200 to 4,070 feet

*Mean annual precipitation:* 13 to 17 inches

*Mean annual air temperature:* 39 to 45 degrees F

## Custom Soil Resource Report

*Frost-free period:* 90 to 105 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Nishon and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Nishon

#### Setting

*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 4 inches:* clay loam  
*Bt - 4 to 22 inches:* clay  
*Bk - 22 to 60 inches:* clay

#### Properties and qualities

*Slope:* 0 to 1 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Poorly drained  
*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:* About 0 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Calcium carbonate, maximum in profile:* 15 percent  
*Available water storage in profile:* High (about 9.6 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4w  
*Hydrologic Soil Group:* C/D  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XN166MT)  
*Hydric soil rating:* Yes

### Minor Components

#### Artificially drained soils

*Percent of map unit:* 3 percent  
*Hydric soil rating:* No

#### Mckenzie, saline

*Percent of map unit:* 1 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)  
*Hydric soil rating:* Yes

#### Nishon

*Percent of map unit:* 1 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XN166MT)  
*Hydric soil rating:* Yes

### 29B—Nunemaker silty clay loam, 0 to 4 percent slopes

#### Map Unit Setting

*National map unit symbol:* cl3s  
*Elevation:* 3,000 to 3,400 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

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

#### Description of Nunemaker

##### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Glaciofluvial deposits

##### Typical profile

*A - 0 to 4 inches:* silty clay loam  
*Bw - 4 to 12 inches:* silty clay  
*Bk - 12 to 21 inches:* clay  
*Bky - 21 to 60 inches:* clay loam

##### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 8.5 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e

## Custom Soil Resource Report

*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

### Minor Components

#### Marvan

*Percent of map unit:* 7 percent  
*Landform:* Lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

#### Vanda

*Percent of map unit:* 6 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)  
*Hydric soil rating:* No

#### Mckenzie

*Percent of map unit:* 2 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)  
*Hydric soil rating:* Yes

## 29C—Nunemaker silty clay loam, 4 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* cl3t  
*Elevation:* 3,000 to 3,400 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

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

### Description of Nunemaker

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

*Parent material:* Glaciofluvial deposits

### Typical profile

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

*Bw - 4 to 12 inches:* silty clay

*Bk - 12 to 21 inches:* clay

*Bky - 21 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 4 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Gypsum, maximum in profile:* 5 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Moderate (about 8.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)

*Hydric soil rating:* No

### Minor Components

#### Vanda

*Percent of map unit:* 4 percent

*Landform:* Fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)

*Hydric soil rating:* No

#### Marvan

*Percent of map unit:* 3 percent

*Landform:* Fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)

*Hydric soil rating:* No

#### Slopes more than 8 percent

*Percent of map unit:* 3 percent

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)

*Hydric soil rating:* No

#### Slopes less than 4 percent

*Percent of map unit:* 3 percent

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)

*Hydric soil rating:* No

**Mckenzie**

*Percent of map unit:* 2 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)  
*Hydric soil rating:* Yes

**30B—Marvan silty clay, 0 to 4 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cl3y  
*Elevation:* 3,000 to 3,480 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Marvan and similar soils:* 85 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Marvan**

**Setting**

*Landform:* Lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

**Typical profile**

*Ap - 0 to 7 inches:* silty clay  
*Bssyz - 7 to 30 inches:* silty clay  
*Bnyz - 30 to 60 inches:* silty clay

**Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 10 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 38.0

## Custom Soil Resource Report

*Available water storage in profile:* Moderate (about 6.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* D

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)

*Hydric soil rating:* No

### Minor Components

#### Vanda

*Percent of map unit:* 5 percent

*Landform:* Fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)

*Hydric soil rating:* No

#### Bascovy

*Percent of map unit:* 5 percent

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)

*Hydric soil rating:* No

## 30C—Marvan silty clay, 4 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* cl3z

*Elevation:* 3,000 to 3,480 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 46 degrees F

*Frost-free period:* 105 to 125 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Marvan and similar soils:* 85 percent

*Minor components:* 10 percent

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

### Description of Marvan

#### Setting

*Landform:* Fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

## Custom Soil Resource Report

### Typical profile

*Ap - 0 to 7 inches:* silty clay  
*Bssyz - 7 to 30 inches:* silty clay  
*Bnyz - 30 to 60 inches:* silty clay

### Properties and qualities

*Slope:* 4 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 10 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 38.0  
*Available water storage in profile:* Moderate (about 6.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* D  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

### Minor Components

#### Vanda

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)  
*Hydric soil rating:* No

#### Bascovy

*Percent of map unit:* 5 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

## 32B—Kobase silty clay loam, 0 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* cl45



## Custom Soil Resource Report

*Elevation:* 3,000 to 3,480 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

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

### Description of Kobase

#### Setting

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*Ap - 0 to 5 inches:* silty clay loam  
*Bw - 5 to 12 inches:* silty clay loam  
*Bk - 12 to 28 inches:* silty clay loam  
*By - 28 to 60 inches:* silty clay loam

#### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

### Minor Components

#### Kobase, calcareous

*Percent of map unit:* 8 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) RRU 58A-C 11-14" p.z. (R058AC041MT)  
*Hydric soil rating:* No

**Marvan**

*Percent of map unit:* 3 percent  
*Landform:* Lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

**Mckenzie**

*Percent of map unit:* 2 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)  
*Hydric soil rating:* Yes

**Vanda**

*Percent of map unit:* 2 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)  
*Hydric soil rating:* No

**32C—Kobase silty clay loam, 4 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cl46  
*Elevation:* 3,000 to 3,480 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 37 to 46 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

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

**Description of Kobase**

**Setting**

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

**Typical profile**

*Ap - 0 to 5 inches:* silty clay loam  
*Bw - 5 to 12 inches:* silty clay loam

## Custom Soil Resource Report

*Bk - 12 to 28 inches: silty clay loam*

*By - 28 to 60 inches: silty clay loam*

### Properties and qualities

*Slope: 4 to 8 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural 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 in profile: 15 percent*

*Gypsum, maximum in profile: 3 percent*

*Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)*

*Available water storage in profile: High (about 9.7 inches)*

### Interpretive groups

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 4e*

*Hydrologic Soil Group: C*

*Ecological site: Clayey (Cy) 10-14" p.z. (R052XN162MT)*

*Hydric soil rating: No*

### Minor Components

#### Trudau

*Percent of map unit: 5 percent*

*Landform: Fans*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Ecological site: Saline Upland (SU) 10-14" p.z. (R052XN170MT)*

*Hydric soil rating: No*

#### Bascovy

*Percent of map unit: 5 percent*

*Landform: Hills*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Ecological site: Clayey (Cy) 10-14" p.z. (R052XN162MT)*

*Hydric soil rating: No*

#### Ethridge

*Percent of map unit: 5 percent*

*Landform: Fans*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Ecological site: Clayey (Cy) 10-14" p.z. (R052XN162MT)*

*Hydric soil rating: No*

### 37B—Evanston clay loam, 0 to 4 percent slopes

#### Map Unit Setting

*National map unit symbol:* cl4v  
*Elevation:* 3,000 to 3,800 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Prime farmland if irrigated

#### Map Unit Composition

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

#### Description of Evanston

##### Setting

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

##### Typical profile

*A - 0 to 6 inches:* clay loam  
*Bt - 6 to 15 inches:* clay loam  
*Bk - 15 to 32 inches:* clay loam  
*C - 32 to 60 inches:* clay loam

##### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.9 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

**Minor Components**

**Evanston, calcareous**

*Percent of map unit:* 10 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

**Chinook**

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

**38B—Ethrige clay loam, 0 to 4 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cl50  
*Elevation:* 3,000 to 4,000 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Prime farmland if irrigated

**Map Unit Composition**

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

**Description of Ethrige**

**Setting**

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

**Typical profile**

*Ap - 0 to 6 inches:* clay loam  
*Bt - 6 to 15 inches:* silty clay  
*Bk - 15 to 38 inches:* silty clay loam  
*BC - 38 to 60 inches:* silty clay loam

**Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches

## Custom Soil Resource Report

*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 3.9 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 5.0  
*Available water storage in profile:* High (about 9.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

### Minor Components

#### Marias

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

#### Marvan

*Percent of map unit:* 5 percent  
*Landform:* Lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

#### Vanda

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)  
*Hydric soil rating:* No

## 39B—Ferd loam, 0 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* cl54  
*Elevation:* 3,000 to 3,800 feet

## Custom Soil Resource Report

*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Ferd

#### Setting

*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*Ap - 0 to 5 inches:* loam  
*E/Bt - 5 to 9 inches:* loam  
*Bt - 9 to 16 inches:* clay loam  
*Bk - 16 to 41 inches:* clay loam  
*BC - 41 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 13.0  
*Available water storage in profile:* High (about 9.6 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Minor Components

#### Gerdrum

*Percent of map unit:* 5 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

**Absher**

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)  
*Hydric soil rating:* No

**Slopes more than 4 percent**

*Percent of map unit:* 5 percent  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

**42B—Joplin clay loam, 0 to 4 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cl5q  
*Elevation:* 3,080 to 4,000 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Prime farmland if irrigated

**Map Unit Composition**

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

**Description of Joplin**

**Setting**

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

**Typical profile**

*Ap - 0 to 4 inches:* clay loam  
*Bt - 4 to 9 inches:* clay loam  
*Bk - 9 to 26 inches:* clay loam  
*C - 26 to 60 inches:* clay loam

**Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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



## Custom Soil Resource Report

*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Minor Components

#### Joplin, calcareous

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Eloam

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

#### Slopes more than 4 percent

*Percent of map unit:* 5 percent  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

## 44B—Kevin clay loam, 0 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* cl64  
*Elevation:* 3,080 to 3,800 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

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

## Description of Kevin

### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

### Typical profile

*Ap - 0 to 5 inches:* clay loam  
*Bt - 5 to 9 inches:* clay loam  
*Bk - 9 to 24 inches:* clay loam  
*C - 24 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

## Minor Components

### Slopes more than 4 percent

*Percent of map unit:* 5 percent  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Kevin, calcareous

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Elloam

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)

*Hydric soil rating:* No

## **44C—Kevin clay loam, 4 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cl65

*Elevation:* 3,080 to 3,800 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 105 to 125 days

*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

*Kevin and similar soils:* 85 percent

*Minor components:* 15 percent

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

### **Description of Kevin**

#### **Setting**

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Till

#### **Typical profile**

*Ap - 0 to 5 inches:* clay loam

*Bt - 5 to 9 inches:* clay loam

*Bk - 9 to 24 inches:* clay loam

*C - 24 to 60 inches:* clay loam

#### **Properties and qualities**

*Slope:* 4 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Gypsum, maximum in profile:* 2 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 9.8 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

*Hydric soil rating:* No

**Minor Components**

**Slopes more than 8 percent**

*Percent of map unit:* 5 percent

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

*Hydric soil rating:* No

**Kevin, calcareous**

*Percent of map unit:* 5 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

*Hydric soil rating:* No

**Elloam**

*Percent of map unit:* 5 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)

*Hydric soil rating:* No

**47B—Marias silty clay, 0 to 4 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cl6b

*Elevation:* 3,000 to 3,400 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 105 to 125 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Marias and similar soils:* 90 percent

*Minor components:* 10 percent

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

**Description of Marias**

**Setting**

*Landform:* Fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

**Typical profile**

*Ap - 0 to 5 inches:* silty clay

*Bss - 5 to 27 inches:* clay

## Custom Soil Resource Report

*Bssy - 27 to 60 inches: clay*

### **Properties and qualities**

*Slope: 0 to 4 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural 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 in profile: 10 percent*

*Gypsum, maximum in profile: 5 percent*

*Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)*

*Sodium adsorption ratio, maximum in profile: 8.0*

*Available water storage in profile: Moderate (about 8.5 inches)*

### **Interpretive groups**

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 4e*

*Hydrologic Soil Group: D*

*Ecological site: Clayey (Cy) 10-14" p.z. (R052XN162MT)*

*Hydric soil rating: No*

### **Minor Components**

#### **Ethridge**

*Percent of map unit: 4 percent*

*Landform: Fans*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Ecological site: Clayey (Cy) 10-14" p.z. (R052XN162MT)*

*Hydric soil rating: No*

#### **Kobase**

*Percent of map unit: 4 percent*

*Landform: Fans*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Ecological site: Clayey (Cy) 10-14" p.z. (R052XN162MT)*

*Hydric soil rating: No*

#### **Mckenzie**

*Percent of map unit: 2 percent*

*Landform: Depressions*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Ecological site: Saline Upland (SU) 10-14" p.z. (R052XN170MT)*

*Hydric soil rating: Yes*

## 48B—Vanda silty clay, 0 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* cl6g  
*Elevation:* 3,000 to 3,400 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Vanda

#### Setting

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*E - 0 to 1 inches:* silty clay  
*Bkn - 1 to 9 inches:* silty clay  
*Bknyz - 9 to 60 inches:* silty clay

#### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 10 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Low (about 6.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)  
*Hydric soil rating:* No

**Minor Components**

**Benz**

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)  
*Hydric soil rating:* No

**Marvan**

*Percent of map unit:* 5 percent  
*Landform:* Lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

**Creed**

*Percent of map unit:* 3 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

**Gerdrum**

*Percent of map unit:* 2 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

**53E—Sunburst clay loam, 15 to 25 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cl6x  
*Elevation:* 3,080 to 3,480 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

## Description of Sunburst

### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

### Typical profile

*Ap - 0 to 6 inches:* clay loam  
*Bky - 6 to 60 inches:* clay

### Properties and qualities

*Slope:* 15 to 25 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 8.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey-Steep (CyStp) 10-14" p.z. (R052XN164MT)  
*Hydric soil rating:* No

## Minor Components

### Noncalcareous surface layers

*Percent of map unit:* 5 percent  
*Ecological site:* Clayey-Steep (CyStp) 10-14" p.z. (R052XN164MT)  
*Hydric soil rating:* No

### Hillon

*Percent of map unit:* 5 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XN168MT)  
*Hydric soil rating:* No

### Kevin

*Percent of map unit:* 5 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XN168MT)  
*Hydric soil rating:* No



## 53F—Sunburst clay loam, 25 to 70 percent slopes

### Map Unit Setting

*National map unit symbol:* cl6y  
*Elevation:* 3,080 to 3,480 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Sunburst

#### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

#### Typical profile

*Ap - 0 to 6 inches:* clay loam  
*Bky - 6 to 60 inches:* clay

#### Properties and qualities

*Slope:* 25 to 70 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 8.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey-Steep (CyStp) 10-14" p.z. (R052XN164MT)  
*Hydric soil rating:* No

**Minor Components**

**Hillon**

*Percent of map unit:* 5 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XN168MT)  
*Hydric soil rating:* No

**Kevin**

*Percent of map unit:* 5 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XN168MT)  
*Hydric soil rating:* No

**Noncalcareous surface layers**

*Percent of map unit:* 5 percent  
*Ecological site:* Clayey-Steep (CyStp) 10-14" p.z. (R052XN164MT)  
*Hydric soil rating:* No

**54B—Trudau loam, 0 to 4 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cl6z  
*Elevation:* 3,000 to 3,600 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Trudau and similar soils:* 85 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Trudau**

**Setting**

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

**Typical profile**

*Ap - 0 to 4 inches:* loam  
*Bw - 4 to 12 inches:* clay loam  
*Bkz - 12 to 60 inches:* stratified clay loam to sandy loam

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 13.0  
*Available water storage in profile:* Low (about 5.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* C  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)  
*Hydric soil rating:* No

### Minor Components

#### Marvan

*Percent of map unit:* 5 percent  
*Landform:* Lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

#### Vanda

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)  
*Hydric soil rating:* No

## 62A—Vaeda silty clay loam, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* cl7m  
*Elevation:* 3,200 to 3,400 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Vaeda and similar soils:* 90 percent

*Minor components:* 10 percent

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

**Description of Vaeda**

**Setting**

*Landform:* Fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

**Typical profile**

*E - 0 to 2 inches:* silty clay loam

*Bnz - 2 to 13 inches:* silty clay

*Bnyz - 13 to 60 inches:* silty clay loam

**Properties and qualities**

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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

*Gypsum, maximum in profile:* 5 percent

*Salinity, maximum in profile:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 20.0

*Available water storage in profile:* Moderate (about 6.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* D

*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)

*Hydric soil rating:* No

**Minor Components**

**Creed**

*Percent of map unit:* 5 percent

*Landform:* Fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)

*Hydric soil rating:* No

**Marias**

*Percent of map unit:* 5 percent

*Landform:* Fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)

*Hydric soil rating:* No

## **79B—Yamacall loam, 0 to 4 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cl95  
*Elevation:* 3,000 to 3,800 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Prime farmland if irrigated

### **Map Unit Composition**

*Yamacall and similar soils:* 85 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Yamacall**

#### **Setting**

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### **Typical profile**

*Ap - 0 to 6 inches:* loam  
*Bw - 6 to 11 inches:* loam  
*Bk - 11 to 60 inches:* loam

#### **Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Available water storage in profile:* Moderate (about 8.2 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

**Minor Components**

**Yetull**

*Percent of map unit:* 5 percent

*Landform:* Dunes

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Sands (Sa) 10-14" p.z. (R052XN175MT)

*Hydric soil rating:* No

**Slopes more than 4 percent**

*Percent of map unit:* 5 percent

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

*Hydric soil rating:* No

**141A—McKenzie clay, saline, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cl27

*Elevation:* 3,180 to 3,500 feet

*Mean annual precipitation:* 10 to 14 inches

*Frost-free period:* 105 to 125 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Mckenzie and similar soils:* 85 percent

*Minor components:* 15 percent

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

**Description of Mckenzie**

**Setting**

*Landform:* Depressions

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Glaciolacustrine deposits

**Typical profile**

*A - 0 to 4 inches:* clay

*Bw - 4 to 12 inches:* clay

*Byz - 12 to 60 inches:* clay

**Properties and qualities**

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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

## Custom Soil Resource Report

*Frequency of ponding:* Frequent  
*Calcium carbonate, maximum in profile:* 10 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 13.0  
*Available water storage in profile:* Low (about 4.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)  
*Hydric soil rating:* Yes

### Minor Components

#### Slickspots

*Percent of map unit:* 10 percent

#### Mckenzie

*Percent of map unit:* 5 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)  
*Hydric soil rating:* Yes

## 222E—Hillon-Neldore complex, 8 to 25 percent slopes

### Map Unit Setting

*National map unit symbol:* cl37  
*Elevation:* 3,080 to 4,100 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Hillon

#### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

## Custom Soil Resource Report

### Typical profile

*A - 0 to 5 inches:* clay loam  
*Bk - 5 to 30 inches:* clay loam  
*Bky - 30 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XN168MT)  
*Hydric soil rating:* No

## Description of Neldore

### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Residuum

### Typical profile

*A - 0 to 6 inches:* clay  
*C - 6 to 18 inches:* clay  
*Cr - 18 to 60 inches:* unweathered bedrock

### Properties and qualities

*Slope:* 15 to 25 percent  
*Depth to restrictive feature:* 10 to 20 inches to paralithic bedrock  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* Very low (about 2.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e



## Custom Soil Resource Report

*Hydrologic Soil Group:* D

*Ecological site:* Shallow Clay (SwC) 10-14" p.z. (R052XN179MT)

*Hydric soil rating:* No

### Minor Components

#### Slopes more than 25 percent

*Percent of map unit:* 10 percent

*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XN168MT)

*Hydric soil rating:* No

#### Rock outcrop

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

## 222F—Hillon-Neldore complex, 25 to 70 percent slopes

### Map Unit Setting

*National map unit symbol:* cl38

*Elevation:* 3,080 to 4,100 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 105 to 125 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Hillon and similar soils:* 45 percent

*Neldore and similar soils:* 40 percent

*Minor components:* 15 percent

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

### Description of Hillon

#### Setting

*Landform:* Hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Till

#### Typical profile

*A - 0 to 5 inches:* clay loam

*Bk - 5 to 30 inches:* clay loam

*Bky - 30 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 45 to 70 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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)

## Custom Soil Resource Report

*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XN168MT)  
*Hydric soil rating:* No

### Description of Neldore

#### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Residuum

#### Typical profile

*A - 0 to 6 inches:* clay  
*C - 6 to 18 inches:* clay  
*Cr - 18 to 60 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 25 to 45 percent  
*Depth to restrictive feature:* 10 to 20 inches to paralithic bedrock  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* Very low (about 2.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* D  
*Ecological site:* Shallow Clay (SwC) 10-14" p.z. (R052XN179MT)  
*Hydric soil rating:* No

### Minor Components

#### Slopes less than 25 percent

*Percent of map unit:* 10 percent  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XN168MT)  
*Hydric soil rating:* No

**Rock outcrop**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

**311B—Creed-Gerdrum-Absher complex, 0 to 4 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cl40

*Elevation:* 3,000 to 4,200 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 36 to 45 degrees F

*Frost-free period:* 105 to 125 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Creed and similar soils:* 35 percent

*Gerdrum and similar soils:* 30 percent

*Absher and similar soils:* 20 percent

*Minor components:* 15 percent

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

**Description of Creed**

**Setting**

*Landform:* Fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

**Typical profile**

*E - 0 to 5 inches:* clay loam

*Btn - 5 to 12 inches:* clay

*Bknyz - 12 to 60 inches:* clay loam

**Properties and qualities**

*Slope:* 0 to 4 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 10 percent

*Gypsum, maximum in profile:* 5 percent

*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 20.0

*Available water storage in profile:* Moderate (about 6.4 inches)

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4s  
*Hydrologic Soil Group:* C  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

### Description of Gerdrum

#### Setting

*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*E - 0 to 4 inches:* clay loam  
*Btn - 4 to 14 inches:* clay  
*Bknyz - 14 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Low (about 5.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

### Description of Absher

#### Setting

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*E - 0 to 2 inches:* clay  
*Btn - 2 to 13 inches:* clay  
*Bknyz - 13 to 60 inches:* silty clay

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Strongly saline (16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 70.0  
*Available water storage in profile:* Low (about 4.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)  
*Hydric soil rating:* No

### Minor Components

#### Ethridge

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

#### Evanston

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Ferd

*Percent of map unit:* 5 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

## **321B—Kobase silty clay loam, calcareous, 0 to 4 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cl42

*Elevation:* 3,000 to 3,700 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 105 to 125 days

*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

*Kobase and similar soils:* 85 percent

*Minor components:* 15 percent

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

### **Description of Kobase**

#### **Setting**

*Landform:* Fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

#### **Typical profile**

*Ap - 0 to 5 inches:* silty clay loam

*Bw - 5 to 12 inches:* silty clay loam

*Bk - 12 to 28 inches:* silty clay loam

*By - 28 to 60 inches:* silty clay loam

#### **Properties and qualities**

*Slope:* 0 to 4 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Gypsum, maximum in profile:* 3 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 9.7 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

## Custom Soil Resource Report

*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

### Minor Components

#### Marvan

*Percent of map unit:* 5 percent  
*Landform:* Lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

#### Vanda

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)  
*Hydric soil rating:* No

#### Noncalcareous surface layers

*Percent of map unit:* 5 percent  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

## 321C—Kobase silty clay loam, calcareous, 4 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* cl43  
*Elevation:* 3,000 to 3,700 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

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

### Description of Kobase

#### Setting

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

## Custom Soil Resource Report

### Typical profile

*Ap - 0 to 5 inches:* silty clay loam  
*Bw - 5 to 12 inches:* silty clay loam  
*Bk - 12 to 28 inches:* silty clay loam  
*By - 28 to 60 inches:* silty clay loam

### Properties and qualities

*Slope:* 4 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

### Minor Components

#### Noncalcareous surface layers

*Percent of map unit:* 5 percent  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

#### Slopes less than 4 percent

*Percent of map unit:* 4 percent  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

#### Marvan

*Percent of map unit:* 3 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

#### Vanda

*Percent of map unit:* 3 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)  
*Hydric soil rating:* No



### **332B—Phillips-Kevin complex, 0 to 4 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* 2sy83

*Elevation:* 2,000 to 3,870 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 46 degrees F

*Frost-free period:* 100 to 140 days

*Farmland classification:* Farmland of statewide importance

#### **Map Unit Composition**

*Phillips and similar soils:* 50 percent

*Kevin and similar soils:* 35 percent

*Minor components:* 15 percent

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

#### **Description of Phillips**

##### **Setting**

*Landform:* Ground moraines

*Landform position (three-dimensional):* Dip

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Parent material:* Clayey till

##### **Typical profile**

*A - 0 to 2 inches:* loam

*E - 2 to 7 inches:* loam

*Bt - 7 to 11 inches:* clay

*Btk - 11 to 15 inches:* clay loam

*Bk - 15 to 36 inches:* clay loam

*BCyz - 36 to 50 inches:* clay loam

*Cz - 50 to 79 inches:* clay loam

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

*Slope:* 0 to 4 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 12 percent

*Gypsum, maximum in profile:* 4 percent

*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 12.0

*Available water storage in profile:* High (about 9.8 inches)

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

### Description of Kevin

#### Setting

*Landform:* Ground moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Clayey till

#### Typical profile

*Ap - 0 to 6 inches:* clay loam  
*Bt - 6 to 9 inches:* clay loam  
*Bk1 - 9 to 23 inches:* clay loam  
*Bk2 - 23 to 41 inches:* clay loam  
*BCyz - 41 to 57 inches:* clay loam  
*Cz - 57 to 79 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 14 percent  
*Gypsum, maximum in profile:* 4 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 10.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

### Minor Components

#### Hillon

*Percent of map unit:* 5 percent  
*Landform:* Ground moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Elloam

*Percent of map unit:* 4 percent

## Custom Soil Resource Report

*Landform:* Ground moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

### **Ethridge**

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines  
*Microfeatures of landform position:* Swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* No

### **Nishon**

*Percent of map unit:* 2 percent  
*Landform:* Depressions on ground moraines  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

### **Thoeny**

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

## **364C—Chinook fine sandy loam, 0 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cl4j  
*Elevation:* 3,100 to 3,900 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

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

### **Description of Chinook**

#### **Setting**

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

## Custom Soil Resource Report

### Typical profile

*A - 0 to 6 inches:* fine sandy loam  
*Bw - 6 to 23 inches:* fine sandy loam  
*Bk - 23 to 60 inches:* fine sandy loam

### Properties and qualities

*Slope:* 0 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Available water storage in profile:* Moderate (about 7.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* A  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XN163MT)  
*Hydric soil rating:* No

### Minor Components

#### Slopes more than 8 percent

*Percent of map unit:* 5 percent  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XN163MT)  
*Hydric soil rating:* No

#### Kobase

*Percent of map unit:* 3 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

#### Kremlin

*Percent of map unit:* 3 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Lihen

*Percent of map unit:* 2 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XN163MT)  
*Hydric soil rating:* No

#### Busby

*Percent of map unit:* 2 percent

## Custom Soil Resource Report

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XN163MT)  
*Hydric soil rating:* No

### **372B—Evanston fine sandy loam, 0 to 4 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* cl4n  
*Elevation:* 3,200 to 3,500 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Farmland of statewide importance

#### **Map Unit Composition**

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

#### **Description of Evanston**

##### **Setting**

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

##### **Typical profile**

*Ap - 0 to 6 inches:* fine sandy loam  
*Bt - 6 to 15 inches:* clay loam  
*Bk - 15 to 32 inches:* clay loam  
*C - 32 to 60 inches:* clay loam

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

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Available water storage in profile:* High (about 9.9 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e

## Custom Soil Resource Report

*Hydrologic Soil Group:* B  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XN163MT)  
*Hydric soil rating:* No

### Minor Components

#### Slopes more than 4 percent

*Percent of map unit:* 10 percent  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XN163MT)  
*Hydric soil rating:* No

#### Chinook

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XN163MT)  
*Hydric soil rating:* No

## 391B—Ferd-Creed-Gerdrum complex, 0 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* cl52  
*Elevation:* 3,000 to 3,700 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Ferd and similar soils:* 40 percent  
*Creed and similar soils:* 35 percent  
*Gerdrum and similar soils:* 20 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Ferd

#### Setting

*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*Ap - 0 to 5 inches:* loam  
*E/Bt - 5 to 9 inches:* loam  
*Bt - 9 to 16 inches:* clay loam  
*Bk - 16 to 41 inches:* clay loam  
*BC - 41 to 60 inches:* clay loam

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 13.0  
*Available water storage in profile:* High (about 9.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Description of Creed

#### Setting

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*E - 0 to 5 inches:* loam  
*Btn - 5 to 12 inches:* clay  
*Bknyz - 12 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 10 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 20.0  
*Available water storage in profile:* Moderate (about 6.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4s  
*Hydrologic Soil Group:* C

## Custom Soil Resource Report

*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

### Description of Gerdrum

#### Setting

*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*E - 0 to 4 inches:* clay loam  
*Btn - 4 to 14 inches:* clay  
*Bknyz - 14 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Low (about 5.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

### Minor Components

#### Absher

*Percent of map unit:* 2 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)  
*Hydric soil rating:* No

#### Gerdrum

*Percent of map unit:* 2 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No



**Slickspots**

*Percent of map unit: 1 percent*

**402A—Gerdrum-Absher complex, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol: cl57  
Elevation: 3,000 to 3,600 feet  
Mean annual precipitation: 10 to 14 inches  
Mean annual air temperature: 39 to 45 degrees F  
Frost-free period: 105 to 125 days  
Farmland classification: Not prime farmland*

**Map Unit Composition**

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

**Description of Gerdrum**

**Setting**

*Landform: Terraces  
Down-slope shape: Linear  
Across-slope shape: Linear  
Parent material: Alluvium*

**Typical profile**

*E - 0 to 4 inches: clay loam  
Btn - 4 to 14 inches: clay  
Bknyz - 14 to 60 inches: clay loam*

**Properties and qualities**

*Slope: 0 to 2 percent  
Depth to restrictive feature: More than 80 inches  
Natural 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 in profile: 15 percent  
Gypsum, maximum in profile: 5 percent  
Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
Sodium adsorption ratio, maximum in profile: 30.0  
Available water storage in profile: Low (about 5.1 inches)*

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

### Description of Absher

#### Setting

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*E - 0 to 2 inches:* clay  
*Btn - 2 to 13 inches:* clay  
*Bknyz - 13 to 60 inches:* silty clay

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Strongly saline (16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 70.0  
*Available water storage in profile:* Low (about 4.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)  
*Hydric soil rating:* No

### Minor Components

#### Ferd

*Percent of map unit:* 5 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Nobe

*Percent of map unit:* 5 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)

*Hydric soil rating:* No

### **Slickspots**

*Percent of map unit:* 5 percent

## **421C—Joplin-Hillon loams, 2 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2t07b

*Elevation:* 2,000 to 3,870 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 46 degrees F

*Frost-free period:* 100 to 140 days

*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

*Joplin and similar soils:* 50 percent

*Hillon and similar soils:* 40 percent

*Minor components:* 10 percent

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

### **Description of Joplin**

#### **Setting**

*Landform:* Moraines

*Landform position (two-dimensional):* Footslope, toeslope

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

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Parent material:* Fine-loamy till

#### **Typical profile**

*Ap - 0 to 6 inches:* loam

*Bt - 6 to 9 inches:* clay loam

*Bk1 - 9 to 22 inches:* clay loam

*Bk2 - 22 to 41 inches:* clay loam

*BCyz - 41 to 57 inches:* loam

*Cz - 57 to 79 inches:* loam

#### **Properties and qualities**

*Slope:* 2 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 14 percent

## Custom Soil Resource Report

*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 9.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating:* No

### Description of Hillon

#### Setting

*Landform:* Moraines  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Fine-loamy till

#### Typical profile

*Ap - 0 to 6 inches:* loam  
*Bk1 - 6 to 14 inches:* loam  
*Bk2 - 14 to 29 inches:* loam  
*BCyz - 29 to 41 inches:* loam  
*Cz - 41 to 79 inches:* loam

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 12 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* Moderate (about 8.8 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating:* No

### Minor Components

#### Evanston

*Percent of map unit:* 4 percent

## Custom Soil Resource Report

*Landform:* Moraines  
*Landform position (three-dimensional):* Head slope  
*Microfeatures of landform position:* Swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* Overflow (Ov) LRU 52-A (R052XA060MT)  
*Hydric soil rating:* No

### **Fortbenton**

*Percent of map unit:* 2 percent  
*Landform:* Moraines  
*Landform position (two-dimensional):* Shoulder, backslope, summit  
*Landform position (three-dimensional):* Nose slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Ecological site:* Sandy (Sy) LRU 52-A (R052XA110MT)  
*Hydric soil rating:* No

### **Hillon, gravelly surface**

*Percent of map unit:* 2 percent  
*Landform:* Moraines  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Crest  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating:* No

### **Nishon**

*Percent of map unit:* 1 percent  
*Landform:* Moraines  
*Landform position (three-dimensional):* Base slope  
*Microfeatures of landform position:* Closed depressions  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* Closed Depression (CD) LRU 52-A (R052XA071MT)  
*Hydric soil rating:* Yes

### **Delpoint**

*Percent of map unit:* 1 percent  
*Landform:* Moraines  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XN168MT)  
*Hydric soil rating:* No

## 421D—Joplin-Hillon clay loams, 8 to 15 percent slopes

### Map Unit Setting

*National map unit symbol:* cl5c  
*Elevation:* 3,100 to 4,000 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Joplin and similar soils:* 45 percent  
*Hillon and similar soils:* 40 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Joplin

#### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

#### Typical profile

*Ap - 0 to 4 inches:* clay loam  
*Bt - 4 to 9 inches:* clay loam  
*Bk - 9 to 26 inches:* clay loam  
*C - 26 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C

## Custom Soil Resource Report

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Description of Hillon

#### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

#### Typical profile

*A - 0 to 5 inches:* clay loam  
*Bk - 5 to 30 inches:* clay loam  
*Bky - 30 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Minor Components

#### Elloam

*Percent of map unit:* 13 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

#### Mckenzie

*Percent of map unit:* 2 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)  
*Hydric soil rating:* Yes

## 423B—Joplin-Hillon clay loams, 0 to 3 percent slopes

### Map Unit Setting

*National map unit symbol:* cl5d

*Elevation:* 3,100 to 4,000 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 105 to 125 days

*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Joplin, calcareous, and similar soils:* 50 percent

*Hillon and similar soils:* 35 percent

*Minor components:* 15 percent

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

### Description of Joplin, Calcareous

#### Setting

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Till

#### Typical profile

*Ap - 0 to 4 inches:* clay loam

*Bt - 4 to 9 inches:* clay loam

*Bk - 9 to 26 inches:* clay loam

*C - 26 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 3 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Gypsum, maximum in profile:* 2 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 9.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C



## Custom Soil Resource Report

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Description of Hillon

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

#### Typical profile

*A - 0 to 5 inches:* clay loam  
*Bk - 5 to 30 inches:* clay loam  
*Bky - 30 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Minor Components

#### Noncalcareous surface layers

*Percent of map unit:* 7 percent  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Elloam

*Percent of map unit:* 6 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

#### Mckenzie

*Percent of map unit:* 2 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)  
*Hydric soil rating:* Yes

### 427B—Joplin complex, 0 to 4 percent slopes

#### Map Unit Setting

*National map unit symbol:* cl5l  
*Elevation:* 3,100 to 4,000 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Joplin and similar soils:* 45 percent  
*Joplin, calcareous, and similar soils:* 40 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Joplin

##### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

##### Typical profile

*Ap - 0 to 4 inches:* clay loam  
*Bt - 4 to 9 inches:* clay loam  
*Bk - 9 to 26 inches:* clay loam  
*C - 26 to 60 inches:* clay loam

##### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.3 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

## Custom Soil Resource Report

*Land capability classification (nonirrigated): 3e*  
*Hydrologic Soil Group: C*  
*Ecological site: Silty (Si) 10-14" p.z. (R052XN161MT)*  
*Hydric soil rating: No*

### Description of Joplin, Calcareous

#### Setting

*Landform: Till plains*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Parent material: Till*

#### Typical profile

*Ap - 0 to 4 inches: clay loam*  
*Bt - 4 to 9 inches: clay loam*  
*Bk - 9 to 26 inches: clay loam*  
*C - 26 to 60 inches: clay loam*

#### Properties and qualities

*Slope: 0 to 4 percent*  
*Depth to restrictive feature: More than 80 inches*  
*Natural 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 in profile: 15 percent*  
*Gypsum, maximum in profile: 2 percent*  
*Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)*  
*Available water storage in profile: High (about 9.3 inches)*

#### Interpretive groups

*Land capability classification (irrigated): None specified*  
*Land capability classification (nonirrigated): 4e*  
*Hydrologic Soil Group: C*  
*Ecological site: Silty (Si) 10-14" p.z. (R052XN161MT)*  
*Hydric soil rating: No*

### Minor Components

#### Elloam

*Percent of map unit: 7 percent*  
*Landform: Till plains*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Ecological site: Claypan (Cp) 10-14" p.z. (R052XN086MT)*  
*Hydric soil rating: No*

#### Slopes more than 4 percent

*Percent of map unit: 6 percent*  
*Ecological site: Silty (Si) 10-14" p.z. (R052XN161MT)*  
*Hydric soil rating: No*

#### Mckenzie

*Percent of map unit: 2 percent*

## Custom Soil Resource Report

*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)  
*Hydric soil rating:* Yes

### 441C—Kevin-Hillon clay loams, 2 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2t071  
*Elevation:* 2,490 to 3,800 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

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

#### Description of Kevin

##### Setting

*Landform:* Rises  
*Landform position (two-dimensional):* Backslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Fine-loamy till

##### Typical profile

*Ap - 0 to 6 inches:* clay loam  
*Bt - 6 to 9 inches:* clay loam  
*Bk1 - 9 to 23 inches:* clay loam  
*Bk2 - 23 to 41 inches:* clay loam  
*BCyz - 41 to 58 inches:* clay loam  
*Cz - 58 to 79 inches:* clay loam

##### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 14 percent

## Custom Soil Resource Report

*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 10.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating:* No

### Description of Hillon

#### Setting

*Landform:* Rises  
*Landform position (two-dimensional):* Summit, shoulder  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Fine-loamy till

#### Typical profile

*Ap - 0 to 6 inches:* clay loam  
*Bk1 - 6 to 16 inches:* clay loam  
*Bk2 - 16 to 32 inches:* clay loam  
*BCyz - 32 to 42 inches:* clay loam  
*Cz - 42 to 79 inches:* clay loam

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 14 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 9.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating:* No

### Minor Components

#### Scobey

*Percent of map unit:* 8 percent  
*Landform:* Rises

## Custom Soil Resource Report

*Landform position (two-dimensional):* Footslope, backslope  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating:* No

### **Hillon, gravelly surface**

*Percent of map unit:* 3 percent  
*Landform:* Knolls  
*Landform position (two-dimensional):* Summit  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating:* No

### **Ethridge**

*Percent of map unit:* 3 percent  
*Landform:* Swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* Clayey (Cy) LRU 52-A (R052XA001MT)  
*Hydric soil rating:* No

### **Nishon**

*Percent of map unit:* 1 percent  
*Landform:* Depressions  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* Overflow (Ov) LRU 52-A (R052XA060MT)  
*Hydric soil rating:* Yes

## **445B—Kevin complex, 0 to 4 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cl5y  
*Elevation:* 3,100 to 3,800 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

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

**Description of Kevin**

**Setting**

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

**Typical profile**

*Ap - 0 to 5 inches:* clay loam  
*Bt - 5 to 9 inches:* clay loam  
*Bk - 9 to 24 inches:* clay loam  
*C - 24 to 60 inches:* clay loam

**Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.8 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

**Description of Kevin, Calcareous**

**Setting**

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

**Typical profile**

*Ap - 0 to 5 inches:* clay loam  
*Bt - 5 to 9 inches:* clay loam  
*Bk - 9 to 24 inches:* clay loam  
*C - 24 to 60 inches:* clay loam

**Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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

## Custom Soil Resource Report

*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Minor Components

#### Elloam

*Percent of map unit:* 7 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

#### Slopes more than 4 percent

*Percent of map unit:* 7 percent  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 1 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XN166MT)  
*Hydric soil rating:* Yes

## 446C—Kevin-Elloam clay loams, 2 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* cl61  
*Elevation:* 3,100 to 3,800 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Kevin and similar soils:* 55 percent



## Custom Soil Resource Report

*Elloam and similar soils: 35 percent*

*Minor components: 8 percent*

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

### Description of Kevin

#### Setting

*Landform: Till plains*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Till*

#### Typical profile

*Ap - 0 to 5 inches: clay loam*

*Bt - 5 to 9 inches: clay loam*

*Bk - 9 to 24 inches: clay loam*

*C - 24 to 60 inches: clay loam*

#### Properties and qualities

*Slope: 4 to 8 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural 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 in profile: 15 percent*

*Gypsum, maximum in profile: 2 percent*

*Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)*

*Available water storage in profile: High (about 9.8 inches)*

#### Interpretive groups

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 3e*

*Hydrologic Soil Group: C*

*Ecological site: Silty (Si) 10-14" p.z. (R052XN161MT)*

*Hydric soil rating: No*

### Description of Elloam

#### Setting

*Landform: Till plains*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Till*

#### Typical profile

*E - 0 to 4 inches: clay loam*

*Btn - 4 to 15 inches: clay loam*

*Btkn - 15 to 25 inches: clay loam*

*Bknzy - 25 to 60 inches: clay loam*

#### Properties and qualities

*Slope: 2 to 4 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural drainage class: Well drained*

## 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:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 15 percent

*Gypsum, maximum in profile:* 5 percent

*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 25.0

*Available water storage in profile:* Moderate (about 6.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* D

*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)

*Hydric soil rating:* No

### Minor Components

#### Kevin, calcareous

*Percent of map unit:* 2 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)

*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 2 percent

*Landform:* Depressions

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XN166MT)

*Hydric soil rating:* Yes

#### Absher

*Percent of map unit:* 2 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)

*Hydric soil rating:* No

#### Slickspots

*Percent of map unit:* 2 percent

## 521B—Elloam-Absher clay loams, 0 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* cl6v  
*Elevation:* 3,000 to 3,700 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Elloam and similar soils:* 50 percent  
*Absher and similar soils:* 40 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Elloam

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

#### Typical profile

*E - 0 to 4 inches:* clay loam  
*Btn - 4 to 15 inches:* clay loam  
*Btkn - 15 to 25 inches:* clay loam  
*Bknzy - 25 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 25.0  
*Available water storage in profile:* Moderate (about 6.6 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s

## Custom Soil Resource Report

*Hydrologic Soil Group:* D  
*Ecological site:* Claypan (Cp) 10-14" p.z. (R052XN086MT)  
*Hydric soil rating:* No

### Description of Absher

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

#### Typical profile

*E - 0 to 2 inches:* clay loam  
*Btn - 2 to 13 inches:* clay  
*Bknyz - 13 to 60 inches:* silty clay

#### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Strongly saline (16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 70.0  
*Available water storage in profile:* Low (about 4.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XN172MT)  
*Hydric soil rating:* No

### Minor Components

#### Phillips

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Slickspots

*Percent of map unit:* 5 percent

## 561B—Scobey-Kevin clay loams, 0 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* 2t3kb  
*Elevation:* 2,490 to 3,800 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

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

### Description of Scobey

#### Setting

*Landform:* Flats  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey till

#### Typical profile

*Ap - 0 to 6 inches:* clay loam  
*Bt - 6 to 15 inches:* clay  
*Bk1 - 15 to 29 inches:* clay loam  
*Bk2 - 29 to 43 inches:* clay loam  
*BCyz - 43 to 61 inches:* clay loam  
*Cz - 61 to 79 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 14 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 9.8 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating:* No

**Description of Kevin**

**Setting**

*Landform:* Flats  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Fine-loamy till

**Typical profile**

*Ap - 0 to 6 inches:* clay loam  
*Bt - 6 to 9 inches:* clay loam  
*Bk1 - 9 to 23 inches:* clay loam  
*Bk2 - 23 to 41 inches:* clay loam  
*BCyz - 41 to 58 inches:* clay loam  
*Cz - 58 to 79 inches:* clay loam

**Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 14 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 10.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating:* No

**Minor Components**

**Hillon**

*Percent of map unit:* 8 percent  
*Landform:* Rises  
*Landform position (two-dimensional):* Summit, shoulder  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)

## Custom Soil Resource Report

*Hydric soil rating:* No

### **Elloam**

*Percent of map unit:* 3 percent

*Landform:* Flats

*Landform position (three-dimensional):* Dip

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Claypan (Cp) LRU 52-A (R052XA006MT)

*Hydric soil rating:* No

### **Acel**

*Percent of map unit:* 2 percent

*Landform:* Swales

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)

*Hydric soil rating:* No

### **Nishon**

*Percent of map unit:* 2 percent

*Landform:* Depressions

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Ecological site:* Overflow (Ov) LRU 52-A (R052XA060MT)

*Hydric soil rating:* Yes

## **601A—Havre-Glendive complex, 0 to 2 percent slopes, rarely flooded**

### **Map Unit Setting**

*National map unit symbol:* cl7j

*Elevation:* 3,000 to 3,900 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 37 to 45 degrees F

*Frost-free period:* 105 to 125 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Havre and similar soils:* 50 percent

*Glendive and similar soils:* 35 percent

*Minor components:* 15 percent

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

### **Description of Havre**

#### **Setting**

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

## Custom Soil Resource Report

### Typical profile

*Ap - 0 to 6 inches:* loam  
*C1 - 6 to 24 inches:* stratified fine sandy loam to clay loam  
*C2 - 24 to 60 inches:* stratified fine sandy loam to clay loam

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Available water storage in profile:* High (about 9.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

## Description of Glendive

### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*A - 0 to 5 inches:* fine sandy loam  
*C1 - 5 to 16 inches:* sandy loam  
*C2 - 16 to 60 inches:* stratified loamy fine sand to silt loam

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 7.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* A  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XN163MT)  
*Hydric soil rating:* No



**Minor Components**

**Harlake**

*Percent of map unit:* 5 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

**Occasionally flooded soils**

*Percent of map unit:* 4 percent  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

**Bigzag**

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XN171MT)  
*Hydric soil rating:* Yes

**Big sandy**

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Draft Subirrigated (Sb) RRU 46-N 13-19" p.z. (R046XN256MT)  
*Hydric soil rating:* Yes

**793B—Yamacall loam, calcareous, 0 to 4 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cl90  
*Elevation:* 3,000 to 3,900 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

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

## Description of Yamacall

### Setting

*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*Ap - 0 to 6 inches:* loam  
*Bw - 6 to 11 inches:* loam  
*Bk - 11 to 60 inches:* loam

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Available water storage in profile:* Moderate (about 8.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

## Minor Components

### Noncalcareous surface layers

*Percent of map unit:* 5 percent  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### Trudau

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XN170MT)  
*Hydric soil rating:* No

### Slopes more than 4 percent

*Percent of map unit:* 5 percent  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

## 971C—Neldore-Bascovy clays, 2 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* clb1  
*Elevation:* 3,000 to 4,000 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Neldore and similar soils:* 45 percent  
*Bascovy and similar soils:* 40 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Neldore

#### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Residuum

#### Typical profile

*A - 0 to 6 inches:* clay  
*C - 6 to 18 inches:* clay  
*Cr - 18 to 60 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* 10 to 20 inches to paralithic bedrock  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* Very low (about 2.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Shallow Clay (SwC) 10-14" p.z. (R052XN179MT)  
*Hydric soil rating:* No

## Description of Bascovy

### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Residuum

### Typical profile

*A - 0 to 4 inches:* clay  
*Bss1 - 4 to 13 inches:* clay  
*Bss2 - 13 to 30 inches:* clay  
*Cr - 30 to 60 inches:* unweathered bedrock

### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock  
*Natural 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 in profile:* 5 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 13.0  
*Available water storage in profile:* Low (about 4.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* D  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

## Minor Components

### Slopes more than 8 percent

*Percent of map unit:* 5 percent  
*Ecological site:* Shallow Clay (SwC) 10-14" p.z. (R052XN179MT)  
*Hydric soil rating:* No

### Marias

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

### Marvan

*Percent of map unit:* 5 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

### **W—Water**

#### **Map Unit Composition**

*Water:* 100 percent

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

# Soil Information for All Uses

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## Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities 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 property or quality.

## Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

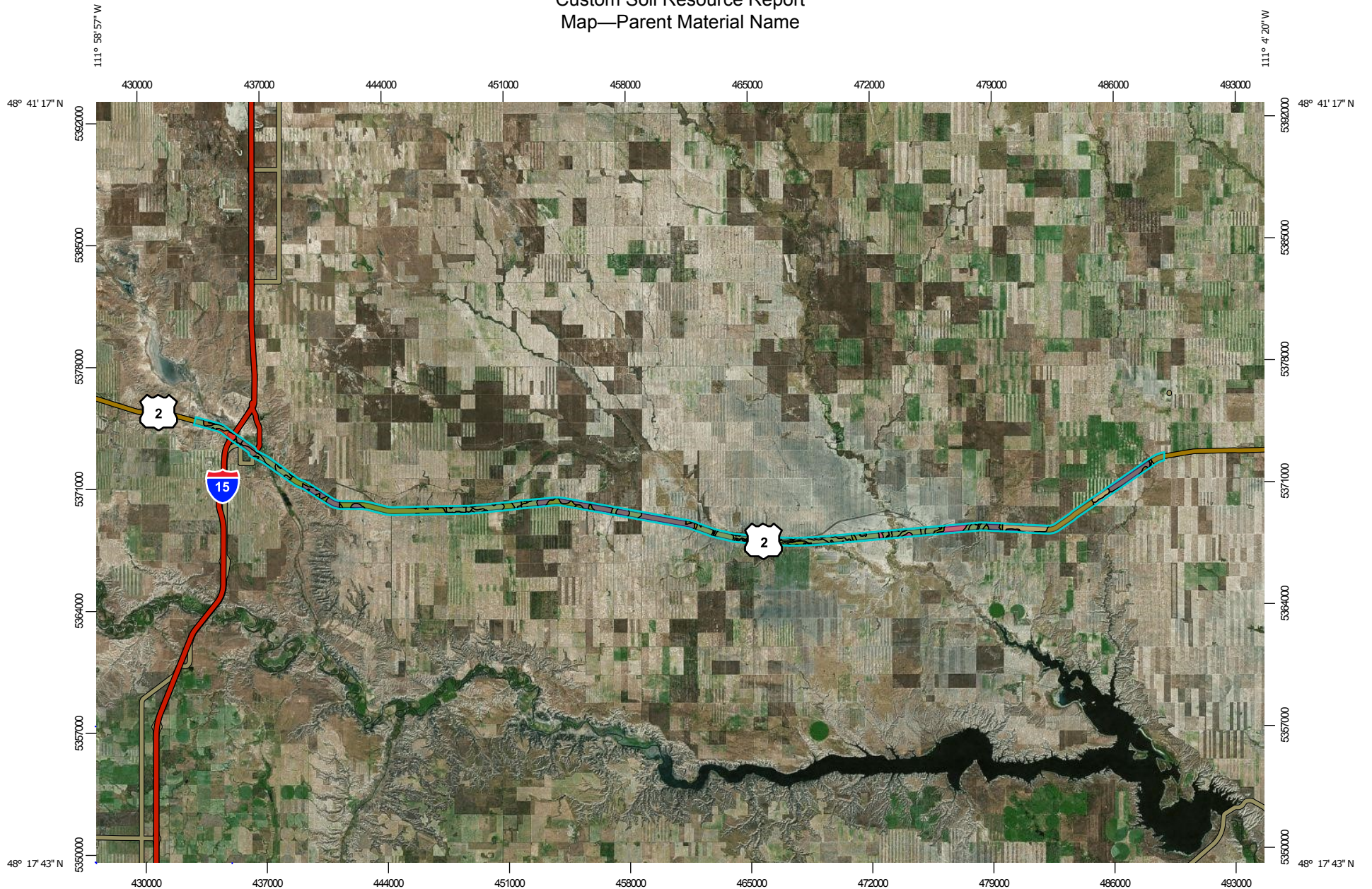
## Parent Material Name

Parent material name is a term for the general physical, chemical, and mineralogical composition of the unconsolidated material, mineral or organic, in which the soil forms. Mode of deposition and/or weathering may be implied by the name.

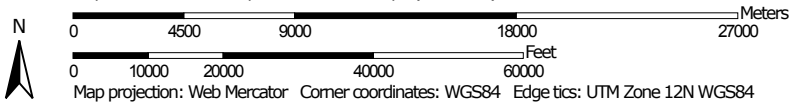
The soil surveyor uses parent material to develop a model used for soil mapping. Soil scientists and specialists in other disciplines use parent material to help interpret soil boundaries and project performance of the material below the soil. Many soil properties relate to parent material. Among these properties are proportions of sand, silt, and clay; chemical content; bulk density; structure; and the kinds and amounts of rock fragments. These properties affect interpretations and may be criteria used to separate soil series. Soil properties and landscape information may imply the kind of parent material.

For each soil in the database, one or more parent materials may be identified. One is marked as the representative or most commonly occurring. The representative parent material name is presented here.

# Custom Soil Resource Report Map—Parent Material Name




Map Scale: 1:307,000 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)

**Soils**





**Soil Rating Polygons**





-  alluvium
-  clayey till
-  fine-loamy till
-  glaciofluvial deposits
-  glaciolacustrine deposits
-  residuum
-  till
-  Not rated or not available

**Soil Rating Lines**


-  alluvium
-  clayey till
-  fine-loamy till
-  glaciofluvial deposits
-  glaciolacustrine deposits
-  residuum
-  till
-  Not rated or not available

**Soil Rating Points**






-  alluvium
-  clayey till
-  fine-loamy till
-  glaciofluvial deposits

-  glaciolacustrine deposits
-  residuum
-  till
-  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: Liberty County, Montana  
 Survey Area Data: Version 12, Sep 28, 2015

Soil Survey Area: Toole County, Montana  
 Survey Area Data: Version 11, Sep 28, 2015

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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



**MAP LEGEND**

**MAP INFORMATION**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Custom Soil Resource Report

**Table—Parent Material Name**

Parent Material Name— Summary by Map Unit — Liberty County, Montana (MT051)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
35B	Assinniboine fine sandy loam, 0 to 4 percent slopes		1.5	0.0%
224E	Hillon-Joplin loams, 8 to 25 percent slopes		11.0	0.2%
331B	Phillips-Elloam complex, 0 to 4 percent slopes		86.6	1.3%
421C	Joplin-Hillon loams, 2 to 8 percent slopes	fine-loamy till	464.8	7.0%
442C	Kevin-Elloam clay loams, 2 to 8 percent slopes		295.0	4.4%
503B	Telstad-Joplin loams, 0 to 4 percent slopes	fine-loamy till	21.8	0.3%
561B	Scobey-Kevin clay loams, 0 to 4 percent slopes	clayey till	282.1	4.2%
561C	Scobey-Kevin clay loams, 2 to 8 percent slopes	clayey till	28.6	0.4%
605C	Yamacall-Havre loams, 0 to 8 percent slopes		11.7	0.2%
<b>Subtotals for Soil Survey Area</b>			<b>1,203.2</b>	<b>18.0%</b>
<b>Totals for Area of Interest</b>			<b>6,672.3</b>	<b>100.0%</b>

Parent Material Name— Summary by Map Unit — Toole County, Montana (MT101)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
16B	Degrad loam, 0 to 4 percent slopes	alluvium	0.0	0.0%
19B	Kenilworth loam, 0 to 4 percent slopes	alluvium	25.5	0.4%
22E	Hillon clay loam, 8 to 25 percent slopes	till	21.8	0.3%
23A	Acel silty clay loam, 0 to 2 percent slopes	glaciofluvial deposits	3.9	0.1%
28A	Nishon clay loam, 0 to 1 percent slopes	alluvium	3.6	0.1%
29B	Nunemaker silty clay loam, 0 to 4 percent slopes	glaciofluvial deposits	246.7	3.7%
29C	Nunemaker silty clay loam, 4 to 8 percent slopes	glaciofluvial deposits	60.1	0.9%
30B	Marvan silty clay, 0 to 4 percent slopes	alluvium	381.0	5.7%
30C	Marvan silty clay, 4 to 8 percent slopes	alluvium	13.5	0.2%

Custom Soil Resource Report

Parent Material Name— Summary by Map Unit — Toole County, Montana (MT101)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
32B	Kobase silty clay loam, 0 to 4 percent slopes	alluvium	334.1	5.0%
32C	Kobase silty clay loam, 4 to 8 percent slopes	alluvium	115.8	1.7%
37B	Evanston clay loam, 0 to 4 percent slopes	alluvium	128.6	1.9%
38B	Ethridge clay loam, 0 to 4 percent slopes	alluvium	45.3	0.7%
39B	Ferd loam, 0 to 4 percent slopes	alluvium	93.3	1.4%
42B	Joplin clay loam, 0 to 4 percent slopes	till	159.1	2.4%
44B	Kevin clay loam, 0 to 4 percent slopes	till	13.4	0.2%
44C	Kevin clay loam, 4 to 8 percent slopes	till	22.2	0.3%
47B	Marias silty clay, 0 to 4 percent slopes	alluvium	223.0	3.3%
48B	Vanda silty clay, 0 to 4 percent slopes	alluvium	56.1	0.8%
53E	Sunburst clay loam, 15 to 25 percent slopes	till	90.0	1.3%
53F	Sunburst clay loam, 25 to 70 percent slopes	till	84.2	1.3%
54B	Trudau loam, 0 to 4 percent slopes	alluvium	37.0	0.6%
62A	Vaeda silty clay loam, 0 to 2 percent slopes	alluvium	130.5	2.0%
79B	Yamacall loam, 0 to 4 percent slopes	alluvium	3.5	0.1%
141A	McKenzie clay, saline, 0 to 2 percent slopes	glaciolacustrine deposits	49.9	0.7%
222E	Hillon-Neldore complex, 8 to 25 percent slopes	till	48.4	0.7%
222F	Hillon-Neldore complex, 25 to 70 percent slopes	till	159.0	2.4%
311B	Creed-Gerdrum-Absher complex, 0 to 4 percent slopes	alluvium	159.5	2.4%
321B	Kobase silty clay loam, calcareous, 0 to 4 percent slopes	alluvium	214.5	3.2%
321C	Kobase silty clay loam, calcareous, 4 to 8 percent slopes	alluvium	30.4	0.5%
332B	Phillips-Kevin complex, 0 to 4 percent slopes	clayey till	834.0	12.5%
364C	Chinook fine sandy loam, 0 to 8 percent slopes	alluvium	0.7	0.0%

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Parent Material Name— Summary by Map Unit — Toole County, Montana (MT101)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
372B	Evanston fine sandy loam, 0 to 4 percent slopes	alluvium	246.8	3.7%
391B	Ferd-Creed-Gerdrum complex, 0 to 4 percent slopes	alluvium	19.8	0.3%
402A	Gerdrum-Absher complex, 0 to 2 percent slopes	alluvium	9.4	0.1%
421C	Joplin-Hillon loams, 2 to 8 percent slopes	fine-loamy till	21.6	0.3%
421D	Joplin-Hillon clay loams, 8 to 15 percent slopes	till	8.4	0.1%
423B	Joplin-Hillon clay loams, 0 to 3 percent slopes	till	78.0	1.2%
427B	Joplin complex, 0 to 4 percent slopes	till	612.1	9.2%
441C	Kevin-Hillon clay loams, 2 to 8 percent slopes	fine-loamy till	32.3	0.5%
445B	Kevin complex, 0 to 4 percent slopes	till	26.9	0.4%
446C	Kevin-Elloam clay loams, 2 to 8 percent slopes	till	17.7	0.3%
521B	Elloam-Absher clay loams, 0 to 4 percent slopes	till	26.3	0.4%
561B	Scobey-Kevin clay loams, 0 to 4 percent slopes	clayey till	249.8	3.7%
601A	Havre-Glendive complex, 0 to 2 percent slopes, rarely flooded	alluvium	233.7	3.5%
793B	Yamacall loam, calcareous, 0 to 4 percent slopes	alluvium	2.4	0.0%
971C	Neldore-Bascovy clays, 2 to 8 percent slopes	residuum	86.4	1.3%
W	Water		8.9	0.1%
<b>Subtotals for Soil Survey Area</b>			<b>5,469.1</b>	<b>82.0%</b>
<b>Totals for Area of Interest</b>			<b>6,672.3</b>	<b>100.0%</b>

**Rating Options—Parent Material Name**

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Lower

## 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.

## Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

## Prime and other Important Farmlands

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

*Prime farmland* is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate

## Custom Soil Resource Report

quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

*Unique farmland* is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

### Report—Prime and other Important Farmlands

Prime and other Important Farmlands—Liberty County, Montana		
Map Symbol	Map Unit Name	Farmland Classification
35B	Assinniboine fine sandy loam, 0 to 4 percent slopes	Farmland of statewide importance
224E	Hillon-Joplin loams, 8 to 25 percent slopes	Not prime farmland
331B	Phillips-Elloam complex, 0 to 4 percent slopes	Not prime farmland
421C	Joplin-Hillon loams, 2 to 8 percent slopes	Farmland of statewide importance
442C	Kevin-Elloam clay loams, 2 to 8 percent slopes	Not prime farmland

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<b>Prime and other Important Farmlands—Liberty County, Montana</b>		
<b>Map Symbol</b>	<b>Map Unit Name</b>	<b>Farmland Classification</b>
503B	Telstad-Joplin loams, 0 to 4 percent slopes	Prime farmland if irrigated
561B	Scobey-Kevin clay loams, 0 to 4 percent slopes	Prime farmland if irrigated
561C	Scobey-Kevin clay loams, 2 to 8 percent slopes	Farmland of statewide importance
605C	Yamacall-Havre loams, 0 to 8 percent slopes	Farmland of statewide importance

<b>Prime and other Important Farmlands—Toole County, Montana</b>		
<b>Map Symbol</b>	<b>Map Unit Name</b>	<b>Farmland Classification</b>
16B	Degrad loam, 0 to 4 percent slopes	Prime farmland if irrigated
19B	Kenilworth loam, 0 to 4 percent slopes	Farmland of statewide importance
22E	Hillon clay loam, 8 to 25 percent slopes	Not prime farmland
23A	Acel silty clay loam, 0 to 2 percent slopes	Farmland of statewide importance
28A	Nishon clay loam, 0 to 1 percent slopes	Not prime farmland
29B	Nunemaker silty clay loam, 0 to 4 percent slopes	Farmland of statewide importance
29C	Nunemaker silty clay loam, 4 to 8 percent slopes	Farmland of statewide importance
30B	Marvan silty clay, 0 to 4 percent slopes	Not prime farmland
30C	Marvan silty clay, 4 to 8 percent slopes	Not prime farmland
32B	Kobase silty clay loam, 0 to 4 percent slopes	Farmland of statewide importance
32C	Kobase silty clay loam, 4 to 8 percent slopes	Farmland of statewide importance
37B	Evanston clay loam, 0 to 4 percent slopes	Prime farmland if irrigated
38B	Ethridge clay loam, 0 to 4 percent slopes	Prime farmland if irrigated
39B	Ferd loam, 0 to 4 percent slopes	Not prime farmland
42B	Joplin clay loam, 0 to 4 percent slopes	Prime farmland if irrigated
44B	Kevin clay loam, 0 to 4 percent slopes	Prime farmland if irrigated
44C	Kevin clay loam, 4 to 8 percent slopes	Farmland of statewide importance
47B	Marias silty clay, 0 to 4 percent slopes	Not prime farmland
48B	Vanda silty clay, 0 to 4 percent slopes	Not prime farmland
53E	Sunburst clay loam, 15 to 25 percent slopes	Not prime farmland
53F	Sunburst clay loam, 25 to 70 percent slopes	Not prime farmland
54B	Trudau loam, 0 to 4 percent slopes	Not prime farmland
62A	Vaeda silty clay loam, 0 to 2 percent slopes	Not prime farmland
79B	Yamacall loam, 0 to 4 percent slopes	Prime farmland if irrigated
141A	McKenzie clay, saline, 0 to 2 percent slopes	Not prime farmland
222E	Hillon-Neldore complex, 8 to 25 percent slopes	Not prime farmland
222F	Hillon-Neldore complex, 25 to 70 percent slopes	Not prime farmland
311B	Creed-Gerdrum-Absher complex, 0 to 4 percent slopes	Not prime farmland
321B	Kobase silty clay loam, calcareous, 0 to 4 percent slopes	Farmland of statewide importance
321C	Kobase silty clay loam, calcareous, 4 to 8 percent slopes	Farmland of statewide importance
332B	Phillips-Kevin complex, 0 to 4 percent slopes	Farmland of statewide importance
364C	Chinook fine sandy loam, 0 to 8 percent slopes	Farmland of statewide importance

## Custom Soil Resource Report

<b>Prime and other Important Farmlands—Toole County, Montana</b>		
<b>Map Symbol</b>	<b>Map Unit Name</b>	<b>Farmland Classification</b>
372B	Evanston fine sandy loam, 0 to 4 percent slopes	Farmland of statewide importance
391B	Ferd-Creed-Gerdrum complex, 0 to 4 percent slopes	Not prime farmland
402A	Gerdrum-Absher complex, 0 to 2 percent slopes	Not prime farmland
421C	Joplin-Hillon loams, 2 to 8 percent slopes	Farmland of statewide importance
421D	Joplin-Hillon clay loams, 8 to 15 percent slopes	Not prime farmland
423B	Joplin-Hillon clay loams, 0 to 3 percent slopes	Farmland of statewide importance
427B	Joplin complex, 0 to 4 percent slopes	Farmland of statewide importance
441C	Kevin-Hillon clay loams, 2 to 8 percent slopes	Farmland of statewide importance
445B	Kevin complex, 0 to 4 percent slopes	Farmland of statewide importance
446C	Kevin-Elloam clay loams, 2 to 8 percent slopes	Not prime farmland
521B	Elloam-Absher clay loams, 0 to 4 percent slopes	Not prime farmland
561B	Scobey-Kevin clay loams, 0 to 4 percent slopes	Prime farmland if irrigated
601A	Havre-Glendive complex, 0 to 2 percent slopes, rarely flooded	Not prime farmland
793B	Yamacall loam, calcareous, 0 to 4 percent slopes	Farmland of statewide importance
971C	Neldore-Bascovy clays, 2 to 8 percent slopes	Not prime farmland
W	Water	Not prime farmland



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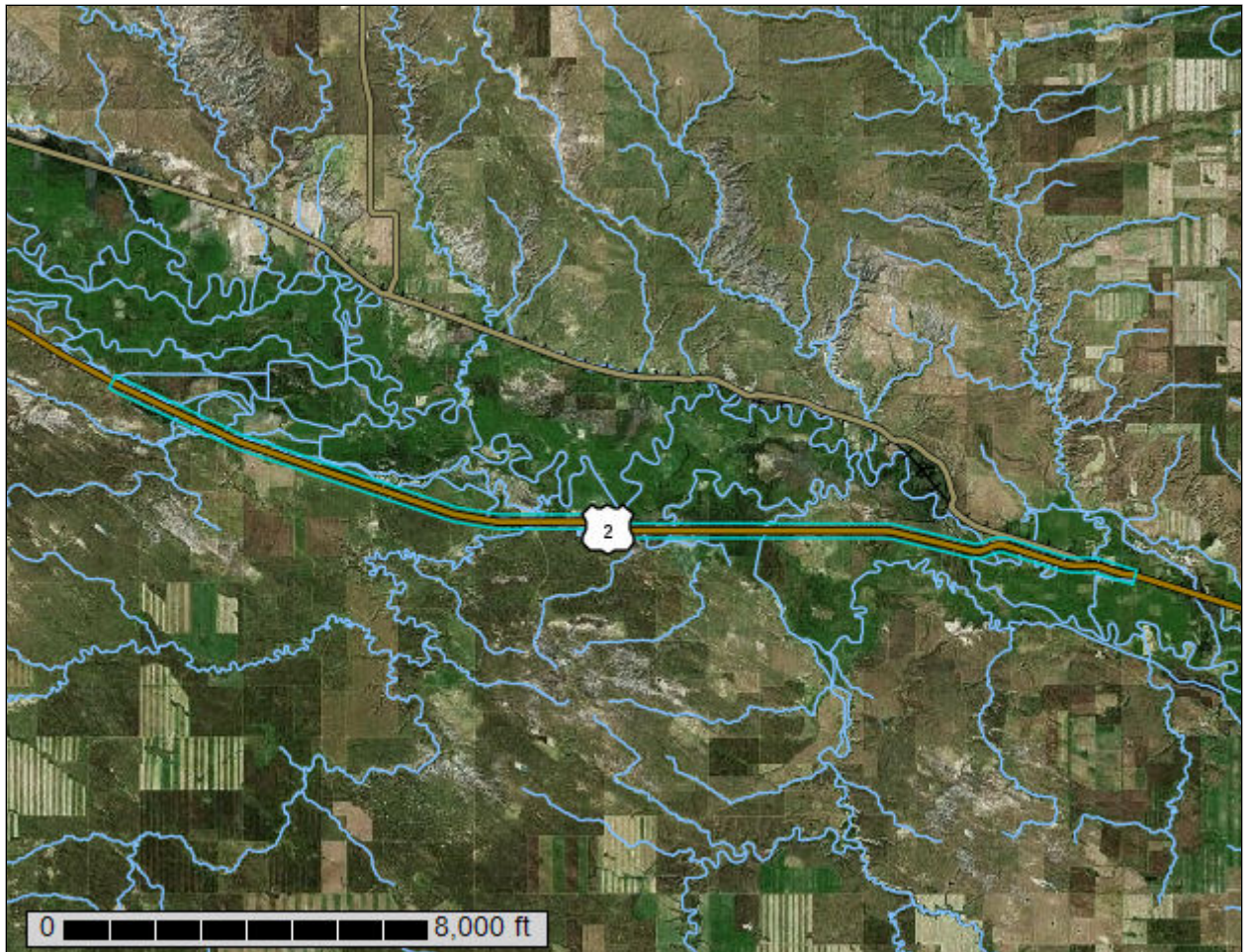
United States  
Department of  
Agriculture

**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 Blaine County and Part of Phillips County Area, Montana, and Phillips County Area, Montana



# 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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# Contents

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<b>Preface</b> .....	2
<b>How Soil Surveys Are Made</b> .....	6
<b>Soil Map</b> .....	9
Soil Map.....	10
Legend.....	11
Map Unit Legend.....	13
Map Unit Descriptions.....	14
Blaine County and Part of Phillips County Area, Montana.....	16
2—Assinniboine fine sandy loam, 0 to 4 percent slopes.....	16
20—Bowdoin clay.....	17
26—Cabbart-Hillon association, steep.....	18
31—Chinook fine sandy loam, 2 to 6 percent slopes.....	20
48—Hanly loamy fine sand.....	21
50—Harlem silty clay loam.....	23
51—Harlem silty clay loam, saline.....	24
52—Harlem silty clay.....	25
53—Harlem silty clay, saline.....	27
54—Harlem variant-Lardell silty clay loams.....	29
55—Havre loam.....	31
57—Havre silty clay loam.....	32
59—Havre, Hanly, and Glendive soils, channeled.....	33
60—Havre variant-Lardell silty clay loams.....	36
67—Hillon clay loam, 25 to 45 percent slopes.....	38
68—Hillon-Kevin clay loams, 15 to 35 percent slopes.....	39
76—Lardell silty clay loam.....	41
91—Nishon clay loam.....	43
95—Phillips loam, 0 to 4 percent slopes.....	44
97—Phillips-Elloam complex, 0 to 4 percent slopes.....	46
98—Phillips-Elloam complex, 4 to 8 percent slopes.....	48
119—Telstad loam, 0 to 4 percent slopes.....	50
121—Telstad-Joplin loams, 2 to 8 percent slopes.....	52
123—Thoeny-Elloam complex, 0 to 4 percent slopes.....	55
131—Ustic Torrifluvents, wet.....	57
153—Water.....	58
Phillips County Area, Montana.....	59
60A—Havre loam, 0 to 2 percent slopes.....	59
90A—Harlake clay, 0 to 2 percent slopes.....	60
93A—Bowdoin clay, 0 to 2 percent slopes.....	62
604A—Bullhook loam, 0 to 2 percent slopes.....	63
811A—Glendive-Havre loams, 0 to 2 percent slopes.....	65
902A—Lostriver-Bullhook complex, 0 to 2 percent slopes.....	67
903A—Harlake-Lostriver clays, 0 to 2 percent slopes.....	69
905A—Harlake-Havre clay loams, 0 to 2 percent slopes.....	71
<b>Soil Information for All Uses</b> .....	74

## Custom Soil Resource Report

Soil Properties and Qualities.....	74
Soil Qualities and Features.....	74
Parent Material Name.....	74
Soil Reports.....	80
Land Classifications.....	80
Prime and other Important Farmlands.....	80
<b>References</b> .....	<b>83</b>

# 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

## Custom Soil Resource Report

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

# Soil Map

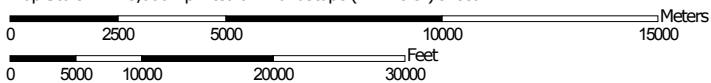
---

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

# Custom Soil Resource Report Soil Map



Map Scale: 1:175,000 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N 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: Blaine County and Part of Phillips County Area, Montana  
 Survey Area Data: Version 13, Sep 28, 2015

Soil Survey Area: Phillips County Area, Montana  
 Survey Area Data: Version 12, Sep 28, 2015

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

**MAP LEGEND**

**MAP INFORMATION**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Blaine County and Part of Phillips County Area, Montana (MT608)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2	Assinniboine fine sandy loam, 0 to 4 percent slopes	114.8	3.1%
20	Bowdoin clay	714.7	19.3%
26	Cabbart-Hillon association, steep	19.3	0.5%
31	Chinook fine sandy loam, 2 to 6 percent slopes	19.0	0.5%
48	Hanly loamy fine sand	14.9	0.4%
50	Harlem silty clay loam	47.1	1.3%
51	Harlem silty clay loam, saline	9.9	0.3%
52	Harlem silty clay	209.0	5.6%
53	Harlem silty clay, saline	226.5	6.1%
54	Harlem variant-Lardell silty clay loams	35.2	0.9%
55	Havre loam	42.9	1.2%
57	Havre silty clay loam	13.0	0.4%
59	Havre, Hanly, and Glendive soils, channeled	5.2	0.1%
60	Havre variant-Lardell silty clay loams	62.5	1.7%
67	Hillon clay loam, 25 to 45 percent slopes	37.4	1.0%
68	Hillon-Kevin clay loams, 15 to 35 percent slopes	170.7	4.6%
76	Lardell silty clay loam	225.5	6.1%
91	Nishon clay loam	3.1	0.1%
95	Phillips loam, 0 to 4 percent slopes	5.8	0.2%
97	Phillips-Elloam complex, 0 to 4 percent slopes	49.3	1.3%
98	Phillips-Elloam complex, 4 to 8 percent slopes	35.5	1.0%
119	Telstad loam, 0 to 4 percent slopes	888.0	23.9%
121	Telstad-Joplin loams, 2 to 8 percent slopes	85.0	2.3%
123	Thoeny-Elloam complex, 0 to 4 percent slopes	74.7	2.0%
131	Ustic Torrifluvents, wet	37.5	1.0%
153	Water	31.5	0.8%
<b>Subtotals for Soil Survey Area</b>		<b>3,178.0</b>	<b>85.7%</b>

## Custom Soil Resource Report

Blaine County and Part of Phillips County Area, Montana (MT608)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
<b>Totals for Area of Interest</b>		<b>3,708.9</b>	<b>100.0%</b>

Phillips County Area, Montana (MT641)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
60A	Havre loam, 0 to 2 percent slopes	167.7	4.5%
90A	Harlake clay, 0 to 2 percent slopes	201.2	5.4%
93A	Bowdoin clay, 0 to 2 percent slopes	49.4	1.3%
604A	Bullhook loam, 0 to 2 percent slopes	7.3	0.2%
811A	Glendive-Havre loams, 0 to 2 percent slopes	0.7	0.0%
902A	Lostriver-Bullhook complex, 0 to 2 percent slopes	27.0	0.7%
903A	Harlake-Lostriver clays, 0 to 2 percent slopes	49.8	1.3%
905A	Harlake-Havre clay loams, 0 to 2 percent slopes	27.8	0.8%
<b>Subtotals for Soil Survey Area</b>		<b>530.9</b>	<b>14.3%</b>
<b>Totals for Area of Interest</b>		<b>3,708.9</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



## Custom Soil Resource Report

scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

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

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

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

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

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

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

## Blaine County and Part of Phillips County Area, Montana

### 2—Assinniboine fine sandy loam, 0 to 4 percent slopes

#### Map Unit Setting

*National map unit symbol:* cmf7

*Elevation:* 2,500 to 3,500 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 105 to 125 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Assinniboine and similar soils:* 90 percent

*Minor components:* 10 percent

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

#### Description of Assinniboine

##### Setting

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium and/or eolian deposits over till

##### Typical profile

*A - 0 to 9 inches:* fine sandy loam

*Bt - 9 to 21 inches:* sandy clay loam

*Bk - 21 to 60 inches:* fine sandy loam

##### Properties and qualities

*Slope:* 0 to 4 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 15 percent

*Available water storage in profile:* Moderate (about 8.7 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* B

*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XC212MT)

*Hydric soil rating:* No

#### Minor Components

##### Chinook

*Percent of map unit:* 5 percent

*Landform:* Fans on till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

## Custom Soil Resource Report

*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XC212MT)  
*Hydric soil rating:* No

### **Cozberg**

*Percent of map unit:* 5 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XC212MT)  
*Hydric soil rating:* No

## **20—Bowdoin clay**

### **Map Unit Setting**

*National map unit symbol:* cmf8  
*Elevation:* 2,300 to 2,500 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

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

### **Description of Bowdoin**

#### **Setting**

*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium and/or glaciolacustrine deposits

#### **Typical profile**

*A - 0 to 6 inches:* clay  
*B<sub>ss</sub> - 6 to 34 inches:* clay  
*B<sub>ssy</sub> - 34 to 60 inches:* clay

#### **Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* 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 in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)

## Custom Soil Resource Report

*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 7.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

### Minor Components

#### Harlem

*Percent of map unit:* 5 percent  
*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XN162MT)  
*Hydric soil rating:* No

#### Vanda

*Percent of map unit:* 5 percent  
*Landform:* Terraces, fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) RRU 58A-C 11-14" p.z. (R058AC053MT)  
*Hydric soil rating:* No

## 26—Cabbart-Hillon association, steep

### Map Unit Setting

*National map unit symbol:* cmg4  
*Elevation:* 2,300 to 3,800 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Cabbart

#### Setting

*Landform:* Escarpments, hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Residuum weathered from sandstone and siltstone

## Custom Soil Resource Report

### Typical profile

*A - 0 to 4 inches:* loam  
*C - 4 to 12 inches:* loam  
*Cr - 12 to 60 inches:* unweathered bedrock

### Properties and qualities

*Slope:* 25 to 45 percent  
*Depth to restrictive feature:* 10 to 20 inches to paralithic bedrock  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 25 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 5.0  
*Available water storage in profile:* Very low (about 2.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* D  
*Ecological site:* Shallow (Sw) 10-14" p.z. (R052XC214MT)  
*Hydric soil rating:* No

## Description of Hillon

### Setting

*Landform:* Ridges  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

### Typical profile

*A - 0 to 4 inches:* clay loam  
*Bk - 4 to 26 inches:* clay loam  
*Bky - 26 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 15 to 35 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e

## Custom Soil Resource Report

*Hydrologic Soil Group: C*

*Ecological site: Silty-Steep (SiStp) 10-14" p.z. (R052XC223MT)*

*Hydric soil rating: No*

### Minor Components

#### Yamac

*Percent of map unit: 5 percent*

*Landform: Hills*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Ecological site: Silty (Si) RRU 58A-C 11-14" p.z. (R058AC040MT)*

*Hydric soil rating: No*

#### Kevin

*Percent of map unit: 5 percent*

*Landform: Hills*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Ecological site: Thin Hilly (TH) 10-14" p.z. (R052XC220MT)*

*Hydric soil rating: No*

#### Rock outcrop

*Percent of map unit: 5 percent*

*Hydric soil rating: No*

## 31—Chinook fine sandy loam, 2 to 6 percent slopes

### Map Unit Setting

*National map unit symbol: cmgv*

*Elevation: 2,500 to 3,500 feet*

*Mean annual precipitation: 10 to 14 inches*

*Mean annual air temperature: 39 to 45 degrees F*

*Frost-free period: 105 to 125 days*

*Farmland classification: Farmland of statewide importance*

### Map Unit Composition

*Chinook and similar soils: 90 percent*

*Minor components: 10 percent*

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

### Description of Chinook

#### Setting

*Landform: Fans on till plains*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Alluvium and/or eolian deposits over till*

## Custom Soil Resource Report

### Typical profile

*A - 0 to 6 inches:* fine sandy loam  
*Bw - 6 to 16 inches:* fine sandy loam  
*Bk - 16 to 60 inches:* fine sandy loam

### Properties and qualities

*Slope:* 2 to 6 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Available water storage in profile:* Moderate (about 7.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* A  
*Hydric soil rating:* No

### Minor Components

#### Elloam

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

#### Kevin

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

## 48—Hanly loamy fine sand

### Map Unit Setting

*National map unit symbol:* cmjn  
*Elevation:* 2,300 to 3,500 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Hanly and similar soils:* 90 percent

*Minor components:* 10 percent

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

**Description of Hanly**

**Setting**

*Landform:* Flood plains, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Sandy alluvium

**Typical profile**

*A - 0 to 3 inches:* loamy fine sand

*C - 3 to 60 inches:* stratified sand to fine sandy loam

**Properties and qualities**

*Slope:* 0 to 4 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Somewhat excessively drained

*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 19.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* Occasional

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 5 percent

*Available water storage in profile:* Low (about 3.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 4w

*Land capability classification (nonirrigated):* 6w

*Hydrologic Soil Group:* A

*Ecological site:* Sands (Sa) 10-14" p.z. (R052XC211MT)

*Hydric soil rating:* No

**Minor Components**

**Glendive**

*Percent of map unit:* 5 percent

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XC212MT)

*Hydric soil rating:* No

**Havre**

*Percent of map unit:* 5 percent

*Landform:* Flood plains, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No



## 50—Harlem silty clay loam

### Map Unit Setting

*National map unit symbol:* cmjz  
*Elevation:* 2,300 to 2,700 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

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

### Description of Harlem

#### Setting

*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 10 inches:* silty clay loam  
*C1 - 10 to 46 inches:* stratified silty clay loam to clay  
*C2 - 46 to 66 inches:* stratified fine sandy loam to silty clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 5.0  
*Available water storage in profile:* High (about 9.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

**Minor Components**

**Havre**

*Percent of map unit:* 4 percent  
*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

**Lardell**

*Percent of map unit:* 3 percent  
*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)  
*Hydric soil rating:* Yes

**Harlem, silty clay**

*Percent of map unit:* 3 percent  
*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

**51—Harlem silty clay loam, saline**

**Map Unit Setting**

*National map unit symbol:* cmk1  
*Elevation:* 2,300 to 3,500 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

**Description of Harlem**

**Setting**

*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

## Custom Soil Resource Report

### Typical profile

- A - 0 to 10 inches:* silty clay loam
- C1 - 10 to 46 inches:* stratified clay loam to silty clay
- C2 - 46 to 60 inches:* stratified loam to silty clay loam

### Properties and qualities

- Slope:* 0 to 2 percent
- Depth to restrictive feature:* More than 80 inches
- Natural 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:* Rare
- Frequency of ponding:* None
- Calcium carbonate, maximum in profile:* 10 percent
- Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
- Sodium adsorption ratio, maximum in profile:* 30.0
- Available water storage in profile:* Moderate (about 6.9 inches)

### Interpretive groups

- Land capability classification (irrigated):* 6s
- Land capability classification (nonirrigated):* 6s
- Hydrologic Soil Group:* C
- Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)
- Hydric soil rating:* No

### Minor Components

#### Havre

- Percent of map unit:* 7 percent
- Landform:* Flood plains, terraces
- Down-slope shape:* Linear
- Across-slope shape:* Linear
- Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)
- Hydric soil rating:* No

#### Lardell

- Percent of map unit:* 3 percent
- Landform:* Terraces, flood plains
- Down-slope shape:* Linear
- Across-slope shape:* Linear
- Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)
- Hydric soil rating:* Yes

## 52—Harlem silty clay

### Map Unit Setting

- National map unit symbol:* cmk4
- Elevation:* 2,300 to 2,700 feet

## Custom Soil Resource Report

*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60

### Map Unit Composition

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

### Description of Harlem

#### Setting

*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 10 inches:* silty clay  
*C1 - 10 to 46 inches:* stratified silty clay loam to clay  
*C2 - 46 to 66 inches:* stratified fine sandy loam to silty clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 5.0  
*Available water storage in profile:* High (about 9.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

### Minor Components

#### Havre

*Percent of map unit:* 4 percent  
*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

**Bowdoin**

*Percent of map unit:* 4 percent  
*Landform:* Terraces, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

**Lardell**

*Percent of map unit:* 2 percent  
*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)  
*Hydric soil rating:* Yes

**53—Harlem silty clay, saline**

**Map Unit Setting**

*National map unit symbol:* cmk5  
*Elevation:* 2,300 to 2,700 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

**Description of Harlem, Saline**

**Setting**

*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

**Typical profile**

*A - 0 to 6 inches:* silty clay  
*C - 6 to 60 inches:* stratified clay loam to silty clay

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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

## Custom Soil Resource Report

*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 6.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

### Minor Components

#### Harlem

*Percent of map unit:* 3 percent  
*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

#### Marvan

*Percent of map unit:* 3 percent  
*Landform:* Terraces, fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) RRU 58A-C 11-14" p.z. (R058AC041MT)  
*Hydric soil rating:* No

#### Vanda

*Percent of map unit:* 3 percent  
*Landform:* Terraces, fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) RRU 58A-C 11-14" p.z. (R058AC053MT)  
*Hydric soil rating:* No

#### Lardell

*Percent of map unit:* 1 percent  
*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)  
*Hydric soil rating:* Yes

## 54—Harlem variant-Lardell silty clay loams

### Map Unit Setting

*National map unit symbol:* cmk6  
*Elevation:* 2,300 to 2,700 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Harlem

#### Setting

*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 7 inches:* silty clay loam  
*C1 - 7 to 28 inches:* silty clay loam  
*C2 - 28 to 44 inches:* silty clay loam  
*C3 - 44 to 60 inches:* stratified loam to silty clay

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat 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 24 to 48 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 7.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 6w  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* D  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)  
*Hydric soil rating:* No

## Description of Lardell

### Setting

*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*Az - 0 to 8 inches:* silty clay loam  
*Bz1 - 8 to 29 inches:* silty clay loam  
*Bz2 - 29 to 60 inches:* stratified fine sandy loam to silty clay loam

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 12 to 60 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Strongly saline (16.0 to 50.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 80.0  
*Available water storage in profile:* Low (about 4.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* 7s  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* C  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)  
*Hydric soil rating:* Yes

## Minor Components

### Havre, saline

*Percent of map unit:* 5 percent  
*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### Harlem, saline

*Percent of map unit:* 5 percent  
*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No



## 55—Havre loam

### Map Unit Setting

*National map unit symbol:* cmk8  
*Elevation:* 2,300 to 3,500 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Havre

#### Setting

*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 8 inches:* loam  
*C - 8 to 60 inches:* stratified fine sandy loam to clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 3.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

## Minor Components

### Glendive

*Percent of map unit:* 5 percent  
*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XC212MT)  
*Hydric soil rating:* No

### Harlem

*Percent of map unit:* 5 percent  
*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

## 57—Havre silty clay loam

### Map Unit Setting

*National map unit symbol:* cmkg  
*Elevation:* 2,300 to 3,500 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

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

### Description of Havre

#### Setting

*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 8 inches:* silty clay loam  
*C - 8 to 60 inches:* stratified fine sandy loam to clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained

## Custom Soil Resource Report

*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:* Rare

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 5 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 3.0 mmhos/cm)

*Available water storage in profile:* High (about 9.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 2e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)

*Hydric soil rating:* No

### Minor Components

#### Harlem

*Percent of map unit:* 5 percent

*Landform:* Flood plains, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)

*Hydric soil rating:* No

#### Havre, somewhat poorly drained

*Percent of map unit:* 5 percent

*Landform:* Flood plains, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)

*Hydric soil rating:* No

## 59—Havre, Hanly, and Glendive soils, channeled

### Map Unit Setting

*National map unit symbol:* cmkk

*Elevation:* 2,300 to 3,500 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 105 to 125 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Havre and similar soils:* 30 percent

*Hanly and similar soils:* 30 percent

*Glendive and similar soils:* 30 percent

*Minor components:* 10 percent

## Custom Soil Resource Report

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

### Description of Havre

#### Setting

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

#### Typical profile

*A - 0 to 8 inches:* loam

*C - 8 to 60 inches:* stratified fine sandy loam to clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* Occasional

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 5 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 3.0 mmhos/cm)

*Available water storage in profile:* High (about 9.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6w

*Hydrologic Soil Group:* B

*Ecological site:* Draft Overflow (Ov) RRU 46-C 13-19 p.z. (R046XC504MT)

*Hydric soil rating:* No

### Description of Hanly

#### Setting

*Landform:* Flood plains, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Sandy alluvium

#### Typical profile

*A - 0 to 3 inches:* loamy fine sand

*C - 3 to 60 inches:* stratified sand to fine sandy loam

#### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Somewhat excessively drained

*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 19.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* Occasional

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 5 percent

*Available water storage in profile:* Low (about 3.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 6w  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* A  
*Ecological site:* Draft Overflow (Ov) RRU 46-C 13-19 p.z. (R046XC504MT)  
*Hydric soil rating:* No

**Description of Glendive**

**Setting**

*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

**Typical profile**

*A - 0 to 7 inches:* fine sandy loam  
*C - 7 to 60 inches:* sandy loam

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Occasional  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.9 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* B  
*Ecological site:* Draft Overflow (Ov) RRU 46-C 13-19 p.z. (R046XC504MT)  
*Hydric soil rating:* No

**Minor Components**

**Harlem**

*Percent of map unit:* 4 percent  
*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) RRU 58A-C 11-14" p.z. (R058AC045MT)  
*Hydric soil rating:* No

**Rivra**

*Percent of map unit:* 4 percent  
*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow to Gravel (SwGr) 10-14" p.z. (R052XN176MT)  
*Hydric soil rating:* No

**Lallie**

*Percent of map unit:* 2 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R052XC225MT)  
*Hydric soil rating:* Yes

**60—Havre variant-Lardell silty clay loams**

**Map Unit Setting**

*National map unit symbol:* cmkm  
*Elevation:* 2,300 to 2,700 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

**Description of Havre**

**Setting**

*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

**Typical profile**

*A - 0 to 7 inches:* silty clay loam  
*C1 - 7 to 19 inches:* silty clay loam  
*C2 - 19 to 60 inches:* stratified fine sandy loam to silty clay loam

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)  
*Depth to water table:* About 24 to 48 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent

## Custom Soil Resource Report

*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 30.0

*Available water storage in profile:* Moderate (about 6.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 6w

*Land capability classification (nonirrigated):* 6w

*Hydrologic Soil Group:* C

*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)

*Hydric soil rating:* No

### Description of Lardell

#### Setting

*Landform:* Flood plains, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

#### Typical profile

*Az - 0 to 8 inches:* silty clay loam

*Bz1 - 8 to 29 inches:* silty clay loam

*Bz2 - 29 to 60 inches:* stratified fine sandy loam to silty clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Somewhat 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 18 to 36 inches

*Frequency of flooding:* Rare

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Salinity, maximum in profile:* Strongly saline (16.0 to 50.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 80.0

*Available water storage in profile:* Low (about 4.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* 7s

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* C

*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)

*Hydric soil rating:* No

### Minor Components

#### Harlem

*Percent of map unit:* 5 percent

*Landform:* Flood plains, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)

*Hydric soil rating:* No

#### Glendive

*Percent of map unit:* 5 percent

## Custom Soil Resource Report

*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XC212MT)  
*Hydric soil rating:* No

### 67—Hillon clay loam, 25 to 45 percent slopes

#### Map Unit Setting

*National map unit symbol:* cmkx  
*Elevation:* 2,300 to 3,600 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

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

#### Description of Hillon

##### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

##### Typical profile

*A - 0 to 4 inches:* clay loam  
*Bk - 4 to 26 inches:* clay loam  
*Bky - 26 to 60 inches:* clay loam

##### Properties and qualities

*Slope:* 25 to 45 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified



## Custom Soil Resource Report

*Land capability classification (nonirrigated): 7e*  
*Hydrologic Soil Group: C*  
*Ecological site: Thin Hilly (TH) 10-14" p.z. (R052XC220MT)*  
*Hydric soil rating: No*

### Minor Components

#### Kevin

*Percent of map unit: 5 percent*  
*Landform: Hills*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Ecological site: Thin Hilly (TH) 10-14" p.z. (R052XC220MT)*  
*Hydric soil rating: No*

#### Lisam

*Percent of map unit: 5 percent*  
*Landform: Hills*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Ecological site: Shallow Clay (SwC) 10-14" p.z. (R052XC215MT)*  
*Hydric soil rating: No*

#### Cabbart

*Percent of map unit: 5 percent*  
*Landform: Escarpments*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Ecological site: Shallow (Sw) RRU 58A-C 11-14" p.z. (R058AC057MT)*  
*Hydric soil rating: No*

## 68—Hillon-Kevin clay loams, 15 to 35 percent slopes

### Map Unit Setting

*National map unit symbol: cmkz*  
*Elevation: 2,300 to 3,600 feet*  
*Mean annual precipitation: 10 to 14 inches*  
*Mean annual air temperature: 39 to 45 degrees F*  
*Frost-free period: 105 to 125 days*  
*Farmland classification: Not prime farmland*

### Map Unit Composition

*Hillon and similar soils: 45 percent*  
*Kevin and similar soils: 40 percent*  
*Minor components: 15 percent*  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Hillon

#### Setting

*Landform: Hills*

## Custom Soil Resource Report

*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

### Typical profile

*A - 0 to 4 inches:* clay loam  
*Bk - 4 to 26 inches:* clay loam  
*Bky - 26 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 15 to 35 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Thin Hilly (TH) 10-14" p.z. (R052XC220MT)  
*Hydric soil rating:* No

## Description of Kevin

### Setting

*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

### Typical profile

*A - 0 to 3 inches:* clay loam  
*Bt - 3 to 9 inches:* clay loam  
*Bk1 - 9 to 30 inches:* clay loam  
*Bk2 - 30 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 15 to 25 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.8 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Thin Hilly (TH) 10-14" p.z. (R052XC220MT)  
*Hydric soil rating:* No

**Minor Components**

**Chinook**

*Percent of map unit:* 5 percent  
*Landform:* Fans on till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

**Scobey**

*Percent of map unit:* 5 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

**Yamac**

*Percent of map unit:* 5 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) RRU 58A-C 11-14" p.z. (R058AC040MT)  
*Hydric soil rating:* No

**76—Lardell silty clay loam**

**Map Unit Setting**

*National map unit symbol:* cmlh  
*Elevation:* 2,300 to 2,700 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

## Description of Lardell

### Setting

*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*Az - 0 to 8 inches:* silty clay loam  
*Bz1 - 8 to 29 inches:* silty clay loam  
*Bz2 - 29 to 60 inches:* stratified fine sandy loam to silty clay loam

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 12 to 60 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Strongly saline (16.0 to 50.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 80.0  
*Available water storage in profile:* Low (about 4.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* 7s  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* C  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)  
*Hydric soil rating:* Yes

## Minor Components

### Havre

*Percent of map unit:* 3 percent  
*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)  
*Hydric soil rating:* No

### Harlem

*Percent of map unit:* 3 percent  
*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)  
*Hydric soil rating:* No

### Nobe

*Percent of map unit:* 3 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)

*Hydric soil rating:* No

### **Soils with grv substratum**

*Percent of map unit:* 1 percent

*Hydric soil rating:* No

## **91—Nishon clay loam**

### **Map Unit Setting**

*National map unit symbol:* cmmk

*Elevation:* 2,500 to 3,300 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 100 to 120 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Nishon and similar soils:* 95 percent

*Minor components:* 5 percent

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

### **Description of Nishon**

#### **Setting**

*Landform:* Depressions

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

#### **Typical profile**

*E - 0 to 5 inches:* clay loam

*Btg - 5 to 22 inches:* clay

*Bkg - 22 to 60 inches:* clay

#### **Properties and qualities**

*Slope:* 0 to 1 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 inches

*Frequency of flooding:* None

*Frequency of ponding:* Frequent

*Calcium carbonate, maximum in profile:* 15 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 9.6 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

## Custom Soil Resource Report

*Land capability classification (nonirrigated):* 5w  
*Hydrologic Soil Group:* C/D  
*Ecological site:* Draft Overflow (Ov) RRU 46-C 13-19 p.z. (R046XC504MT)  
*Hydric soil rating:* Yes

### Minor Components

#### Dimmick

*Percent of map unit:* 5 percent  
*Landform:* Potholes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R052XC225MT)  
*Hydric soil rating:* Yes

## 95—Phillips loam, 0 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* 2sy7z  
*Elevation:* 2,000 to 3,870 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 100 to 140 days  
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

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

### Description of Phillips

#### Setting

*Landform:* Ground moraines  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey till

#### Typical profile

*A - 0 to 2 inches:* loam  
*E - 2 to 7 inches:* loam  
*Bt - 7 to 11 inches:* clay  
*Btk - 11 to 15 inches:* clay loam  
*Bk - 15 to 36 inches:* clay loam  
*BCyz - 36 to 50 inches:* clay loam  
*Cz - 50 to 79 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches

## Custom Soil Resource Report

*Natural 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 in profile:* 12 percent  
*Gypsum, maximum in profile:* 4 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 9.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

### Minor Components

#### Kevin

*Percent of map unit:* 3 percent  
*Landform:* Moraines  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Elloam

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Thoeny

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Ethridge

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines  
*Microfeatures of landform position:* Swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 1 percent  
*Landform:* Depressions on ground moraines  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave

*Hydric soil rating:* Yes

## **97—Phillips-Elloam complex, 0 to 4 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cmmw  
*Elevation:* 2,300 to 3,600 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Phillips and similar soils:* 60 percent  
*Elloam and similar soils:* 20 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Phillips**

#### **Setting**

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

#### **Typical profile**

*E - 0 to 7 inches:* loam  
*Bt - 7 to 15 inches:* clay  
*Bk - 15 to 36 inches:* clay loam  
*Bky - 36 to 78 inches:* clay loam

#### **Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.5 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)



## Custom Soil Resource Report

*Hydric soil rating:* No

### Description of Elloam

#### Setting

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Till

#### Typical profile

*E - 0 to 3 inches:* clay loam

*Bt - 3 to 9 inches:* clay loam

*Bk - 9 to 28 inches:* clay loam

*Bky - 28 to 62 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 4 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 25.0

*Available water storage in profile:* Moderate (about 6.6 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 6s

*Land capability classification (nonirrigated):* 6s

*Hydrologic Soil Group:* D

*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)

*Hydric soil rating:* No

### Minor Components

#### Assinniboine

*Percent of map unit:* 5 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XC212MT)

*Hydric soil rating:* No

#### Kevin

*Percent of map unit:* 5 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

#### Telstad

*Percent of map unit:* 5 percent

## Custom Soil Resource Report

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### **Thoeny**

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

## **98—Phillips-Elloam complex, 4 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cmmz  
*Elevation:* 2,300 to 3,600 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Phillips and similar soils:* 60 percent  
*Elloam and similar soils:* 20 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Phillips**

#### **Setting**

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

#### **Typical profile**

*E - 0 to 7 inches:* loam  
*Bt - 7 to 15 inches:* clay  
*Bk - 15 to 36 inches:* clay loam  
*Bky - 36 to 78 inches:* clay loam

#### **Properties and qualities**

*Slope:* 4 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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)

## Custom Soil Resource Report

*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### Description of Elloam

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

#### Typical profile

*E - 0 to 3 inches:* clay loam  
*Bt - 3 to 9 inches:* clay loam  
*Bk - 9 to 28 inches:* clay loam  
*Bky - 28 to 62 inches:* clay loam

#### Properties and qualities

*Slope:* 4 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 25.0  
*Available water storage in profile:* Moderate (about 6.6 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

### Minor Components

#### Hillon

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

### **Thoeny**

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### **Kevin**

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### **Telstad**

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### **Chinook**

*Percent of map unit:* 4 percent  
*Landform:* Ridges on till plains, knolls on till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

## **119—Telstad loam, 0 to 4 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2v55h  
*Elevation:* 2,000 to 3,870 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 100 to 140 days  
*Farmland classification:* Prime farmland if irrigated

### **Map Unit Composition**

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

## Description of Telstad

### Setting

*Landform:* Ground moraines  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Fine-loamy till

### Typical profile

*Ap - 0 to 6 inches:* loam  
*Bt - 6 to 15 inches:* clay loam  
*Bk1 - 15 to 30 inches:* clay loam  
*Bk2 - 30 to 45 inches:* clay loam  
*BCyz - 45 to 61 inches:* loam  
*Cz - 61 to 79 inches:* loam

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 14 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 10.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

## Minor Components

### Joplin

*Percent of map unit:* 5 percent  
*Landform:* Ground moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

### Ferd

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines  
*Microfeatures of landform position:* Swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* No

**Fortbenton**

*Percent of map unit:* 1 percent  
*Landform:* Ground moraines  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

**Nishon**

*Percent of map unit:* 1 percent  
*Landform:* Depressions on ground moraines  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

**Elloam**

*Percent of map unit:* 1 percent  
*Landform:* Ground moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

**121—Telstad-Joplin loams, 2 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2v55f  
*Elevation:* 2,000 to 3,870 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 100 to 140 days  
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

*Telstad and similar soils:* 45 percent  
*Joplin and similar soils:* 40 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Telstad**

**Setting**

*Landform:* Recessional moraines  
*Landform position (two-dimensional):* Footslope, toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Fine-loamy till

**Typical profile**

*Ap - 0 to 6 inches:* loam

## Custom Soil Resource Report

*Bt* - 6 to 15 inches: clay loam  
*Bk1* - 15 to 30 inches: clay loam  
*Bk2* - 30 to 45 inches: clay loam  
*BCyz* - 45 to 61 inches: loam  
*Cz* - 61 to 79 inches: loam

### Properties and qualities

*Slope*: 2 to 8 percent  
*Depth to restrictive feature*: More than 80 inches  
*Natural drainage class*: Well drained  
*Capacity of the most limiting layer to transmit water (Ksat)*: Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table*: More than 80 inches  
*Frequency of flooding*: None  
*Frequency of ponding*: None  
*Calcium carbonate, maximum in profile*: 14 percent  
*Gypsum, maximum in profile*: 3 percent  
*Salinity, maximum in profile*: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile*: 12.0  
*Available water storage in profile*: High (about 10.0 inches)

### Interpretive groups

*Land capability classification (irrigated)*: 3e  
*Land capability classification (nonirrigated)*: 3e  
*Hydrologic Soil Group*: C  
*Ecological site*: Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating*: No

## Description of Joplin

### Setting

*Landform*: Recessional moraines  
*Landform position (two-dimensional)*: Shoulder, backslope  
*Landform position (three-dimensional)*: Rise  
*Down-slope shape*: Convex  
*Across-slope shape*: Linear  
*Parent material*: Fine-loamy till

### Typical profile

*Ap* - 0 to 6 inches: loam  
*Bt* - 6 to 9 inches: clay loam  
*Bk1* - 9 to 22 inches: clay loam  
*Bk2* - 22 to 41 inches: clay loam  
*BCyz* - 41 to 57 inches: loam  
*Cz* - 57 to 79 inches: loam

### Properties and qualities

*Slope*: 2 to 8 percent  
*Depth to restrictive feature*: More than 80 inches  
*Natural drainage class*: Well drained  
*Capacity of the most limiting layer to transmit water (Ksat)*: Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table*: More than 80 inches  
*Frequency of flooding*: None  
*Frequency of ponding*: None  
*Calcium carbonate, maximum in profile*: 14 percent

## Custom Soil Resource Report

*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 9.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating:* No

### Minor Components

#### Hillon

*Percent of map unit:* 6 percent  
*Landform:* Recessional moraines  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Ecological site:* Loamy (Lo) LRU 52-A (R052XA032MT)  
*Hydric soil rating:* No

#### Fortbenton

*Percent of map unit:* 3 percent  
*Landform:* Ground moraines  
*Landform position (two-dimensional):* Shoulder, summit, backslope  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Ecological site:* Sandy (Sy) LRU 52-A (R052XA110MT)  
*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 2 percent  
*Landform:* Recessional moraines  
*Microfeatures of landform position:* Closed depressions  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* Closed Depression (CD) LRU 52-A (R052XA071MT)  
*Hydric soil rating:* Yes

#### Ferd

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines  
*Microfeatures of landform position:* Open depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

#### Elloam

*Percent of map unit:* 1 percent  
*Landform:* Recessional moraines  
*Down-slope shape:* Linear



## Custom Soil Resource Report

*Across-slope shape:* Linear  
*Ecological site:* Claypan (Cp) LRU 52-A (R052XA006MT)  
*Hydric soil rating:* No

### **Marmarth**

*Percent of map unit:* 1 percent  
*Landform:* Recessional moraines  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

## **123—Thoeny-Elloam complex, 0 to 4 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cmb4  
*Elevation:* 2,400 to 3,600 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

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

### **Description of Thoeny**

#### **Setting**

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

#### **Typical profile**

*E - 0 to 6 inches:* loam  
*Bt - 6 to 12 inches:* clay  
*Bk - 12 to 28 inches:* clay loam  
*Bky - 28 to 52 inches:* clay loam  
*By - 52 to 60 inches:* clay loam

#### **Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained

## 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:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 15 percent

*Salinity, maximum in profile:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 25.0

*Available water storage in profile:* Moderate (about 7.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* 6s

*Land capability classification (nonirrigated):* 6s

*Hydrologic Soil Group:* D

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

### Description of Elloam

#### Setting

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Till

#### Typical profile

*E - 0 to 3 inches:* clay loam

*Bt - 3 to 9 inches:* clay loam

*Bk - 9 to 28 inches:* clay loam

*Bky - 28 to 62 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 4 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 25.0

*Available water storage in profile:* Moderate (about 6.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 6s

*Land capability classification (nonirrigated):* 6s

*Hydrologic Soil Group:* D

*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)

*Hydric soil rating:* No

**Minor Components**

**Kevin**

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

**Phillips**

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

**Nobe**

*Percent of map unit:* 2 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

**131—Ustic Torrfluents, wet**

**Map Unit Setting**

*National map unit symbol:* cmbn  
*Elevation:* 2,300 to 3,800 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Ustic torrfluents and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Ustic Torrfluents**

**Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None

**Minor Components**

**Havre**

*Percent of map unit:* 2 percent  
*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

**Harlem**

*Percent of map unit:* 2 percent  
*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

**Very gravelly substratum soils**

*Percent of map unit:* 1 percent  
*Hydric soil rating:* No

**153—Water**

**Map Unit Setting**

*National map unit symbol:* cmn5  
*Mean annual precipitation:* 10 to 14 inches  
*Frost-free period:* 105 to 125 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

## Phillips County Area, Montana

### 60A—Havre loam, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* cnw7

*Elevation:* 2,170 to 3,400 feet

*Mean annual precipitation:* 11 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 100 to 120 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Havre and similar soils:* 90 percent

*Minor components:* 10 percent

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

#### Description of Havre

##### Setting

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

##### Typical profile

*A - 0 to 5 inches:* loam

*C1 - 5 to 25 inches:* stratified fine sandy loam to clay loam

*C2 - 25 to 60 inches:* stratified fine sandy loam to clay loam

##### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* Rare

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 10.0

*Available water storage in profile:* High (about 9.7 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 2e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* B

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

#### Minor Components

##### Bullhook

*Percent of map unit:* 5 percent

## Custom Soil Resource Report

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

### **Lallie**

*Percent of map unit:* 5 percent  
*Landform:* Oxbows  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R052XC225MT)  
*Hydric soil rating:* Yes

## **90A—Harlake clay, 0 to 2 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cnx8  
*Elevation:* 2,170 to 3,400 feet  
*Mean annual precipitation:* 11 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 100 to 120 days  
*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

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

### **Description of Harlake**

#### **Setting**

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### **Typical profile**

*A - 0 to 8 inches:* clay  
*C1 - 8 to 50 inches:* stratified silt loam to clay  
*C2 - 50 to 60 inches:* stratified fine sandy loam to silty clay loam

#### **Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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:* Rare  
*Frequency of ponding:* None

## Custom Soil Resource Report

*Calcium carbonate, maximum in profile:* 10 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 13.0  
*Available water storage in profile:* High (about 9.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4s  
*Land capability classification (nonirrigated):* 4s  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

### Minor Components

#### Lostriver

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

#### Havre

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

#### Bullhook

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

#### Bowdoin

*Percent of map unit:* 2 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

#### Somewhat poorly drained soils

*Percent of map unit:* 2 percent  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)  
*Hydric soil rating:* No

#### Lallie

*Percent of map unit:* 2 percent  
*Landform:* Oxbows  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R052XC225MT)  
*Hydric soil rating:* Yes

### 93A—Bowdoin clay, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* cnxw  
*Elevation:* 2,170 to 3,400 feet  
*Mean annual precipitation:* 11 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 100 to 120 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

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

#### Description of Bowdoin

##### Setting

*Landform:* Lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Glaciolacustrine deposits

##### Typical profile

*A - 0 to 3 inches:* clay  
*B<sub>ss</sub> - 3 to 31 inches:* clay  
*B<sub>ssy</sub> - 31 to 60 inches:* clay

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Gypsum, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 7.2 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D



## Custom Soil Resource Report

*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* Unranked

### Minor Components

#### Strongly saline soils

*Percent of map unit:* 7 percent  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

#### Strongly sodic soils

*Percent of map unit:* 7 percent  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

#### Wheatbelt

*Percent of map unit:* 1 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* Yes

## 604A—Bullhook loam, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* cnw6  
*Elevation:* 2,170 to 3,400 feet  
*Mean annual precipitation:* 11 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 100 to 120 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Bullhook

#### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 4 inches:* loam  
*C - 4 to 14 inches:* stratified fine sandy loam to clay loam  
*Cyz - 14 to 60 inches:* fine sandy loam, clay loam

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 8.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* B  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

### Minor Components

#### Havre

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

#### Glendive

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

#### Strongly saline soils

*Percent of map unit:* 2 percent  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

#### Strongly sodic soils

*Percent of map unit:* 2 percent  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

## 811A—Glendive-Havre loams, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* cnwt

*Elevation:* 2,170 to 3,400 feet

*Mean annual precipitation:* 11 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 100 to 120 days

*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Glendive and similar soils:* 60 percent

*Havre and similar soils:* 30 percent

*Minor components:* 10 percent

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

### Description of Glendive

#### Setting

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

#### Typical profile

*A - 0 to 4 inches:* loam

*C1 - 4 to 26 inches:* sandy loam

*C2 - 26 to 60 inches:* stratified loamy fine sand to clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* Rare

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Available water storage in profile:* Moderate (about 8.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 2e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* B

*Other vegetative classification:* not specified (WOODLAND)

*Hydric soil rating:* No

## Description of Havre

### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*A - 0 to 6 inches:* loam  
*C1 - 6 to 25 inches:* stratified fine sandy loam to clay loam  
*C2 - 25 to 60 inches:* stratified fine sandy loam to clay loam

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 10.0  
*Available water storage in profile:* High (about 9.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Other vegetative classification:* not specified (WOODLAND)  
*Hydric soil rating:* No

## Minor Components

### Hanly

*Percent of map unit:* 4 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XC212MT)  
*Hydric soil rating:* No

### Bullhook

*Percent of map unit:* 4 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

### Lallie

*Percent of map unit:* 2 percent  
*Landform:* Oxbows  
*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R052XC225MT)  
*Hydric soil rating:* Yes

### 902A—Lostriver-Bullhook complex, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* cnx4  
*Elevation:* 2,170 to 3,400 feet  
*Mean annual precipitation:* 11 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 100 to 120 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Lostriver and similar soils:* 50 percent  
*Bullhook and similar soils:* 40 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Lostriver

##### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

##### Typical profile

*Ayz - 0 to 6 inches:* clay  
*Cyz1 - 6 to 21 inches:* stratified clay loam to clay  
*Cyz2 - 21 to 60 inches:* stratified clay loam to clay

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 8.6 inches)

## Custom Soil Resource Report

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* C  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

### Description of Bullhook

#### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 4 inches:* loam  
*C - 4 to 14 inches:* stratified fine sandy loam to clay loam  
*Cyz - 14 to 60 inches:* fine sandy loam, clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 8.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* B  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

### Minor Components

#### Strongly saline soils

*Percent of map unit:* 3 percent  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

#### Harlem

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

## Custom Soil Resource Report

### **Strongly sodic soils**

*Percent of map unit:* 2 percent

*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)

*Hydric soil rating:* No

### **Havre**

*Percent of map unit:* 2 percent

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

## **903A—Harlake-Lostriver clays, 0 to 2 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cnx5

*Elevation:* 2,170 to 3,400 feet

*Mean annual precipitation:* 11 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 100 to 120 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Harlake and similar soils:* 50 percent

*Lostriver and similar soils:* 40 percent

*Minor components:* 10 percent

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

### **Description of Harlake**

#### **Setting**

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

#### **Typical profile**

*A - 0 to 8 inches:* clay

*C1 - 8 to 50 inches:* stratified silt loam to clay

*C2 - 50 to 60 inches:* stratified fine sandy loam to silty clay loam

#### **Properties and qualities**

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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

## Custom Soil Resource Report

*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 13.0  
*Available water storage in profile:* High (about 9.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

### Description of Lostriver

#### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*Ayz - 0 to 6 inches:* clay  
*Cyz1 - 6 to 21 inches:* stratified clay loam to clay  
*Cyz2 - 21 to 60 inches:* stratified clay loam to clay

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Gypsum, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 8.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* C  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

### Minor Components

#### Bowdoin

*Percent of map unit:* 4 percent  
*Landform:* Terraces



## Custom Soil Resource Report

*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

### **Havre**

*Percent of map unit:* 2 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

### **Strongly saline soils**

*Percent of map unit:* 2 percent  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

### **Strongly sodic soils**

*Percent of map unit:* 2 percent  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

## **905A—Harlake-Havre clay loams, 0 to 2 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cnx7  
*Elevation:* 2,170 to 3,400 feet  
*Mean annual precipitation:* 11 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 100 to 120 days  
*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

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

### **Description of Harlake**

#### **Setting**

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### **Typical profile**

*A - 0 to 6 inches:* clay loam  
*C1 - 6 to 48 inches:* stratified silt loam to silty clay

## Custom Soil Resource Report

C2 - 48 to 60 inches: stratified fine sandy loam to silt loam

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 36 to 60 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 13.0  
*Available water storage in profile:* High (about 9.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Subirrigated (Sb) 10-14" p.z. (R052XC218MT)  
*Hydric soil rating:* No

## Description of Havre

### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*A - 0 to 6 inches:* clay loam  
*C1 - 6 to 25 inches:* stratified loam to clay loam  
*C2 - 25 to 60 inches:* stratified loam to clay loam

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately 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:* About 36 to 60 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 10.0  
*Available water storage in profile:* High (about 10.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C

Custom Soil Resource Report

*Ecological site:* Subirrigated (Sb) 10-14" p.z. (R052XC218MT)  
*Hydric soil rating:* No

**Minor Components**

**Clay surface layers**

*Percent of map unit:* 5 percent  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

**Moderately saline soils**

*Percent of map unit:* 3 percent  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

**Occasionally flooded soils**

*Percent of map unit:* 3 percent  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XN161MT)  
*Hydric soil rating:* No

**Moderately sodic soils**

*Percent of map unit:* 2 percent  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

**Poorly drained soils**

*Percent of map unit:* 2 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Draft Wet Meadow (WM) RRU 46-C 15-19" p.z. (R046XC518MT)  
*Hydric soil rating:* Yes

# **Soil Information for All Uses**

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## **Soil Properties and Qualities**

The Soil Properties and Qualities section includes various soil properties and qualities 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 property or quality.

## **Soil Qualities and Features**

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

## **Parent Material Name**

Parent material name is a term for the general physical, chemical, and mineralogical composition of the unconsolidated material, mineral or organic, in which the soil forms. Mode of deposition and/or weathering may be implied by the name.

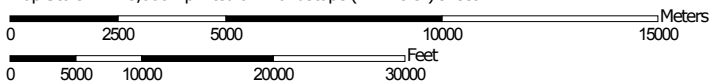
The soil surveyor uses parent material to develop a model used for soil mapping. Soil scientists and specialists in other disciplines use parent material to help interpret soil boundaries and project performance of the material below the soil. Many soil properties relate to parent material. Among these properties are proportions of sand, silt, and clay; chemical content; bulk density; structure; and the kinds and amounts of rock fragments. These properties affect interpretations and may be criteria used to separate soil series. Soil properties and landscape information may imply the kind of parent material.

For each soil in the database, one or more parent materials may be identified. One is marked as the representative or most commonly occurring. The representative parent material name is presented here.

# Custom Soil Resource Report Map—Parent Material Name



Map Scale: 1:175,000 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84



# Custom Soil Resource Report




## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)





### Soils

#### Soil Rating Polygons

-  alluvium
-  alluvium and/or eolian deposits over till
-  alluvium and/or glaciolacustrine deposits
-  clayey till
-  fine-loamy till
-  glaciolacustrine deposits
-  residuum weathered from sandstone and siltstone
-  sandy alluvium
-  till
-  Not rated or not available

#### Soil Rating Lines


-  alluvium
-  alluvium and/or eolian deposits over till
-  alluvium and/or glaciolacustrine deposits
-  clayey till
-  fine-loamy till
-  glaciolacustrine deposits

-  residuum weathered from sandstone and siltstone
-  sandy alluvium
-  till
-  Not rated or not available





#### Soil Rating Points



-  alluvium
-  alluvium and/or eolian deposits over till
-  alluvium and/or glaciolacustrine deposits
-  clayey till
-  fine-loamy till
-  glaciolacustrine deposits
-  residuum weathered from sandstone and siltstone
-  sandy alluvium
-  till
-  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: Blaine County and Part of Phillips County Area, Montana  
 Survey Area Data: Version 13, Sep 28, 2015

Soil Survey Area: Phillips County Area, Montana  
 Survey Area Data: Version 12, Sep 28, 2015

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

**MAP LEGEND**

**MAP INFORMATION**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Custom Soil Resource Report

**Table—Parent Material Name**

<b>Parent Material Name— Summary by Map Unit — Blaine County and Part of Phillips County Area, Montana (MT608)</b>				
<b>Map unit symbol</b>	<b>Map unit name</b>	<b>Rating</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
2	Assinniboine fine sandy loam, 0 to 4 percent slopes	alluvium and/or eolian deposits over till	114.8	3.1%
20	Bowdoin clay	alluvium and/or glaciolacustrine deposits	714.7	19.3%
26	Cabbart-Hillon association, steep	residuum weathered from sandstone and siltstone	19.3	0.5%
31	Chinook fine sandy loam, 2 to 6 percent slopes	alluvium and/or eolian deposits over till	19.0	0.5%
48	Hanly loamy fine sand	sandy alluvium	14.9	0.4%
50	Harlem silty clay loam	alluvium	47.1	1.3%
51	Harlem silty clay loam, saline	alluvium	9.9	0.3%
52	Harlem silty clay	alluvium	209.0	5.6%
53	Harlem silty clay, saline	alluvium	226.5	6.1%
54	Harlem variant-Lardell silty clay loams	alluvium	35.2	0.9%
55	Havre loam	alluvium	42.9	1.2%
57	Havre silty clay loam	alluvium	13.0	0.4%
59	Havre, Hanly, and Glendive soils, channeled	alluvium	5.2	0.1%
60	Havre variant-Lardell silty clay loams	alluvium	62.5	1.7%
67	Hillon clay loam, 25 to 45 percent slopes	till	37.4	1.0%
68	Hillon-Kevin clay loams, 15 to 35 percent slopes	till	170.7	4.6%
76	Lardell silty clay loam	alluvium	225.5	6.1%
91	Nishon clay loam	alluvium	3.1	0.1%
95	Phillips loam, 0 to 4 percent slopes	clayey till	5.8	0.2%
97	Phillips-Elloam complex, 0 to 4 percent slopes	till	49.3	1.3%
98	Phillips-Elloam complex, 4 to 8 percent slopes	till	35.5	1.0%
119	Telstad loam, 0 to 4 percent slopes	fine-loamy till	888.0	23.9%
121	Telstad-Joplin loams, 2 to 8 percent slopes	fine-loamy till	85.0	2.3%



Custom Soil Resource Report

Parent Material Name— Summary by Map Unit — Blaine County and Part of Phillips County Area, Montana (MT608)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
123	Thoeny-Elloam complex, 0 to 4 percent slopes	till	74.7	2.0%
131	Ustic Torrifuvents, wet		37.5	1.0%
153	Water		31.5	0.8%
<b>Subtotals for Soil Survey Area</b>			<b>3,178.0</b>	<b>85.7%</b>
<b>Totals for Area of Interest</b>			<b>3,708.9</b>	<b>100.0%</b>

Parent Material Name— Summary by Map Unit — Phillips County Area, Montana (MT641)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
60A	Havre loam, 0 to 2 percent slopes	alluvium	167.7	4.5%
90A	Harlake clay, 0 to 2 percent slopes	alluvium	201.2	5.4%
93A	Bowdoin clay, 0 to 2 percent slopes	glaciolacustrine deposits	49.4	1.3%
604A	Bullhook loam, 0 to 2 percent slopes	alluvium	7.3	0.2%
811A	Glendive-Havre loams, 0 to 2 percent slopes	alluvium	0.7	0.0%
902A	Lostriver-Bullhook complex, 0 to 2 percent slopes	alluvium	27.0	0.7%
903A	Harlake-Lostriver clays, 0 to 2 percent slopes	alluvium	49.8	1.3%
905A	Harlake-Havre clay loams, 0 to 2 percent slopes	alluvium	27.8	0.8%
<b>Subtotals for Soil Survey Area</b>			<b>530.9</b>	<b>14.3%</b>
<b>Totals for Area of Interest</b>			<b>3,708.9</b>	<b>100.0%</b>

**Rating Options—Parent Material Name**

*Aggregation Method: Dominant Condition*

*Component Percent Cutoff: None Specified*

*Tie-break Rule: Lower*

## 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.

## Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

## Prime and other Important Farmlands

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

*Prime farmland* is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate

## Custom Soil Resource Report

quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

*Unique farmland* is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

### Report—Prime and other Important Farmlands

Prime and other Important Farmlands—Blaine County and Part of Phillips County Area, Montana		
Map Symbol	Map Unit Name	Farmland Classification
2	Assinniboine fine sandy loam, 0 to 4 percent slopes	Farmland of statewide importance
20	Bowdoin clay	Not prime farmland
26	Cabbart-Hillon association, steep	Not prime farmland
31	Chinook fine sandy loam, 2 to 6 percent slopes	Farmland of statewide importance
48	Hanly loamy fine sand	Not prime farmland

## Custom Soil Resource Report

<b>Prime and other Important Farmlands—Blaine County and Part of Phillips County Area, Montana</b>		
<b>Map Symbol</b>	<b>Map Unit Name</b>	<b>Farmland Classification</b>
50	Harlem silty clay loam	Prime farmland if irrigated
51	Harlem silty clay loam, saline	Not prime farmland
52	Harlem silty clay	Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
53	Harlem silty clay, saline	Not prime farmland
54	Harlem variant-Lardell silty clay loams	Not prime farmland
55	Havre loam	Not prime farmland
57	Havre silty clay loam	Prime farmland if irrigated
59	Havre, Hanly, and Glendive soils, channeled	Not prime farmland
60	Havre variant-Lardell silty clay loams	Not prime farmland
67	Hillon clay loam, 25 to 45 percent slopes	Not prime farmland
68	Hillon-Kevin clay loams, 15 to 35 percent slopes	Not prime farmland
76	Lardell silty clay loam	Not prime farmland
91	Nishon clay loam	Not prime farmland
95	Phillips loam, 0 to 4 percent slopes	Farmland of statewide importance
97	Phillips-Elloam complex, 0 to 4 percent slopes	Not prime farmland
98	Phillips-Elloam complex, 4 to 8 percent slopes	Not prime farmland
119	Telstad loam, 0 to 4 percent slopes	Prime farmland if irrigated
121	Telstad-Joplin loams, 2 to 8 percent slopes	Farmland of statewide importance
123	Thoeny-Elloam complex, 0 to 4 percent slopes	Not prime farmland
131	Ustic Torrifuvents, wet	Not prime farmland
153	Water	Not prime farmland

<b>Prime and other Important Farmlands—Phillips County Area, Montana</b>		
<b>Map Symbol</b>	<b>Map Unit Name</b>	<b>Farmland Classification</b>
60A	Havre loam, 0 to 2 percent slopes	Farmland of statewide importance
90A	Harlake clay, 0 to 2 percent slopes	Farmland of statewide importance
93A	Bowdoin clay, 0 to 2 percent slopes	Not prime farmland
604A	Bullhook loam, 0 to 2 percent slopes	Not prime farmland
811A	Glendive-Havre loams, 0 to 2 percent slopes	Farmland of statewide importance
902A	Lostriver-Bullhook complex, 0 to 2 percent slopes	Not prime farmland
903A	Harlake-Lostriver clays, 0 to 2 percent slopes	Not prime farmland
905A	Harlake-Havre clay loams, 0 to 2 percent slopes	Farmland of statewide importance

# References

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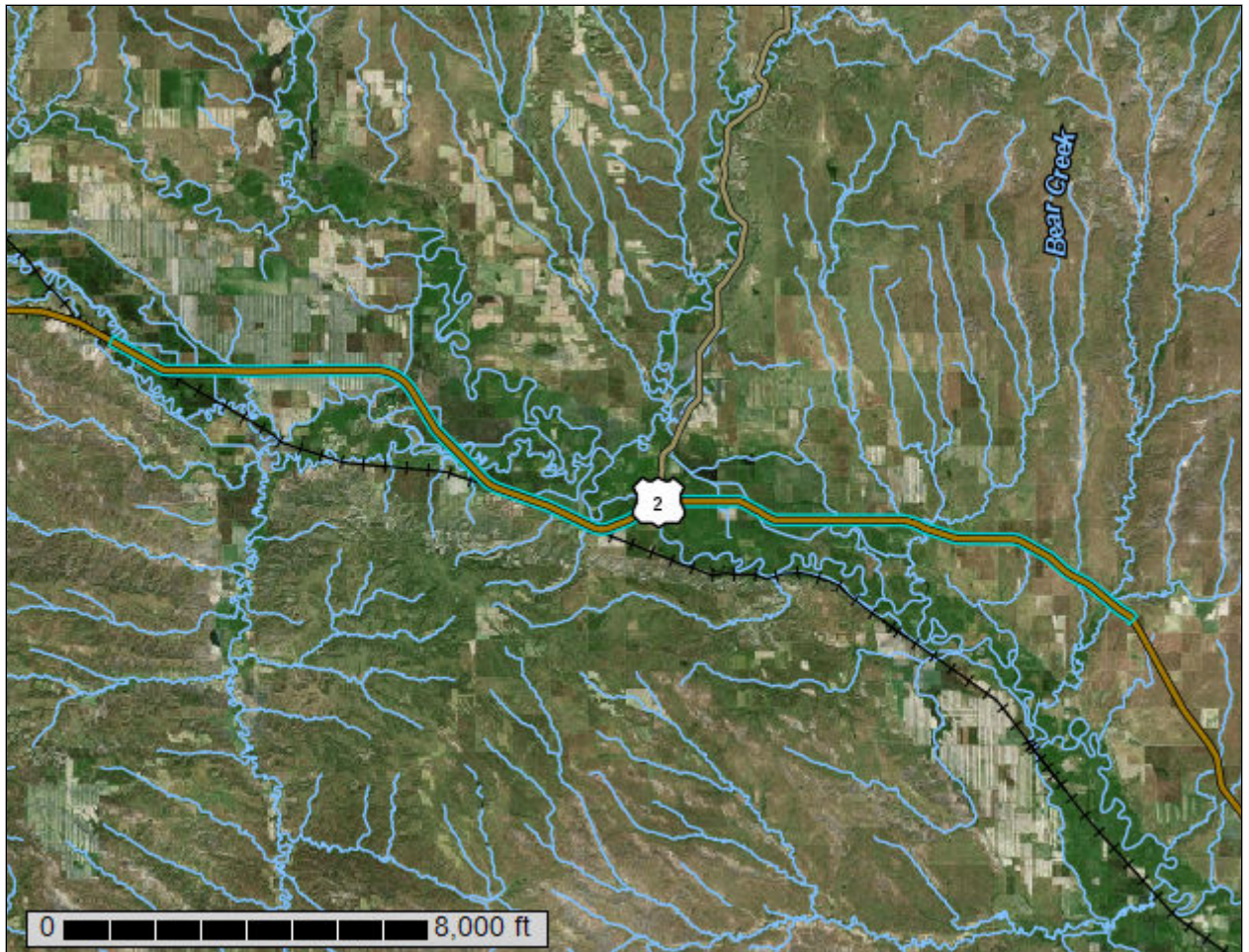
United States  
Department of  
Agriculture

**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 Phillips County Area, Montana, and Valley County, Montana



# 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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# Contents

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<b>Preface</b> .....	2
<b>How Soil Surveys Are Made</b> .....	6
<b>Soil Map</b> .....	9
Soil Map.....	10
Legend.....	11
Map Unit Legend.....	13
Map Unit Descriptions.....	14
Phillips County Area, Montana.....	16
90A—Harlake clay, 0 to 2 percent slopes.....	16
93A—Bowdoin clay, 0 to 2 percent slopes.....	17
W—Water.....	19
Valley County, Montana.....	20
2—Aquic Ustifluvents, saline.....	20
5—Bowdoin clay.....	21
13—Evanston-Lonna loams, 2 to 9 percent slopes.....	22
22—Harlem silty clay loam.....	24
23—Harlem clay.....	25
25—Havre silty clay loam.....	27
26—Havre-Glendive complex.....	28
27—Havre-Harlem silty clays.....	30
30—Hillon-Telstad loams, 9 to 15 percent slopes.....	31
32—Lallie silty clay.....	33
36—Lonna silt loam, 1 to 3 percent slopes.....	34
37—Lonna-Marias complex, 1 to 3 percent slopes.....	36
38—Marias clay, 1 to 9 percent slopes.....	38
46—Phillips loam, 0 to 4 percent slopes.....	40
47—Phillips-Elloam complex, 1 to 9 percent slopes.....	42
49—Phillips-Kevin complex, 2 to 8 percent slopes.....	44
52—Redvale loam, 0 to 3 percent slopes.....	47
57—Scobey-Kevin clay loams, 2 to 8 percent slopes.....	48
59—Scobey-Sunburst clay loams, 5 to 25 percent slopes.....	50
60—Sunburst clay loam, 9 to 35 percent slopes.....	53
65—Telstad loam, 2 to 8 percent slopes.....	55
70—Tinsley complex, 9 to 35 percent slopes.....	56
75—Ustic Torrifluvents, gently sloping.....	59
76—Vaeda silty clay.....	60
79—Water.....	62
<b>Soil Information for All Uses</b> .....	63
Soil Properties and Qualities.....	63
Soil Qualities and Features.....	63
Parent Material Name.....	63
Soil Reports.....	69
Land Classifications.....	69
Prime and other Important Farmlands.....	69

Custom Soil Resource Report

**References**.....72

# 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

## Custom Soil Resource Report

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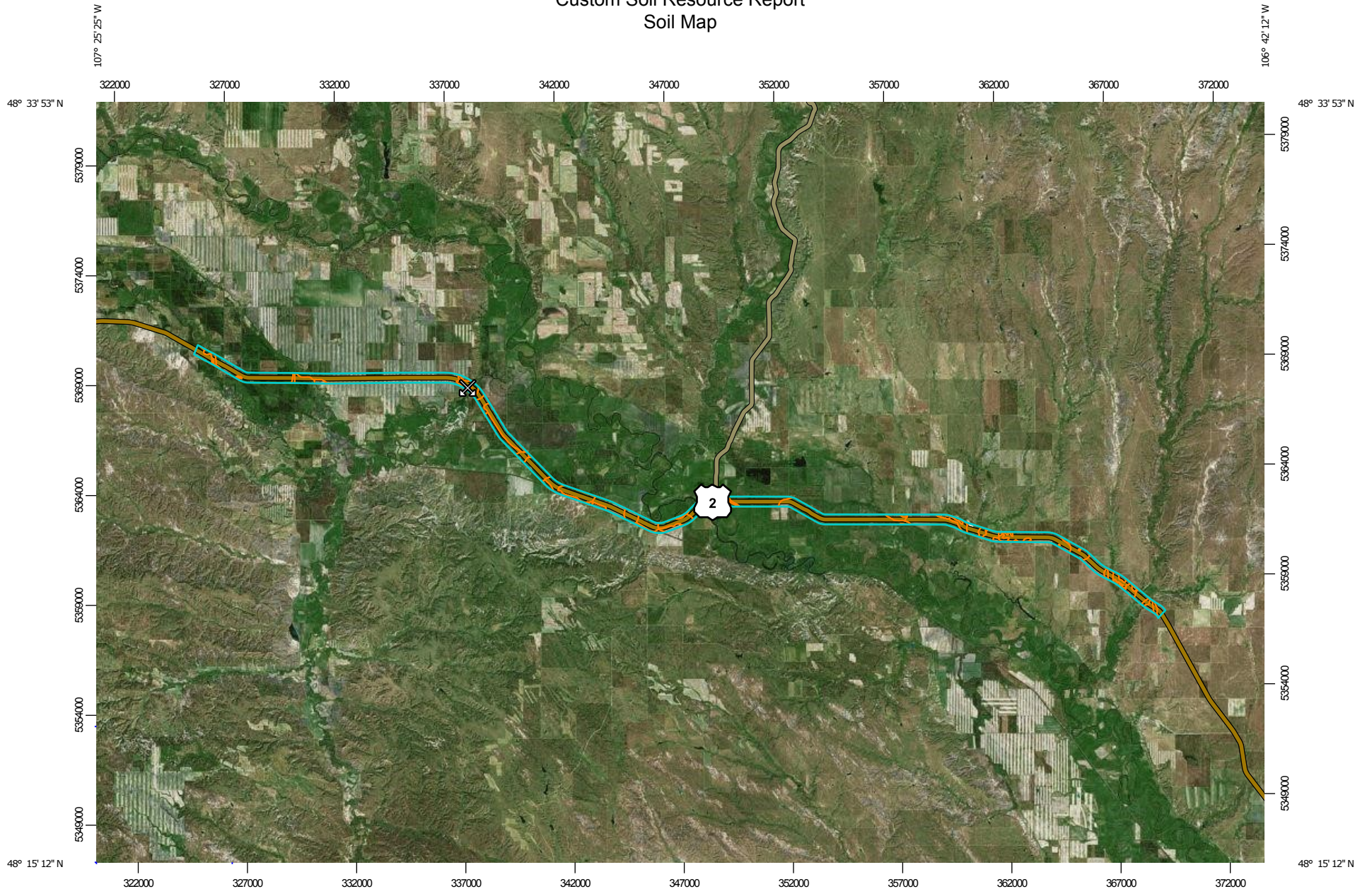
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

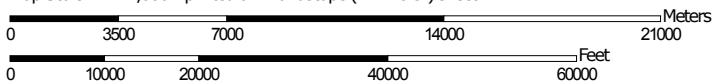
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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce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

# Custom Soil Resource Report Soil Map



Map Scale: 1:244,000 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N 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: Phillips County Area, Montana  
 Survey Area Data: Version 12, Sep 28, 2015

Soil Survey Area: Valley County, Montana  
 Survey Area Data: Version 19, Sep 28, 2015

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

**MAP LEGEND**

**MAP INFORMATION**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Phillips County Area, Montana (MT641)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
90A	Harlake clay, 0 to 2 percent slopes	47.8	0.9%
93A	Bowdoin clay, 0 to 2 percent slopes	491.0	8.9%
W	Water	8.9	0.2%
<b>Subtotals for Soil Survey Area</b>		<b>547.6</b>	<b>9.9%</b>
<b>Totals for Area of Interest</b>		<b>5,533.5</b>	<b>100.0%</b>

Valley County, Montana (MT105)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2	Aquic Ustifluvents, saline	39.7	0.7%
5	Bowdoin clay	101.6	1.8%
13	Evanston-Lonna loams, 2 to 9 percent slopes	20.7	0.4%
22	Harlem silty clay loam	171.4	3.1%
23	Harlem clay	1,304.0	23.6%
25	Havre silty clay loam	260.4	4.7%
26	Havre-Glendive complex	15.3	0.3%
27	Havre-Harlem silty clays	424.1	7.7%
30	Hillon-Telstad loams, 9 to 15 percent slopes	5.2	0.1%
32	Lallie silty clay	62.7	1.1%
36	Lonna silt loam, 1 to 3 percent slopes	151.2	2.7%
37	Lonna-Marias complex, 1 to 3 percent slopes	45.8	0.8%
38	Marias clay, 1 to 9 percent slopes	1,048.6	19.0%
46	Phillips loam, 0 to 4 percent slopes	567.0	10.2%
47	Phillips-Elloam complex, 1 to 9 percent slopes	13.5	0.2%
49	Phillips-Kevin complex, 2 to 8 percent slopes	147.4	2.7%
52	Redvale loam, 0 to 3 percent slopes	31.5	0.6%
57	Scobey-Kevin clay loams, 2 to 8 percent slopes	3.8	0.1%
59	Scobey-Sunburst clay loams, 5 to 25 percent slopes	40.5	0.7%

## Custom Soil Resource Report

Valley County, Montana (MT105)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
60	Sunburst clay loam, 9 to 35 percent slopes	237.3	4.3%
65	Telstad loam, 2 to 8 percent slopes	23.2	0.4%
70	Tinsley complex, 9 to 35 percent slopes	22.5	0.4%
75	Ustic Torrfluvents, gently sloping	100.7	1.8%
76	Vaeda silty clay	126.8	2.3%
79	Water	21.1	0.4%
<b>Subtotals for Soil Survey Area</b>		<b>4,985.9</b>	<b>90.1%</b>
<b>Totals for Area of Interest</b>		<b>5,533.5</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

## Custom Soil Resource Report

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

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

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

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

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

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

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

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

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

## Phillips County Area, Montana

### 90A—Harlake clay, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* cnx8

*Elevation:* 2,170 to 3,400 feet

*Mean annual precipitation:* 11 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 100 to 120 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Harlake and similar soils:* 85 percent

*Minor components:* 15 percent

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

#### Description of Harlake

##### Setting

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

##### Typical profile

*A - 0 to 8 inches:* clay

*C1 - 8 to 50 inches:* stratified silt loam to clay

*C2 - 50 to 60 inches:* stratified fine sandy loam to silty clay loam

##### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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:* Rare

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Gypsum, maximum in profile:* 3 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 13.0

*Available water storage in profile:* High (about 9.3 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 4s

*Land capability classification (nonirrigated):* 4s

*Hydrologic Soil Group:* C

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)

*Hydric soil rating:* No

**Minor Components**

**Lostriver**

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

**Havre**

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

**Bullhook**

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

**Bowdoin**

*Percent of map unit:* 2 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

**Somewhat poorly drained soils**

*Percent of map unit:* 2 percent  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R052XC209MT)  
*Hydric soil rating:* No

**Lallie**

*Percent of map unit:* 2 percent  
*Landform:* Oxbows  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R052XC225MT)  
*Hydric soil rating:* Yes

**93A—Bowdoin clay, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cnxw

## Custom Soil Resource Report

*Elevation:* 2,170 to 3,400 feet  
*Mean annual precipitation:* 11 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 100 to 120 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Bowdoin

#### Setting

*Landform:* Lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Glaciolacustrine deposits

#### Typical profile

*A - 0 to 3 inches:* clay  
*B<sub>ss</sub> - 3 to 31 inches:* clay  
*B<sub>ssy</sub> - 31 to 60 inches:* clay

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Gypsum, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 7.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* Unranked

### Minor Components

#### Strongly saline soils

*Percent of map unit:* 7 percent  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

#### Strongly sodic soils

*Percent of map unit:* 7 percent  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)



## Custom Soil Resource Report

*Hydric soil rating:* No

### **Wheatbelt**

*Percent of map unit:* 1 percent

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)

*Hydric soil rating:* Yes

## **W—Water**

### **Map Unit Composition**

*Water:* 100 percent

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

## Valley County, Montana

### 2—Aquic Ustifluvents, saline

#### Map Unit Setting

*National map unit symbol:* clk8  
*Elevation:* 900 to 3,600 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 34 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Aquic ustifluvents and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Aquic Ustifluvents

##### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

##### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat 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 36 to 60 inches  
*Frequency of flooding:* Occasional  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Strongly saline (16.0 to 32.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 10.0

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* C  
*Ecological site:* Saline Lowland (SL) RRU 58A-E 10-14" p.z. (R058AE012MT)  
*Hydric soil rating:* No

#### Minor Components

##### Lallie

*Percent of map unit:* 5 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R053AE068MT)  
*Hydric soil rating:* Yes

## 5—Bowdoin clay

### Map Unit Setting

*National map unit symbol:* cllb  
*Elevation:* 1,800 to 4,000 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Bowdoin

#### Setting

*Landform:* Flood plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

#### Typical profile

*A - 0 to 5 inches:* clay  
*Bss - 5 to 22 inches:* clay  
*By - 22 to 60 inches:* clay

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 7.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)  
*Hydric soil rating:* No

### Minor Components

#### Harlem

*Percent of map unit:* 6 percent

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

#### Vaeda

*Percent of map unit:* 4 percent

*Landform:* Flood plains, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)

*Hydric soil rating:* No

## 13—Evanston-Lonna loams, 2 to 9 percent slopes

### Map Unit Setting

*National map unit symbol:* clk1

*Elevation:* 1,900 to 6,600 feet

*Mean annual precipitation:* 10 to 13 inches

*Mean annual air temperature:* 36 to 45 degrees F

*Frost-free period:* 110 to 130 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Evanston and similar soils:* 50 percent

*Lonna and similar soils:* 40 percent

*Minor components:* 10 percent

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

### Description of Evanston

#### Setting

*Landform:* Lake plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium and/or glaciolacustrine deposits

#### Typical profile

*A - 0 to 5 inches:* loam

*Bt - 5 to 17 inches:* clay loam

*Bk - 17 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 2 to 9 percent

*Depth to restrictive feature:* More than 80 inches

## Custom Soil Resource Report

*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)  
*Hydric soil rating:* No

### Description of Lonna

#### Setting

*Landform:* Lake plains, fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Silty glaciolacustrine deposits

#### Typical profile

*A - 0 to 5 inches:* loam  
*Bw - 5 to 11 inches:* silt loam  
*Bk - 11 to 26 inches:* silty clay loam  
*C - 26 to 60 inches:* silty clay loam

#### Properties and qualities

*Slope:* 2 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 4.0  
*Available water storage in profile:* High (about 9.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)  
*Hydric soil rating:* No

## Minor Components

### Floweree

*Percent of map unit:* 5 percent  
*Landform:* Hillslopes on lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)  
*Hydric soil rating:* No

### Phillips

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

## 22—Harlem silty clay loam

### Map Unit Setting

*National map unit symbol:* clkc  
*Elevation:* 1,800 to 6,000 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Harlem

#### Setting

*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium and/or clayey glaciolacustrine deposits

#### Typical profile

*A - 0 to 6 inches:* silty clay loam  
*C1 - 6 to 36 inches:* stratified silty clay loam to clay  
*C2 - 36 to 72 inches:* stratified fine sandy loam to silty clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches

## Custom Soil Resource Report

*Natural 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:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 4.0  
*Available water storage in profile:* Moderate (about 8.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

### Minor Components

#### Bowdoin

*Percent of map unit:* 5 percent  
*Landform:* Stream terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)  
*Hydric soil rating:* No

#### Havre

*Percent of map unit:* 5 percent  
*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

## 23—Harlem clay

### Map Unit Setting

*National map unit symbol:* clkd  
*Elevation:* 1,800 to 6,000 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Harlem and similar soils:* 90 percent  
*Minor components:* 10 percent

## Custom Soil Resource Report

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

### Description of Harlem

#### Setting

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Clayey alluvium and/or clayey glaciolacustrine deposits

#### Typical profile

*A - 0 to 6 inches:* clay

*C1 - 6 to 36 inches:* stratified clay to silty clay loam

*C2 - 36 to 72 inches:* stratified silty clay loam to fine sandy loam

#### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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:* Rare

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Salinity, maximum in profile:* Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 4.0

*Available water storage in profile:* Moderate (about 8.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4s

*Land capability classification (nonirrigated):* 4s

*Hydrologic Soil Group:* C

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

### Minor Components

#### Bowdoin

*Percent of map unit:* 6 percent

*Landform:* Stream terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)

*Hydric soil rating:* No

#### Havre

*Percent of map unit:* 4 percent

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No



## 25—Havre silty clay loam

### Map Unit Setting

*National map unit symbol:* clkg  
*Elevation:* 1,900 to 6,000 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

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

### Description of Havre

#### Setting

*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy alluvium

#### Typical profile

*A - 0 to 5 inches:* silty clay loam  
*C - 5 to 65 inches:* stratified fine sandy loam to clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.6 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

## Minor Components

### Harlem

*Percent of map unit:* 5 percent

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

### Glendive

*Percent of map unit:* 5 percent

*Landform:* Flood plains, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

## 26—Havre-Glendive complex

### Map Unit Setting

*National map unit symbol:* clkh

*Elevation:* 1,900 to 6,000 feet

*Mean annual precipitation:* 10 to 13 inches

*Mean annual air temperature:* 37 to 45 degrees F

*Frost-free period:* 110 to 130 days

*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Havre and similar soils:* 65 percent

*Glendive and similar soils:* 25 percent

*Minor components:* 10 percent

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

### Description of Havre

#### Setting

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Loamy alluvium

#### Typical profile

*A - 0 to 5 inches:* silty clay loam

*C - 5 to 65 inches:* stratified fine sandy loam to clay loam

#### Properties and qualities

*Slope:* 0 to 3 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

## Custom Soil Resource Report

*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:* Rare

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 5 percent

*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

*Available water storage in profile:* High (about 9.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

### Description of Glendive

#### Setting

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 8 inches:* loam

*C1 - 8 to 40 inches:* sandy loam

*C2 - 40 to 60 inches:* stratified loamy fine sand to clay loam

#### Properties and qualities

*Slope:* 0 to 3 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* Rare

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

*Available water storage in profile:* High (about 9.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* 2e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* B

*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)

*Hydric soil rating:* No

### Minor Components

#### Harlem

*Percent of map unit:* 10 percent

*Landform:* Flood plains, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

## 27—Havre-Harlem silty clays

### Map Unit Setting

*National map unit symbol:* clkj  
*Elevation:* 1,900 to 6,000 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Havre and similar soils:* 50 percent  
*Harlem and similar soils:* 40 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Havre

#### Setting

*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy alluvium and/or glaciolacustrine deposits

#### Typical profile

*A - 0 to 5 inches:* silty clay  
*C - 5 to 65 inches:* stratified fine sandy loam to clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

## Description of Harlem

### Setting

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Clayey alluvium and/or clayey glaciolacustrine deposits

### Typical profile

*A - 0 to 6 inches:* silty clay

*C1 - 6 to 36 inches:* stratified clay to silty clay loam

*C2 - 36 to 72 inches:* stratified silty clay loam to fine sandy loam

### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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:* Rare

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Salinity, maximum in profile:* Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 4.0

*Available water storage in profile:* Moderate (about 8.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

## 30—Hillon-Telstad loams, 9 to 15 percent slopes

### Map Unit Setting

*National map unit symbol:* clkn

*Elevation:* 1,900 to 4,000 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 100 to 130 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Hillon and similar soils:* 50 percent

*Telstad and similar soils:* 40 percent

*Minor components:* 10 percent

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

## Description of Hillon

### Setting

*Landform:* Hillslopes on till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

### Typical profile

*A - 0 to 4 inches:* loam  
*Bky - 4 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 9 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

## Description of Telstad

### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

### Typical profile

*A - 0 to 8 inches:* loam  
*Bt - 8 to 16 inches:* clay loam  
*Bk1 - 16 to 34 inches:* loam  
*Bk2 - 34 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 9 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent

## Custom Soil Resource Report

*Salinity, maximum in profile:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)

*Available water storage in profile:* High (about 10.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

### Minor Components

#### Phillips

*Percent of map unit:* 6 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

#### Tinsley

*Percent of map unit:* 4 percent

*Landform:* Hillslopes, hills

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Gravelly (Gr) LRU 53A-Y (R053AE621MT)

*Hydric soil rating:* No

## 32—Lallie silty clay

### Map Unit Setting

*National map unit symbol:* clkq

*Elevation:* 900 to 6,000 feet

*Mean annual precipitation:* 10 to 13 inches

*Mean annual air temperature:* 34 to 45 degrees F

*Frost-free period:* 110 to 130 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Lallie and similar soils:* 95 percent

*Minor components:* 5 percent

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

### Description of Lallie

#### Setting

*Landform:* Oxbows

*Down-slope shape:* Linear

*Across-slope shape:* Linear

## Custom Soil Resource Report

*Parent material:* Calcareous clayey alluvium

### Typical profile

*A - 0 to 6 inches:* silty clay  
*Cg - 6 to 60 inches:* silty clay

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 12 inches  
*Frequency of flooding:* Frequent  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 5w  
*Hydrologic Soil Group:* C/D  
*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R053AE068MT)  
*Hydric soil rating:* Yes

### Minor Components

#### Havre

*Percent of map unit:* 5 percent  
*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

## 36—Lonna silt loam, 1 to 3 percent slopes

### Map Unit Setting

*National map unit symbol:* clkv  
*Elevation:* 1,900 to 4,500 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

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



## Description of Lonna

### Setting

*Landform:* Lake plains, fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Silty alluvium

### Typical profile

*A - 0 to 5 inches:* silt loam  
*Bw - 5 to 11 inches:* silt loam  
*Bk - 11 to 26 inches:* silty clay loam  
*C - 26 to 65 inches:* silty clay loam

### Properties and qualities

*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 4.0  
*Available water storage in profile:* High (about 9.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)  
*Hydric soil rating:* No

## Minor Components

### Marias

*Percent of map unit:* 8 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

### Floweree

*Percent of map unit:* 2 percent  
*Landform:* Fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)  
*Hydric soil rating:* No

### **37—Lonna-Marias complex, 1 to 3 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* clkw  
*Elevation:* 1,900 to 6,600 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

*Lonna and similar soils:* 50 percent  
*Marias and similar soils:* 45 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Lonna**

##### **Setting**

*Landform:* Lake plains, fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Silty glaciolacustrine deposits

##### **Typical profile**

*A - 0 to 5 inches:* silt loam  
*Bw - 5 to 11 inches:* silt loam  
*Bk - 11 to 26 inches:* silty clay loam  
*C - 26 to 65 inches:* silty clay loam

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

*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 4.0  
*Available water storage in profile:* High (about 9.1 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)

## Custom Soil Resource Report

*Hydric soil rating:* No

### Description of Marias

#### Setting

*Landform:* Lake plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 6 inches:* clay

*Bss - 6 to 27 inches:* clay

*Bssy - 27 to 74 inches:* clay

#### Properties and qualities

*Slope:* 1 to 3 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 10 percent

*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 13.0

*Available water storage in profile:* Moderate (about 8.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* D

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

### Minor Components

#### Evanston

*Percent of map unit:* 3 percent

*Landform:* Lake plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)

*Hydric soil rating:* No

#### Floweree

*Percent of map unit:* 2 percent

*Landform:* Hillslopes on lake plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)

*Hydric soil rating:* No

## 38—Marias clay, 1 to 9 percent slopes

### Map Unit Setting

*National map unit symbol:* clkx  
*Elevation:* 1,900 to 4,800 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 135 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Marias and similar soils:* 95 percent  
*Marias and similar soils:* 85 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Marias

#### Setting

*Landform:* Lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 6 inches:* clay  
*Bss - 6 to 27 inches:* clay  
*Bssy - 27 to 74 inches:* clay

#### Properties and qualities

*Slope:* 1 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 10 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 13.0  
*Available water storage in profile:* Moderate (about 8.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* D  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

## Description of Marias

### Setting

*Landform:* Alluvial fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

### Typical profile

*A - 0 to 15 inches:* silty clay  
*Bss - 15 to 33 inches:* clay  
*Bssy - 33 to 60 inches:* clay

### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 10 percent  
*Gypsum, maximum in profile:* 6 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 13.0  
*Available water storage in profile:* Moderate (about 8.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* D  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

## Minor Components

### Sunburst

*Percent of map unit:* 2 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R054XE530MT)  
*Hydric soil rating:* No

### Lonna

*Percent of map unit:* 1 percent  
*Landform:* Lake plains, fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)  
*Hydric soil rating:* No

### Absher

*Percent of map unit:* 1 percent  
*Landform:* Terraces

## Custom Soil Resource Report

*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)  
*Hydric soil rating:* No

### **Vaeda**

*Percent of map unit:* 1 percent  
*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)  
*Hydric soil rating:* No

## **46—Phillips loam, 0 to 4 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2sy7z  
*Elevation:* 2,000 to 3,870 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 100 to 140 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

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

### **Description of Phillips**

#### **Setting**

*Landform:* Ground moraines  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey till

#### **Typical profile**

*A - 0 to 2 inches:* loam  
*E - 2 to 7 inches:* loam  
*Bt - 7 to 11 inches:* clay  
*Btk - 11 to 15 inches:* clay loam  
*Bk - 15 to 36 inches:* clay loam  
*BCyz - 36 to 50 inches:* clay loam  
*Cz - 50 to 79 inches:* clay loam

#### **Properties and qualities**

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 12 percent  
*Gypsum, maximum in profile:* 4 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 9.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

### Minor Components

#### Kevin

*Percent of map unit:* 3 percent  
*Landform:* Moraines  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Elloam

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Thoeny

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Ethridge

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines  
*Microfeatures of landform position:* Swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 1 percent  
*Landform:* Depressions on ground moraines  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

## 47—Phillips-Elloam complex, 1 to 9 percent slopes

### Map Unit Setting

*National map unit symbol:* cll7  
*Elevation:* 1,900 to 4,500 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 100 to 130 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Phillips and similar soils:* 50 percent  
*Elloam and similar soils:* 25 percent  
*Minor components:* 25 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Phillips

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

#### Typical profile

*E - 0 to 5 inches:* loam  
*Bt - 5 to 12 inches:* clay  
*Bk - 12 to 36 inches:* clay loam  
*C - 36 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 1 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No



## Description of Elloam

### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

### Typical profile

*E - 0 to 3 inches:* clay loam  
*Btn - 3 to 10 inches:* clay  
*Bkn - 10 to 20 inches:* clay loam  
*Bknyz - 20 to 43 inches:* clay loam  
*C - 43 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 1 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 25.0  
*Available water storage in profile:* Moderate (about 6.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

## Minor Components

### Scobey

*Percent of map unit:* 10 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### Delpoint

*Percent of map unit:* 7 percent  
*Landform:* Hills, ridges  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)  
*Hydric soil rating:* No

### Cabbart

*Percent of map unit:* 5 percent

## Custom Soil Resource Report

*Landform:* Hillslopes, ridges  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow (Sw) RRU 58A-E 10-14" p.z. (R058AE019MT)  
*Hydric soil rating:* No

### **Nobe**

*Percent of map unit:* 2 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

### **Nishon**

*Percent of map unit:* 1 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)  
*Hydric soil rating:* Yes

## **49—Phillips-Kevin complex, 2 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2vyr1  
*Elevation:* 2,000 to 3,870 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 100 to 140 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Phillips and similar soils:* 45 percent  
*Kevin and similar soils:* 40 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Phillips**

#### **Setting**

*Landform:* Moraines  
*Landform position (two-dimensional):* Footslope, toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Clayey till

#### **Typical profile**

*A - 0 to 2 inches:* loam

## Custom Soil Resource Report

*E* - 2 to 7 inches: loam  
*Bt* - 7 to 11 inches: clay  
*Btk* - 11 to 15 inches: clay loam  
*Bk* - 15 to 36 inches: clay loam  
*BCyz* - 36 to 50 inches: clay loam  
*Cz* - 50 to 79 inches: clay loam

### Properties and qualities

*Slope*: 2 to 8 percent  
*Depth to restrictive feature*: More than 80 inches  
*Natural 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 in profile*: 12 percent  
*Gypsum, maximum in profile*: 4 percent  
*Salinity, maximum in profile*: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile*: 12.0  
*Available water storage in profile*: High (about 9.8 inches)

### Interpretive groups

*Land capability classification (irrigated)*: 3e  
*Land capability classification (nonirrigated)*: 3e  
*Hydrologic Soil Group*: C  
*Hydric soil rating*: No

### Description of Kevin

#### Setting

*Landform*: Moraines  
*Landform position (two-dimensional)*: Shoulder, backslope  
*Landform position (three-dimensional)*: Side slope  
*Down-slope shape*: Convex  
*Across-slope shape*: Linear  
*Parent material*: Clayey till

#### Typical profile

*Ap* - 0 to 6 inches: clay loam  
*Bt* - 6 to 9 inches: clay loam  
*Bk1* - 9 to 23 inches: clay loam  
*Bk2* - 23 to 41 inches: clay loam  
*BCyz* - 41 to 57 inches: clay loam  
*Cz* - 57 to 79 inches: clay loam

### Properties and qualities

*Slope*: 2 to 8 percent  
*Depth to restrictive feature*: More than 80 inches  
*Natural 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 in profile*: 14 percent

## Custom Soil Resource Report

*Gypsum, maximum in profile:* 4 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 10.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

### Minor Components

#### Hillon

*Percent of map unit:* 4 percent  
*Landform:* Moraines  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Crest  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Thoeny

*Percent of map unit:* 4 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Elloam

*Percent of map unit:* 3 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Ethridge

*Percent of map unit:* 3 percent  
*Landform:* Ground moraines  
*Microfeatures of landform position:* Swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 1 percent  
*Landform:* Depressions on ground moraines  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

## 52—Redvale loam, 0 to 3 percent slopes

### Map Unit Setting

*National map unit symbol:* clf  
*Elevation:* 2,000 to 6,600 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

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

### Description of Redvale

#### Setting

*Landform:* Fans, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 6 inches:* loam  
*Bt1 - 6 to 11 inches:* clay loam  
*Bt2 - 11 to 20 inches:* clay  
*Bk - 20 to 30 inches:* gravelly clay loam  
*2C - 30 to 60 inches:* extremely gravelly loamy sand

#### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (1.0 to 3.0 mmhos/cm)  
*Available water storage in profile:* Low (about 5.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

**Minor Components**

**Attewan**

*Percent of map unit:* 6 percent

*Landform:* Fans, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)

*Hydric soil rating:* No

**Evanston**

*Percent of map unit:* 4 percent

*Landform:* Fans, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)

*Hydric soil rating:* No

**57—Scobey-Kevin clay loams, 2 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2t3k4

*Elevation:* 2,000 to 3,870 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 46 degrees F

*Frost-free period:* 100 to 140 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Scobey and similar soils:* 45 percent

*Kevin and similar soils:* 40 percent

*Minor components:* 15 percent

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

**Description of Scobey**

**Setting**

*Landform:* Moraines

*Landform position (two-dimensional):* Footslope, toeslope

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

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Parent material:* Clayey till

**Typical profile**

*Ap - 0 to 6 inches:* clay loam

*Bt - 6 to 15 inches:* clay

*Bk1 - 15 to 29 inches:* clay loam

*Bk2 - 29 to 44 inches:* clay loam

## Custom Soil Resource Report

*BCyz - 44 to 61 inches: clay loam*

*Cz - 61 to 79 inches: clay loam*

### Properties and qualities

*Slope: 2 to 8 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural 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 in profile: 14 percent*

*Gypsum, maximum in profile: 4 percent*

*Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)*

*Sodium adsorption ratio, maximum in profile: 12.0*

*Available water storage in profile: High (about 9.9 inches)*

### Interpretive groups

*Land capability classification (irrigated): 3e*

*Land capability classification (nonirrigated): 3e*

*Hydrologic Soil Group: C*

*Hydric soil rating: No*

### Description of Kevin

#### Setting

*Landform: Moraines*

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

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

*Down-slope shape: Convex*

*Across-slope shape: Linear*

*Parent material: Clayey till*

#### Typical profile

*Ap - 0 to 6 inches: clay loam*

*Bt - 6 to 9 inches: clay loam*

*Bk1 - 9 to 23 inches: clay loam*

*Bk2 - 23 to 41 inches: clay loam*

*BCyz - 41 to 57 inches: clay loam*

*Cz - 57 to 79 inches: clay loam*

### Properties and qualities

*Slope: 2 to 8 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural 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 in profile: 14 percent*

*Gypsum, maximum in profile: 4 percent*

*Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)*

*Sodium adsorption ratio, maximum in profile: 12.0*

## Custom Soil Resource Report

*Available water storage in profile:* High (about 10.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

### Minor Components

#### Hillon

*Percent of map unit:* 8 percent

*Landform:* Moraines

*Landform position (two-dimensional):* Shoulder

*Landform position (three-dimensional):* Crest

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Elloam

*Percent of map unit:* 3 percent

*Landform:* Moraines

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Acel

*Percent of map unit:* 2 percent

*Landform:* Moraines

*Microfeatures of landform position:* Swales

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 2 percent

*Landform:* Depressions on moraines

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

## 59—Scobey-Sunburst clay loams, 5 to 25 percent slopes

### Map Unit Setting

*National map unit symbol:* clln

*Elevation:* 1,900 to 4,000 feet

*Mean annual precipitation:* 10 to 13 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 110 to 130 days

*Farmland classification:* Not prime farmland



**Map Unit Composition**

*Scobey and similar soils:* 50 percent

*Sunburst and similar soils:* 30 percent

*Minor components:* 20 percent

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

**Description of Scobey**

**Setting**

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Till

**Typical profile**

*A - 0 to 5 inches:* clay loam

*Bt - 5 to 15 inches:* clay loam

*Bky - 15 to 60 inches:* clay loam

**Properties and qualities**

*Slope:* 5 to 15 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 10.2 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

**Description of Sunburst**

**Setting**

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

**Typical profile**

*A - 0 to 4 inches:* clay loam

*Bk - 4 to 28 inches:* clay loam

*Bky - 28 to 60 inches:* clay loam

**Properties and qualities**

*Slope:* 5 to 25 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 8.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Thin Hilly (TH) 10-14" p.z. (R052XC220MT)  
*Hydric soil rating:* No

### Minor Components

#### Phillips

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

#### Eloam

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

#### Hillon

*Percent of map unit:* 4 percent  
*Landform:* Hillslopes on till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

#### Telstad

*Percent of map unit:* 3 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

#### Thoeny

*Percent of map unit:* 3 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)

*Hydric soil rating:* No

## **60—Sunburst clay loam, 9 to 35 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* clq  
*Elevation:* 1,900 to 5,500 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

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

### **Description of Sunburst**

#### **Setting**

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### **Typical profile**

*A - 0 to 4 inches:* clay loam  
*Bk - 4 to 28 inches:* clay loam  
*Bky - 28 to 60 inches:* clay loam

#### **Properties and qualities**

*Slope:* 9 to 35 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 8.5 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Thin Hilly (TH) 10-14" p.z. (R052XC220MT)  
*Hydric soil rating:* No

**Minor Components**

**Scobey**

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

**Hillon**

*Percent of map unit:* 4 percent  
*Landform:* Hillslopes on till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XC223MT)  
*Hydric soil rating:* No

**Thebo**

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

**Phillips**

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

**Cabbart**

*Percent of map unit:* 2 percent  
*Landform:* Hillslopes, ridges  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow (Sw) RRU 58A-E 10-14" p.z. (R058AE019MT)  
*Hydric soil rating:* No

**Lisam**

*Percent of map unit:* 2 percent  
*Landform:* Hillslopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow Clay (SwC) RRU 58A-E 10-14" p.z. (R058AE199MT)  
*Hydric soil rating:* No

## 65—Telstad loam, 2 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* 2sy84  
*Elevation:* 2,000 to 3,870 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 100 to 140 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Telstad

#### Setting

*Landform:* Moraines  
*Landform position (two-dimensional):* Toeslope, backslope, footslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Fine-loamy till

#### Typical profile

*Ap - 0 to 6 inches:* loam  
*Bt - 6 to 15 inches:* clay loam  
*Bk1 - 15 to 30 inches:* clay loam  
*Bk2 - 30 to 45 inches:* clay loam  
*BCyz - 45 to 61 inches:* loam  
*Cz - 61 to 79 inches:* loam

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 14 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 10.0 inches)

**Interpretive groups**

*Land capability classification (irrigated): 3e*  
*Land capability classification (nonirrigated): 3e*  
*Hydrologic Soil Group: C*  
*Hydric soil rating: No*

**Minor Components**

**Hillon**

*Percent of map unit: 5 percent*  
*Landform: Moraines*  
*Landform position (two-dimensional): Shoulder*  
*Landform position (three-dimensional): Crest*  
*Down-slope shape: Convex*  
*Across-slope shape: Linear*  
*Hydric soil rating: No*

**Ferd**

*Percent of map unit: 3 percent*  
*Landform: Moraines*  
*Microfeatures of landform position: Swales*  
*Down-slope shape: Linear*  
*Across-slope shape: Concave*  
*Hydric soil rating: No*

**Nishon**

*Percent of map unit: 1 percent*  
*Landform: Depressions on moraines*  
*Down-slope shape: Concave*  
*Across-slope shape: Concave*  
*Hydric soil rating: Yes*

**Elloam**

*Percent of map unit: 1 percent*  
*Landform: Moraines*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Hydric soil rating: No*

**70—Tinsley complex, 9 to 35 percent slopes**

**Map Unit Setting**

*National map unit symbol: clm2*  
*Elevation: 1,800 to 5,000 feet*  
*Mean annual precipitation: 10 to 14 inches*  
*Mean annual air temperature: 39 to 45 degrees F*  
*Frost-free period: 100 to 130 days*  
*Farmland classification: Not prime farmland*

**Map Unit Composition**

*Tinsley and similar soils:* 40 percent

*Farnuf and similar soils:* 15 percent

*Turner and similar soils:* 15 percent

*Minor components:* 30 percent

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

**Description of Tinsley**

**Setting**

*Landform:* Hills, hillslopes

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

**Typical profile**

*A - 0 to 4 inches:* very gravelly sandy loam

*C - 4 to 60 inches:* very gravelly sand

**Properties and qualities**

*Slope:* 9 to 35 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Excessively drained

*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Very low (about 1.4 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* A

*Ecological site:* Gravelly (Gr) LRU 53A-Y (R053AE621MT)

*Hydric soil rating:* No

**Description of Farnuf**

**Setting**

*Landform:* Terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Old alluvium

**Typical profile**

*A - 0 to 7 inches:* loam

*Bt - 7 to 23 inches:* clay loam

*Bk - 23 to 50 inches:* loam

*2C - 50 to 60 inches:* stratified gravelly sandy loam to silty clay loam

**Properties and qualities**

*Slope:* 9 to 15 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

## Custom Soil Resource Report

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 10.0  
*Available water storage in profile:* High (about 9.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

### Description of Turner

#### Setting

*Landform:* Hillslopes, fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 5 inches:* loam  
*Bt - 5 to 19 inches:* clay loam  
*2C - 19 to 60 inches:* very gravelly loamy sand

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Available water storage in profile:* Low (about 4.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

### Minor Components

#### Martinsdale

*Percent of map unit:* 10 percent  
*Landform:* Hillslopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear



## Custom Soil Resource Report

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### **Reeder**

*Percent of map unit:* 10 percent  
*Landform:* Hillslopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

### **Doney**

*Percent of map unit:* 5 percent  
*Landform:* Hillslopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R053AE064MT)  
*Hydric soil rating:* No

### **Tally**

*Percent of map unit:* 5 percent  
*Landform:* Hillslopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R053AE062MT)  
*Hydric soil rating:* No

## **75—Ustic Torrifluents, gently sloping**

### **Map Unit Setting**

*National map unit symbol:* clm7  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Ustic torrifluents and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Ustic Torrifluents**

#### **Setting**

*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

## Custom Soil Resource Report

### Typical profile

*C - 7 to 40 inches:* stratified sandy loam to clay loam  
*2C - 40 to 60 inches:* gravelly loamy sand

### Properties and qualities

*Slope:* 0 to 5 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* About 36 to 72 inches  
*Frequency of flooding:* Occasional  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 7.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* B  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XC207MT)  
*Hydric soil rating:* No

## 76—Vaeda silty clay

### Map Unit Setting

*National map unit symbol:* clm8  
*Elevation:* 1,900 to 4,800 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Vaeda and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Vaeda

#### Setting

*Landform:* Fans, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### Typical profile

*E - 0 to 3 inches:* silty clay  
*By1 - 3 to 10 inches:* silty clay  
*By2 - 10 to 72 inches:* silty clay

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 20.0  
*Available water storage in profile:* Moderate (about 7.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)  
*Hydric soil rating:* No

### Minor Components

#### Absher

*Percent of map unit:* 3 percent  
*Landform:* Terraces, fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)  
*Hydric soil rating:* No

#### Marias

*Percent of map unit:* 1 percent  
*Landform:* Lake plains, fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

#### Nobe

*Percent of map unit:* 1 percent  
*Landform:* Fans, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R053AE071MT)  
*Hydric soil rating:* No

## **79—Water**

### **Map Unit Composition**

*Water:* 100 percent

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

# **Soil Information for All Uses**

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## **Soil Properties and Qualities**

The Soil Properties and Qualities section includes various soil properties and qualities 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 property or quality.

## **Soil Qualities and Features**

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

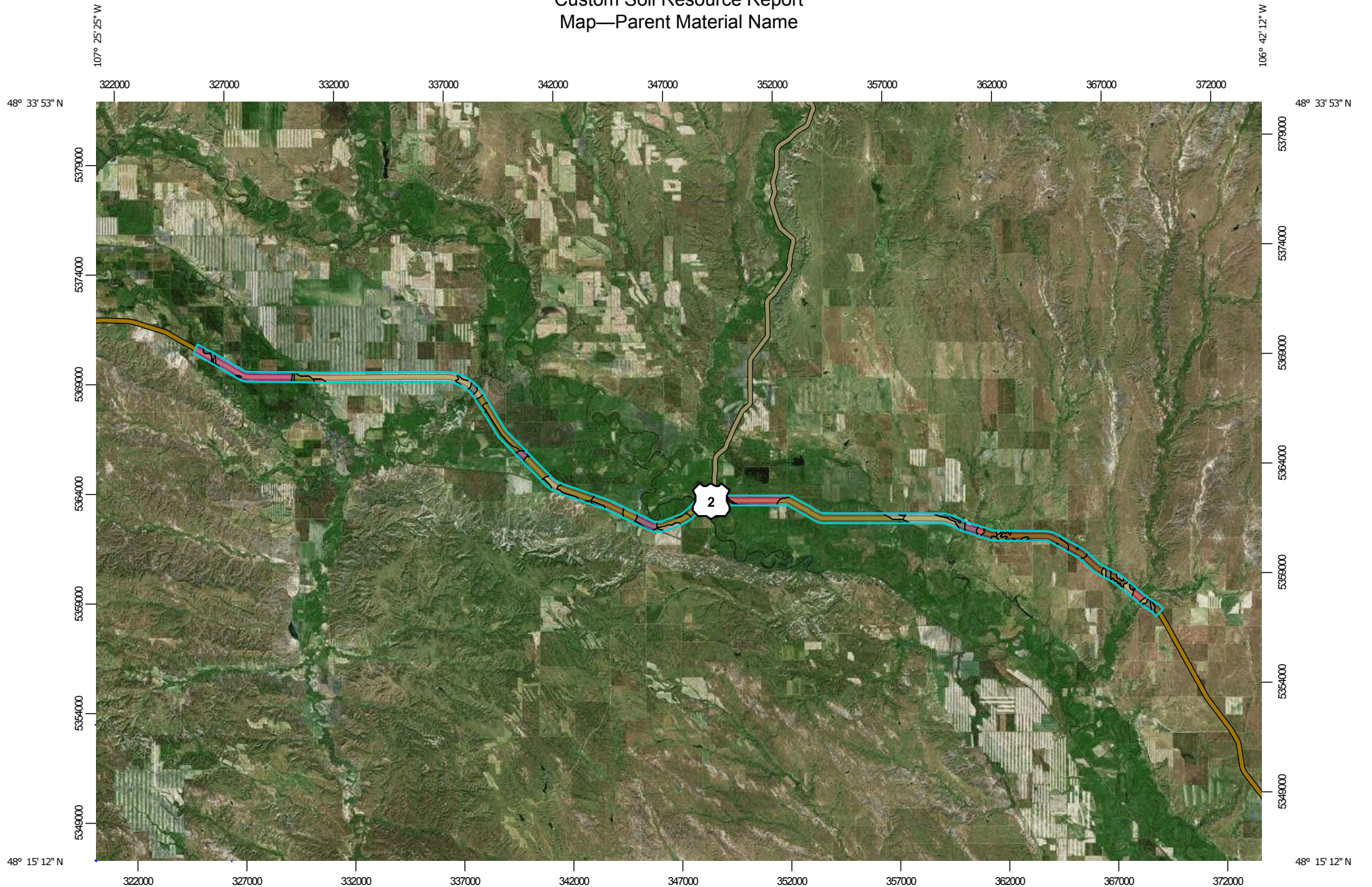
## **Parent Material Name**

Parent material name is a term for the general physical, chemical, and mineralogical composition of the unconsolidated material, mineral or organic, in which the soil forms. Mode of deposition and/or weathering may be implied by the name.

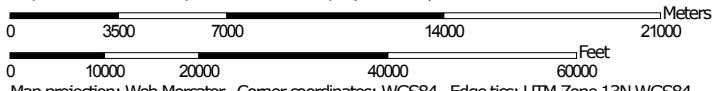
The soil surveyor uses parent material to develop a model used for soil mapping. Soil scientists and specialists in other disciplines use parent material to help interpret soil boundaries and project performance of the material below the soil. Many soil properties relate to parent material. Among these properties are proportions of sand, silt, and clay; chemical content; bulk density; structure; and the kinds and amounts of rock fragments. These properties affect interpretations and may be criteria used to separate soil series. Soil properties and landscape information may imply the kind of parent material.

For each soil in the database, one or more parent materials may be identified. One is marked as the representative or most commonly occurring. The representative parent material name is presented here.

# Custom Soil Resource Report Map—Parent Material Name




Map Scale: 1:244,000 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84















### MAP LEGEND

**Area of Interest (AOI)**


 Area of Interest (AOI)














**Soils**

**Soil Rating Polygons**





-  alluvium
-  alluvium and/or glaciolacustrine deposits
-  calcareous clayey alluvium
-  clayey alluvium
-  clayey alluvium and/or clayey glaciolacustrine deposits
-  clayey till
-  fine-loamy till
-  glaciolacustrine deposits
-  loamy alluvium
-  loamy alluvium and/or glaciolacustrine deposits
-  silty alluvium
-  silty glaciolacustrine deposits
-  till
-  Not rated or not available











**Soil Rating Lines**

 alluvium


-  alluvium and/or glaciolacustrine deposits
-  calcareous clayey alluvium
-  clayey alluvium
-  clayey alluvium and/or clayey glaciolacustrine deposits
-  clayey till
-  fine-loamy till
-  glaciolacustrine deposits
-  loamy alluvium
-  loamy alluvium and/or glaciolacustrine deposits
-  silty alluvium
-  silty glaciolacustrine deposits
-  till
-  Not rated or not available

**Soil Rating Points**






-  alluvium
-  alluvium and/or glaciolacustrine deposits
-  calcareous clayey alluvium
-  clayey alluvium

-  clayey alluvium and/or clayey glaciolacustrine deposits
-  clayey till
-  fine-loamy till
-  glaciolacustrine deposits
-  loamy alluvium
-  loamy alluvium and/or glaciolacustrine deposits
-  silty alluvium
-  silty glaciolacustrine deposits
-  till
-  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: Phillips County Area, Montana  
 Survey Area Data: Version 12, Sep 28, 2015

Soil Survey Area: Valley County, Montana  
 Survey Area Data: Version 19, Sep 28, 2015

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

**MAP LEGEND**

**MAP INFORMATION**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



Custom Soil Resource Report

**Table—Parent Material Name**

Parent Material Name— Summary by Map Unit — Phillips County Area, Montana (MT641)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
90A	Harlake clay, 0 to 2 percent slopes	alluvium	47.8	0.9%
93A	Bowdoin clay, 0 to 2 percent slopes	glaciolacustrine deposits	491.0	8.9%
W	Water		8.9	0.2%
<b>Subtotals for Soil Survey Area</b>			<b>547.6</b>	<b>9.9%</b>
<b>Totals for Area of Interest</b>			<b>5,533.5</b>	<b>100.0%</b>

Parent Material Name— Summary by Map Unit — Valley County, Montana (MT105)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
2	Aquic Ustifluvents, saline	alluvium	39.7	0.7%
5	Bowdoin clay	clayey alluvium	101.6	1.8%
13	Evanston-Lonna loams, 2 to 9 percent slopes	alluvium and/or glaciolacustrine deposits	20.7	0.4%
22	Harlem silty clay loam	clayey alluvium and/or clayey glaciolacustrine deposits	171.4	3.1%
23	Harlem clay	clayey alluvium and/or clayey glaciolacustrine deposits	1,304.0	23.6%
25	Havre silty clay loam	loamy alluvium	260.4	4.7%
26	Havre-Glendive complex	loamy alluvium	15.3	0.3%
27	Havre-Harlem silty clays	loamy alluvium and/or glaciolacustrine deposits	424.1	7.7%
30	Hillon-Telstad loams, 9 to 15 percent slopes	till	5.2	0.1%
32	Lallie silty clay	calcareous clayey alluvium	62.7	1.1%
36	Lonna silt loam, 1 to 3 percent slopes	silty alluvium	151.2	2.7%
37	Lonna-Marias complex, 1 to 3 percent slopes	silty glaciolacustrine deposits	45.8	0.8%
38	Marias clay, 1 to 9 percent slopes		1,048.6	19.0%
46	Phillips loam, 0 to 4 percent slopes	clayey till	567.0	10.2%
47	Phillips-Elloam complex, 1 to 9 percent slopes	till	13.5	0.2%
49	Phillips-Kevin complex, 2 to 8 percent slopes	clayey till	147.4	2.7%
52	Redvale loam, 0 to 3 percent slopes	alluvium	31.5	0.6%

Custom Soil Resource Report

Parent Material Name— Summary by Map Unit — Valley County, Montana (MT105)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
57	Scobey-Kevin clay loams, 2 to 8 percent slopes	clayey till	3.8	0.1%
59	Scobey-Sunburst clay loams, 5 to 25 percent slopes	till	40.5	0.7%
60	Sunburst clay loam, 9 to 35 percent slopes		237.3	4.3%
65	Telstad loam, 2 to 8 percent slopes	fine-loamy till	23.2	0.4%
70	Tinsley complex, 9 to 35 percent slopes	alluvium	22.5	0.4%
75	Ustic Torrifuvents, gently sloping	alluvium	100.7	1.8%
76	Vaeda silty clay		126.8	2.3%
79	Water		21.1	0.4%
<b>Subtotals for Soil Survey Area</b>			<b>4,985.9</b>	<b>90.1%</b>
<b>Totals for Area of Interest</b>			<b>5,533.5</b>	<b>100.0%</b>

**Rating Options—Parent Material Name**

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Lower

## 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.

## Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

## Prime and other Important Farmlands

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

*Prime farmland* is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate

## Custom Soil Resource Report

quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

*Unique farmland* is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

### Report—Prime and other Important Farmlands

Prime and other Important Farmlands—Phillips County Area, Montana		
Map Symbol	Map Unit Name	Farmland Classification
90A	Harlake clay, 0 to 2 percent slopes	Farmland of statewide importance
93A	Bowdoin clay, 0 to 2 percent slopes	Not prime farmland
W	Water	Not prime farmland

## Custom Soil Resource Report

<b>Prime and other Important Farmlands–Valley County, Montana</b>		
<b>Map Symbol</b>	<b>Map Unit Name</b>	<b>Farmland Classification</b>
2	Aquic Ustifluvents, saline	Not prime farmland
5	Bowdoin clay	Not prime farmland
13	Evanston-Lonna loams, 2 to 9 percent slopes	Not prime farmland
22	Harlem silty clay loam	Not prime farmland
23	Harlem clay	Not prime farmland
25	Havre silty clay loam	Farmland of statewide importance
26	Havre-Glendive complex	Farmland of statewide importance
27	Havre-Harlem silty clays	Not prime farmland
30	Hillon-Telstad loams, 9 to 15 percent slopes	Not prime farmland
32	Lallie silty clay	Not prime farmland
36	Lonna silt loam, 1 to 3 percent slopes	Farmland of statewide importance
37	Lonna-Marias complex, 1 to 3 percent slopes	Not prime farmland
38	Marias clay, 1 to 9 percent slopes	Not prime farmland
46	Phillips loam, 0 to 4 percent slopes	Not prime farmland
47	Phillips-Elloam complex, 1 to 9 percent slopes	Not prime farmland
49	Phillips-Kevin complex, 2 to 8 percent slopes	Not prime farmland
52	Redvale loam, 0 to 3 percent slopes	Prime farmland if irrigated
57	Scobey-Kevin clay loams, 2 to 8 percent slopes	Not prime farmland
59	Scobey-Sunburst clay loams, 5 to 25 percent slopes	Not prime farmland
60	Sunburst clay loam, 9 to 35 percent slopes	Not prime farmland
65	Telstad loam, 2 to 8 percent slopes	Not prime farmland
70	Tinsley complex, 9 to 35 percent slopes	Not prime farmland
75	Ustic Torrifluvents, gently sloping	Not prime farmland
76	Vaeda silty clay	Not prime farmland
79	Water	Not prime farmland

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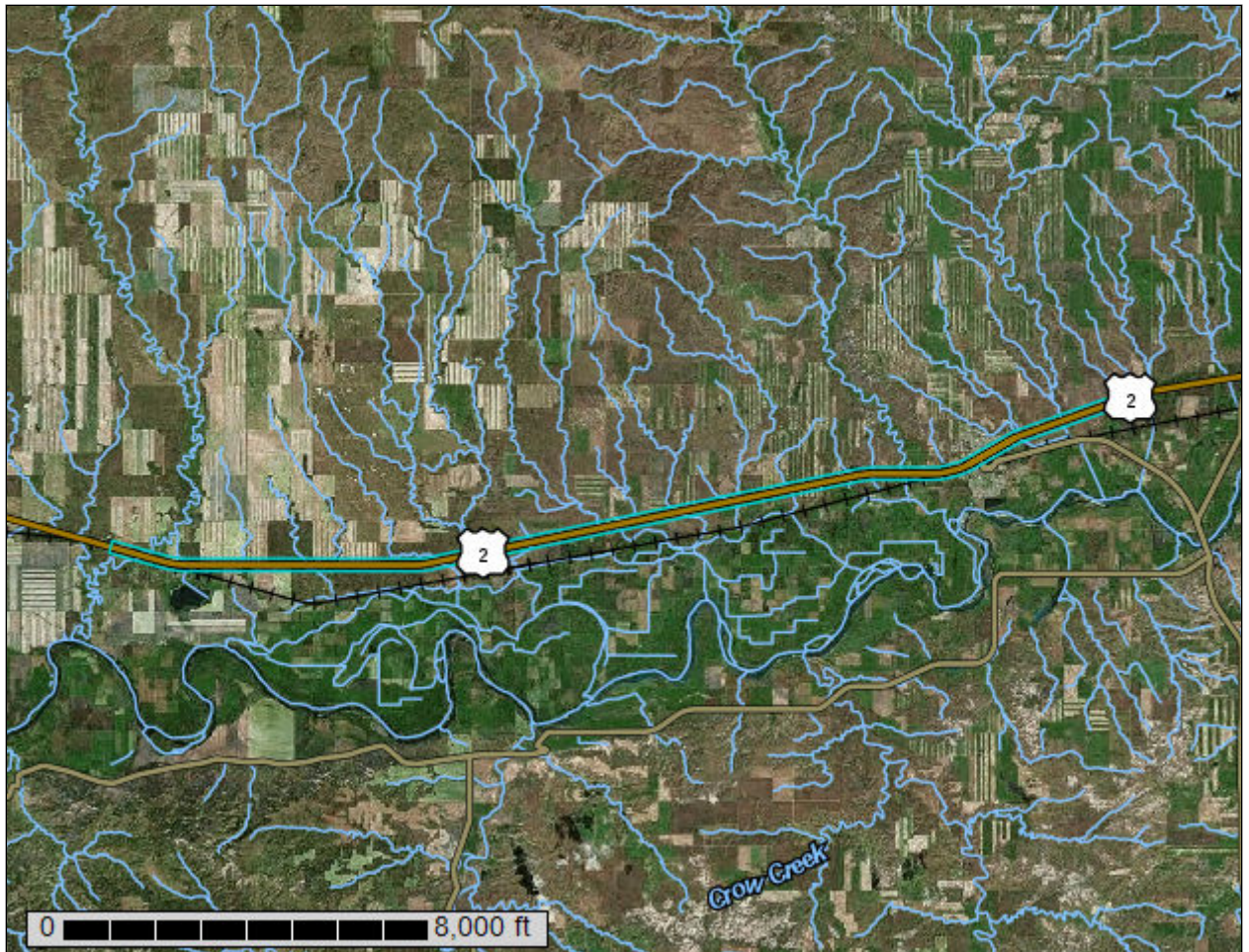
United States  
Department of  
Agriculture

**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 Roosevelt and Daniels Counties, Montana, and Valley County, Montana





# 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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# Contents

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<b>Preface</b> .....	2
<b>How Soil Surveys Are Made</b> .....	6
<b>Soil Map</b> .....	9
Soil Map.....	10
Legend.....	11
Map Unit Legend.....	13
Map Unit Descriptions.....	15
Roosevelt and Daniels Counties, Montana.....	17
1—Adger silty clay loam, 1 to 8 percent slopes.....	17
8—Bowdoin clay, protected.....	18
15—Evanston loam, 2 to 8 percent slopes.....	20
18—Farnuf loam, 2 to 8 percent slopes.....	21
20—Fluvaquents, saline, 0 to 2 percent slopes.....	23
21—Glendive fine sandy loam, protected, 0 to 2 percent slopes.....	24
23—Harlem silty clay loam, protected, 0 to 2 percent slopes.....	25
24—Havre silt loam, protected, 0 to 2 percent slopes.....	27
26—Havrelon loam, 0 to 2 percent slopes.....	28
29—Havrelon-Trembles complex, protected, 0 to 2 percent slopes.....	29
30—Hillon loam, 8 to 15 percent slopes.....	31
31—Hillon loam, 15 to 45 percent slopes.....	33
32—Hillon-Tinsley complex, 8 to 15 percent slopes.....	34
33—Hillon-Tinsley complex, 15 to 45 percent slopes.....	36
34—Lallie silty clay, saline, 0 to 2 percent slopes.....	38
37—Lohler silty clay, protected, 0 to 2 percent slopes.....	39
50—Telstad loam, 2 to 8 percent slopes.....	41
51—Telstad-Hillon loams, 2 to 8 percent slopes.....	42
52—Thebo-Lisam complex, 15 to 45 percent slopes.....	44
55—Trembles fine sandy loam, protected, 0 to 2 percent slopes.....	46
62—Ustic Torrifluvents, 0 to 2 percent slopes.....	48
63—Ustifluvents, saline, 0 to 2 percent slopes.....	49
64—Vanda variant silty clay, 4 to 10 percent slopes.....	50
65—Vanda variant-Thebo-Lisam complex, 4 to 15 percent slopes.....	51
69—Williams loam, 2 to 8 percent slopes.....	54
70—Williams-Zahill loams, 2 to 8 percent slopes.....	56
71—Zahill loam, 8 to 15 percent slopes.....	58
76—Zahill-Tinsley complex, 15 to 45 percent slopes.....	60
Valley County, Montana.....	63
1—Absher-Vaeda complex, 1 to 5 percent slopes.....	63
5—Bowdoin clay.....	65
23—Harlem clay.....	66
25—Havre silty clay loam.....	67
27—Havre-Harlem silty clays.....	69
38—Marias clay, 1 to 9 percent slopes.....	70
47—Phillips-Elloam complex, 1 to 9 percent slopes.....	73

## Custom Soil Resource Report

49—Phillips-Kevin complex, 2 to 8 percent slopes.....	75
51—Phillips-Thoeny loams, 0 to 2 percent slopes.....	78
52—Redvale loam, 0 to 3 percent slopes.....	80
57—Scobey-Kevin clay loams, 2 to 8 percent slopes.....	81
59—Scobey-Sunburst clay loams, 5 to 25 percent slopes.....	83
60—Sunburst clay loam, 9 to 35 percent slopes.....	86
61—Sunburst-Lisam complex, 9 to 35 percent slopes.....	88
68—Thebo-Lisam clays, 2 to 15 percent slopes.....	90
75—Ustic Torrifluvents, gently sloping.....	92
79—Water.....	93
<b>Soil Information for All Uses.....</b>	<b>94</b>
Soil Properties and Qualities.....	94
Soil Qualities and Features.....	94
Parent Material Name.....	94
Soil Reports.....	101
Land Classifications.....	101
Prime and other Important Farmlands.....	101
<b>References.....</b>	<b>105</b>

# 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

## Custom Soil Resource Report

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

## Custom Soil Resource Report

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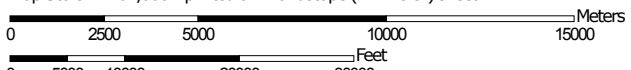
The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



# Custom Soil Resource Report Soil Map



Map Scale: 1:201,000 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N 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: Roosevelt and Daniels Counties, Montana  
 Survey Area Data: Version 14, Sep 28, 2015

Soil Survey Area: Valley County, Montana  
 Survey Area Data: Version 19, Sep 28, 2015

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

**MAP LEGEND**

**MAP INFORMATION**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Roosevelt and Daniels Counties, Montana (MT661)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Adger silty clay loam, 1 to 8 percent slopes	21.8	0.5%
8	Bowdoin clay, protected	27.9	0.7%
15	Evanston loam, 2 to 8 percent slopes	256.2	6.0%
18	Farnuf loam, 2 to 8 percent slopes	69.4	1.6%
20	Fluvaquents, saline, 0 to 2 percent slopes	19.7	0.5%
21	Glendive fine sandy loam, protected, 0 to 2 percent slopes	7.1	0.2%
23	Harlem silty clay loam, protected, 0 to 2 percent slopes	33.1	0.8%
24	Havre silt loam, protected, 0 to 2 percent slopes	24.3	0.6%
26	Havrelon loam, 0 to 2 percent slopes	29.5	0.7%
29	Havrelon-Trembles complex, protected, 0 to 2 percent slopes	54.4	1.3%
30	Hillon loam, 8 to 15 percent slopes	186.6	4.4%
31	Hillon loam, 15 to 45 percent slopes	125.1	2.9%
32	Hillon-Tinsley complex, 8 to 15 percent slopes	18.3	0.4%
33	Hillon-Tinsley complex, 15 to 45 percent slopes	106.5	2.5%
34	Lallie silty clay, saline, 0 to 2 percent slopes	113.7	2.7%
37	Lohler silty clay, protected, 0 to 2 percent slopes	197.4	4.6%
50	Telstad loam, 2 to 8 percent slopes	43.3	1.0%
51	Telstad-Hillon loams, 2 to 8 percent slopes	467.4	11.0%
52	Thebo-Lisam complex, 15 to 45 percent slopes	9.6	0.2%
55	Trembles fine sandy loam, protected, 0 to 2 percent slopes	44.8	1.1%
62	Ustic Torrifluvents, 0 to 2 percent slopes	79.4	1.9%

Custom Soil Resource Report

<b>Roosevelt and Daniels Counties, Montana (MT661)</b>			
<b>Map Unit Symbol</b>	<b>Map Unit Name</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
63	Ustifluvents, saline, 0 to 2 percent slopes	4.5	0.1%
64	Vanda variant silty clay, 4 to 10 percent slopes	167.4	3.9%
65	Vanda variant-Thebo-Lisam complex, 4 to 15 percent slopes	72.4	1.7%
69	Williams loam, 2 to 8 percent slopes	3.3	0.1%
70	Williams-Zahill loams, 2 to 8 percent slopes	44.1	1.0%
71	Zahill loam, 8 to 15 percent slopes	81.8	1.9%
76	Zahill-Tinsley complex, 15 to 45 percent slopes	103.9	2.4%
<b>Subtotals for Soil Survey Area</b>		<b>2,413.0</b>	<b>56.8%</b>
<b>Totals for Area of Interest</b>		<b>4,246.4</b>	<b>100.0%</b>

<b>Valley County, Montana (MT105)</b>			
<b>Map Unit Symbol</b>	<b>Map Unit Name</b>	<b>Acres in AOI</b>	<b>Percent of AOI</b>
1	Absher-Vaeda complex, 1 to 5 percent slopes	115.4	2.7%
5	Bowdoin clay	2.2	0.1%
23	Harlem clay	214.0	5.0%
25	Havre silty clay loam	63.4	1.5%
27	Havre-Harlem silty clays	18.5	0.4%
38	Marias clay, 1 to 9 percent slopes	149.5	3.5%
47	Phillips-Elloam complex, 1 to 9 percent slopes	20.8	0.5%
49	Phillips-Kevin complex, 2 to 8 percent slopes	785.6	18.5%
51	Phillips-Thoeny loams, 0 to 2 percent slopes	101.8	2.4%
52	Redvale loam, 0 to 3 percent slopes	76.2	1.8%
57	Scobey-Kevin clay loams, 2 to 8 percent slopes	29.4	0.7%
59	Scobey-Sunburst clay loams, 5 to 25 percent slopes	70.2	1.7%
60	Sunburst clay loam, 9 to 35 percent slopes	54.2	1.3%
61	Sunburst-Lisam complex, 9 to 35 percent slopes	20.6	0.5%
68	Thebo-Lisam clays, 2 to 15 percent slopes	48.1	1.1%

Custom Soil Resource Report

Valley County, Montana (MT105)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
75	Ustic Torrfluvents, gently sloping	53.3	1.3%
79	Water	10.3	0.2%
<b>Subtotals for Soil Survey Area</b>		<b>1,833.3</b>	<b>43.2%</b>
<b>Totals for Area of Interest</b>		<b>4,246.4</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 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.

## Custom Soil Resource Report

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.

## Roosevelt and Daniels Counties, Montana

### 1—Adger silty clay loam, 1 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* cpbm  
*Elevation:* 1,920 to 2,970 feet  
*Mean annual precipitation:* 12 to 15 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

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

#### Description of Adger

##### Setting

*Landform:* Hills, alluvial fans  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

##### Typical profile

*A - 0 to 2 inches:* silty clay loam  
*Bt - 2 to 8 inches:* silty clay  
*Cyz - 8 to 60 inches:* silty clay

##### Properties and qualities

*Slope:* 1 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Gypsum, maximum in profile:* 2 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 6.1 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) LRU 53A-Y (R053AE073MT)  
*Hydric soil rating:* No



**Minor Components**

**Farnuf**

*Percent of map unit:* 4 percent  
*Landform:* Hills, alluvial fans  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

**Savage**

*Percent of map unit:* 3 percent  
*Landform:* Alluvial fans, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) LRU 53A-Y (R053AE061MT)  
*Hydric soil rating:* No

**Farland**

*Percent of map unit:* 3 percent  
*Landform:* Alluvial fans, hills  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

**Nobe**

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R053AE072MT)  
*Hydric soil rating:* No

**Cherry**

*Percent of map unit:* 2 percent  
*Landform:* Hills, alluvial fans  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

**8—Bowdoin clay, protected**

**Map Unit Setting**

*National map unit symbol:* cpf3  
*Elevation:* 1,880 to 2,120 feet

## Custom Soil Resource Report

*Mean annual precipitation:* 12 to 15 inches  
*Mean annual air temperature:* 34 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Bowdoin

#### Setting

*Landform:* Stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

#### Typical profile

*A - 0 to 3 inches:* clay  
*C1 - 3 to 16 inches:* clay  
*C2 - 16 to 60 inches:* clay

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 7.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) LRU 53A-Y (R053AE073MT)  
*Hydric soil rating:* No

### Minor Components

#### Harlem

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

#### Havre

*Percent of map unit:* 2 percent

## Custom Soil Resource Report

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### **Havrelon**

*Percent of map unit:* 2 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

### **Lohler**

*Percent of map unit:* 2 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) LRU 53A-Y (R053AE061MT)  
*Hydric soil rating:* No

### **Mckenzie**

*Percent of map unit:* 1 percent  
*Landform:* Basin floors, depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)  
*Hydric soil rating:* Yes

## **15—Evanston loam, 2 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cpbt  
*Elevation:* 1,990 to 2,710 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Farmland of statewide importance

### **Map Unit Composition**

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

### **Description of Evanston**

#### **Setting**

*Landform:* Stream terraces, alluvial fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

## Custom Soil Resource Report

*Parent material:* Loamy alluvium

### Typical profile

*A - 0 to 4 inches:* loam

*Bt - 4 to 12 inches:* clay loam

*Bk - 12 to 23 inches:* loam

*Ck - 23 to 60 inches:* loam

### Properties and qualities

*Slope:* 2 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 15 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 10.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* B

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

### Minor Components

#### Telstad

*Percent of map unit:* 6 percent

*Landform:* Plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

#### Hillon

*Percent of map unit:* 4 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

## 18—Farnuf loam, 2 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* cpbx

## Custom Soil Resource Report

*Elevation:* 1,870 to 3,110 feet  
*Mean annual precipitation:* 12 to 15 inches  
*Mean annual air temperature:* 34 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

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

### Description of Farnuf

#### Setting

*Landform:* Alluvial fans, hills  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy alluvium

#### Typical profile

*Ap - 0 to 6 inches:* loam  
*Bt - 6 to 18 inches:* clay loam  
*Btk - 18 to 36 inches:* silt loam  
*C - 36 to 60 inches:* stratified gravelly sandy loam to silty clay loam

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 5.0  
*Available water storage in profile:* High (about 9.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

### Minor Components

#### Williams

*Percent of map unit:* 4 percent  
*Landform:* Plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

**Farland**

*Percent of map unit:* 3 percent  
*Landform:* Alluvial fans, hills  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

**Bowbells**

*Percent of map unit:* 3 percent  
*Landform:* Swales, depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)  
*Hydric soil rating:* No

**20—Fluvaquents, saline, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cpc0  
*Elevation:* 1,910 to 2,810 feet  
*Mean annual precipitation:* 12 to 15 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

**Description of Fluvaquents**

**Setting**

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R053AE068MT)

*Hydric soil rating:* Yes

**Minor Components**

**Harlem**

*Percent of map unit:* 6 percent

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

**Riverwash**

*Percent of map unit:* 4 percent

*Hydric soil rating:* No

**21—Glendive fine sandy loam, protected, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cpc1

*Elevation:* 1,970 to 2,280 feet

*Mean annual precipitation:* 10 to 13 inches

*Mean annual air temperature:* 37 to 45 degrees F

*Frost-free period:* 105 to 120 days

*Farmland classification:* Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60

**Map Unit Composition**

*Glendive and similar soils:* 90 percent

*Minor components:* 10 percent

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

**Description of Glendive**

**Setting**

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Coarse-loamy alluvium

**Typical profile**

*A - 0 to 7 inches:* fine sandy loam

*C1 - 7 to 15 inches:* sandy loam

*C2 - 15 to 60 inches:* stratified loamy fine sand to silt loam

**Properties and qualities**

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

## Custom Soil Resource Report

*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 3.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 8.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* A  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XC212MT)  
*Hydric soil rating:* No

### Minor Components

#### Havre

*Percent of map unit:* 5 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

#### Banks

*Percent of map unit:* 5 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)  
*Hydric soil rating:* No

## 23—Harlem silty clay loam, protected, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* cpc3  
*Elevation:* 1,970 to 2,170 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

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



## Description of Harlem

### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

### Typical profile

*A - 0 to 4 inches:* silty clay loam  
*C - 4 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  
*Natural 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 in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 10.0  
*Available water storage in profile:* High (about 9.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

## Minor Components

### Havre

*Percent of map unit:* 9 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### Lallie

*Percent of map unit:* 1 percent  
*Landform:* Lakebeds, oxbows  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R053AE068MT)  
*Hydric soil rating:* Yes

## 24—Havre silt loam, protected, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* cpc4

*Elevation:* 1,970 to 2,050 feet

*Mean annual precipitation:* 10 to 13 inches

*Mean annual air temperature:* 37 to 45 degrees F

*Frost-free period:* 105 to 120 days

*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Havre and similar soils:* 90 percent

*Minor components:* 10 percent

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

### Description of Havre

#### Setting

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Loamy alluvium

#### Typical profile

*A - 0 to 7 inches:* silt loam

*C - 7 to 60 inches:* stratified fine sandy loam to clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

*Available water storage in profile:* High (about 9.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* B

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

**Minor Components**

**Glendive**

*Percent of map unit:* 6 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R052XC212MT)  
*Hydric soil rating:* No

**Harlem**

*Percent of map unit:* 4 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

**26—Havrelon loam, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cpc6  
*Elevation:* 1,870 to 2,910 feet  
*Mean annual precipitation:* 12 to 15 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60

**Map Unit Composition**

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

**Description of Havrelon**

**Setting**

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy alluvium

**Typical profile**

*A - 0 to 7 inches:* loam  
*C - 7 to 60 inches:* stratified silty clay loam to very fine sandy loam

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained

## Custom Soil Resource Report

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* Occasional

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Available water storage in profile:* High (about 10.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4w

*Hydrologic Soil Group:* B

*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)

*Hydric soil rating:* No

### Minor Components

#### Lohler

*Percent of map unit:* 5 percent

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)

*Hydric soil rating:* No

#### Trembles

*Percent of map unit:* 4 percent

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)

*Hydric soil rating:* No

#### Somewhat poorly drained soils

*Percent of map unit:* 1 percent

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

## 29—Havrelon-Trembles complex, protected, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* cpc9

*Elevation:* 1,870 to 2,220 feet

*Mean annual precipitation:* 12 to 15 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 105 to 120 days

*Farmland classification:* Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60

**Map Unit Composition**

*Havrelon and similar soils:* 60 percent

*Trembles and similar soils:* 30 percent

*Minor components:* 10 percent

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

**Description of Havrelon**

**Setting**

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Loamy alluvium

**Typical profile**

*A - 0 to 7 inches:* stratified silty clay loam to very fine sandy loam

*C - 7 to 60 inches:* stratified silty clay loam to very fine sandy loam

**Properties and qualities**

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Available water storage in profile:* High (about 10.5 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* B

*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)

*Hydric soil rating:* No

**Description of Trembles**

**Setting**

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Coarse-loamy alluvium

**Typical profile**

*A - 0 to 8 inches:* fine sandy loam

*C1 - 8 to 48 inches:* stratified fine sandy loam to loam

*C2 - 48 to 60 inches:* stratified fine sandy loam to loamy sand

**Properties and qualities**

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

*Depth to water table:* More than 80 inches

## Custom Soil Resource Report

*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 7.1 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* A  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R053AE062MT)  
*Hydric soil rating:* No

### **Minor Components**

#### **Banks**

*Percent of map unit:* 6 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)  
*Hydric soil rating:* No

#### **Lohler**

*Percent of map unit:* 4 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) LRU 53A-Y (R053AE061MT)  
*Hydric soil rating:* No

## **30—Hillon loam, 8 to 15 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cpcc  
*Elevation:* 2,000 to 2,590 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

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

## Description of Hillon

### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy glacial till

### Typical profile

*Ap - 0 to 7 inches:* loam  
*Ck - 7 to 60 inches:* clay loam

### Properties and qualities

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

## Minor Components

### Telstad

*Percent of map unit:* 6 percent  
*Landform:* Plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### Evanston

*Percent of map unit:* 4 percent  
*Landform:* Alluvial fans, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

## 31—Hillon loam, 15 to 45 percent slopes

### Map Unit Setting

*National map unit symbol:* cpcd  
*Elevation:* 2,000 to 2,510 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Hillon

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy glacial till

#### Typical profile

*Ap - 0 to 7 inches:* loam  
*Ck - 7 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 15 to 45 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XC223MT)  
*Hydric soil rating:* No



### Minor Components

#### Evanston

*Percent of map unit:* 6 percent  
*Landform:* Stream terraces, alluvial fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

#### Tinsley

*Percent of map unit:* 4 percent  
*Landform:* Ridges, knolls, terraces  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Gravelly (Gr) LRU 53A-Y (R053AE621MT)  
*Hydric soil rating:* No

## 32—Hillon-Tinsley complex, 8 to 15 percent slopes

### Map Unit Setting

*National map unit symbol:* cpcf  
*Elevation:* 2,000 to 2,710 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Hillon and similar soils:* 75 percent  
*Tinsley and similar soils:* 15 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Hillon

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy glacial till

#### Typical profile

*Ap - 0 to 7 inches:* loam  
*Ck - 7 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* More than 80 inches

## Custom Soil Resource Report

*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### Description of Tinsley

#### Setting

*Landform:* Terraces, ridges, knolls  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Sandy and gravelly outwash

#### Typical profile

*A - 0 to 3 inches:* very gravelly sandy loam  
*C - 3 to 45 inches:* very gravelly sand  
*Ck - 45 to 60 inches:* very gravelly sand

#### Properties and qualities

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Very low (about 1.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* A  
*Ecological site:* Gravel (Gr) 10-14" p.z. (R052XC617MT)  
*Hydric soil rating:* No

### Minor Components

#### Evanston

*Percent of map unit:* 5 percent

## Custom Soil Resource Report

*Landform:* Alluvial fans, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

### **Tinsley**

*Percent of map unit:* 3 percent  
*Landform:* Terraces, ridges, knolls  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Gravelly (Gr) LRU 53A-Y (R053AE621MT)  
*Hydric soil rating:* No

### **Wabek**

*Percent of map unit:* 2 percent  
*Landform:* Plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Gravelly (Gr) LRU 53A-Y (R053AE621MT)  
*Hydric soil rating:* No

## **33—Hillon-Tinsley complex, 15 to 45 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cpcg  
*Elevation:* 2,000 to 2,710 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Hillon and similar soils:* 75 percent  
*Tinsley and similar soils:* 15 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Hillon**

#### **Setting**

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy glacial till

#### **Typical profile**

*Ap - 0 to 7 inches:* loam  
*Ck - 7 to 60 inches:* clay loam

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 15 to 45 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 10.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XC223MT)  
*Hydric soil rating:* No

### Description of Tinsley

#### Setting

*Landform:* Terraces, ridges, knolls  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Sandy and gravelly outwash

#### Typical profile

*A - 0 to 3 inches:* very gravelly sandy loam  
*C - 3 to 45 inches:* very gravelly sand  
*Ck - 45 to 60 inches:* very gravelly sand

### Properties and qualities

*Slope:* 15 to 45 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Very low (about 1.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* A  
*Ecological site:* Gravel (Gr) 10-14" p.z. (R052XC617MT)  
*Hydric soil rating:* No

## Minor Components

### Wabek

*Percent of map unit:* 10 percent  
*Landform:* Plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Gravelly (Gr) LRU 53A-Y (R053AE621MT)  
*Hydric soil rating:* No

## 34—Lallie silty clay, saline, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* cpch  
*Elevation:* 1,870 to 2,870 feet  
*Mean annual precipitation:* 12 to 15 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Lallie

#### Setting

*Landform:* Lakebeds, oxbows  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

#### Typical profile

*A - 0 to 3 inches:* silty clay  
*C - 3 to 60 inches:* silty clay

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

## Custom Soil Resource Report

*Sodium adsorption ratio, maximum in profile:* 5.0  
*Available water storage in profile:* Moderate (about 9.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* C/D  
*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R053AE068MT)  
*Hydric soil rating:* Yes

### Minor Components

#### Bowdoin

*Percent of map unit:* 5 percent  
*Landform:* Stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) LRU 53A-Y (R053AE073MT)  
*Hydric soil rating:* No

#### Lohler

*Percent of map unit:* 5 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) LRU 53A-Y (R053AE061MT)  
*Hydric soil rating:* No

## 37—Lohler silty clay, protected, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* cpcl  
*Elevation:* 1,870 to 2,080 feet  
*Mean annual precipitation:* 12 to 15 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Lohler

#### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

## Custom Soil Resource Report

### Typical profile

*A - 0 to 7 inches:* silty clay  
*C - 7 to 60 inches:* silty clay

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 20 percent  
*Available water storage in profile:* High (about 9.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) LRU 53A-Y (R053AE061MT)  
*Hydric soil rating:* No

### Minor Components

#### Havrelon

*Percent of map unit:* 6 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

#### Bowdoin

*Percent of map unit:* 3 percent  
*Landform:* Stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) LRU 53A-Y (R053AE073MT)  
*Hydric soil rating:* No

#### Lallie

*Percent of map unit:* 1 percent  
*Landform:* Oxbows, lakebeds  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R053AE068MT)  
*Hydric soil rating:* Yes

## 50—Telstad loam, 2 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* 2sy84  
*Elevation:* 2,000 to 3,870 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 100 to 140 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Telstad

#### Setting

*Landform:* Moraines  
*Landform position (two-dimensional):* Footslope, backslope, toeslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Fine-loamy till

#### Typical profile

*Ap - 0 to 6 inches:* loam  
*Bt - 6 to 15 inches:* clay loam  
*Bk1 - 15 to 30 inches:* clay loam  
*Bk2 - 30 to 45 inches:* clay loam  
*BCyz - 45 to 61 inches:* loam  
*Cz - 61 to 79 inches:* loam

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 14 percent  
*Gypsum, maximum in profile:* 3 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 10.0 inches)



**Interpretive groups**

*Land capability classification (irrigated): 3e*  
*Land capability classification (nonirrigated): 3e*  
*Hydrologic Soil Group: C*  
*Hydric soil rating: No*

**Minor Components**

**Hillon**

*Percent of map unit: 5 percent*  
*Landform: Moraines*  
*Landform position (two-dimensional): Shoulder*  
*Landform position (three-dimensional): Crest*  
*Down-slope shape: Convex*  
*Across-slope shape: Linear*  
*Hydric soil rating: No*

**Ferd**

*Percent of map unit: 3 percent*  
*Landform: Moraines*  
*Microfeatures of landform position: Swales*  
*Down-slope shape: Linear*  
*Across-slope shape: Concave*  
*Hydric soil rating: No*

**Nishon**

*Percent of map unit: 1 percent*  
*Landform: Depressions on moraines*  
*Down-slope shape: Concave*  
*Across-slope shape: Concave*  
*Hydric soil rating: Yes*

**Elloam**

*Percent of map unit: 1 percent*  
*Landform: Moraines*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Hydric soil rating: No*

**51—Telstad-Hillon loams, 2 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol: cpd3*  
*Elevation: 2,020 to 2,680 feet*  
*Mean annual precipitation: 10 to 13 inches*  
*Mean annual air temperature: 36 to 45 degrees F*  
*Frost-free period: 105 to 120 days*  
*Farmland classification: Not prime farmland*

**Map Unit Composition**

*Telstad and similar soils:* 60 percent

*Hillon and similar soils:* 30 percent

*Minor components:* 10 percent

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

**Description of Telstad**

**Setting**

*Landform:* Plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Loamy glacial till

**Typical profile**

*A - 0 to 5 inches:* loam

*Bt - 5 to 15 inches:* clay loam

*Ck - 15 to 60 inches:* clay loam

**Properties and qualities**

*Slope:* 2 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Salinity, maximum in profile:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)

*Available water storage in profile:* High (about 10.3 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

**Description of Hillon**

**Setting**

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Loamy glacial till

**Typical profile**

*Ap - 0 to 7 inches:* loam

*Ck - 7 to 60 inches:* clay loam

**Properties and qualities**

*Slope:* 2 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 10.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

### Minor Components

#### Phillips

*Percent of map unit:* 4 percent

*Landform:* Plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)

*Hydric soil rating:* No

#### Eloam

*Percent of map unit:* 3 percent

*Landform:* Moraines

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)

*Hydric soil rating:* No

#### Evanston

*Percent of map unit:* 3 percent

*Landform:* Stream terraces, alluvial fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

## 52—Thebo-Lisam complex, 15 to 45 percent slopes

### Map Unit Setting

*National map unit symbol:* cpd4

*Elevation:* 1,960 to 2,620 feet

*Mean annual precipitation:* 10 to 13 inches

*Mean annual air temperature:* 39 to 45 degrees F

## Custom Soil Resource Report

*Frost-free period:* 105 to 120 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Thebo and similar soils:* 55 percent

*Lisam and similar soils:* 30 percent

*Minor components:* 15 percent

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

### Description of Thebo

#### Setting

*Landform:* Plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Residuum weathered from shale

#### Typical profile

*A - 0 to 2 inches:* clay

*Bk - 2 to 25 inches:* clay

*Ck - 25 to 32 inches:* clay

*Cr - 32 to 60 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 15 to 30 percent

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

*Natural 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 in profile:* 15 percent

*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

*Available water storage in profile:* Low (about 4.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* D

*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)

*Hydric soil rating:* No

### Description of Lisam

#### Setting

*Landform:* Plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Residuum weathered from calcareous shale

#### Typical profile

*A - 0 to 4 inches:* silty clay

*C - 4 to 17 inches:* silty clay

*Cr - 17 to 60 inches:* weathered bedrock

#### Properties and qualities

*Slope:* 20 to 45 percent

## Custom Soil Resource Report

*Depth to restrictive feature:* 10 to 20 inches to paralithic bedrock  
*Natural 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 in profile:* 5 percent  
*Salinity, maximum in profile:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* Very low (about 2.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* D  
*Ecological site:* Shallow Clay (SwC) 10-14" p.z. (R052XC215MT)  
*Hydric soil rating:* No

### Minor Components

#### Zahill

*Percent of map unit:* 8 percent  
*Landform:* Knolls, hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R053AE064MT)  
*Hydric soil rating:* No

#### Hillon

*Percent of map unit:* 7 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XC223MT)  
*Hydric soil rating:* No

## 55—Trembles fine sandy loam, protected, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* cpd7  
*Elevation:* 1,870 to 2,020 feet  
*Mean annual precipitation:* 12 to 15 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60

**Map Unit Composition**

*Trembles and similar soils:* 90 percent

*Minor components:* 10 percent

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

**Description of Trembles**

**Setting**

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Coarse-loamy alluvium

**Typical profile**

*A - 0 to 8 inches:* fine sandy loam

*C1 - 8 to 48 inches:* stratified fine sandy loam to loam

*C2 - 48 to 60 inches:* stratified fine sandy loam to loamy sand

**Properties and qualities**

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Moderate (about 7.1 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* A

*Ecological site:* Sandy (Sy) 10-14" p.z. (R053AE062MT)

*Hydric soil rating:* No

**Minor Components**

**Havrelon**

*Percent of map unit:* 5 percent

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)

*Hydric soil rating:* No

**Banks**

*Percent of map unit:* 5 percent

*Landform:* Flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)

*Hydric soil rating:* No

## 62—Ustic Torrfluents, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* cpdh  
*Elevation:* 1,990 to 2,490 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Ustic Torrfluents

#### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XC207MT)  
*Hydric soil rating:* No

### Minor Components

#### Riverwash

*Percent of map unit:* 9 percent  
*Hydric soil rating:* No

#### Lallie

*Percent of map unit:* 1 percent  
*Landform:* Lakebeds, oxbows  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R053AE068MT)  
*Hydric soil rating:* Yes

## 63—Ustifluvents, saline, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* cpdj  
*Elevation:* 1,910 to 2,840 feet  
*Mean annual precipitation:* 12 to 15 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Ustifluvents

#### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Ecological site:* Saline Overflow (SOv) 10-14" p.z. (R053AE072MT)  
*Hydric soil rating:* No

### Minor Components

#### Riverwash

*Percent of map unit:* 9 percent  
*Hydric soil rating:* No

#### Lallie

*Percent of map unit:* 1 percent  
*Landform:* Lakebeds, oxbows  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Wet Meadow (WM) 10-14" p.z. (R053AE068MT)  
*Hydric soil rating:* Yes



## 64—Vanda variant silty clay, 4 to 10 percent slopes

### Map Unit Setting

*National map unit symbol:* cpdk  
*Elevation:* 1,950 to 2,540 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Vanda

#### Setting

*Landform:* Alluvial fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

#### Typical profile

*A - 0 to 8 inches:* silty clay  
*Cz1 - 8 to 24 inches:* silty clay loam  
*Cz2 - 24 to 60 inches:* silty clay

#### Properties and qualities

*Slope:* 4 to 10 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 10 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 7.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* D  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

**Minor Components**

**Lisam**

*Percent of map unit:* 5 percent  
*Landform:* Plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow Clay (SwC) 10-14" p.z. (R052XC215MT)  
*Hydric soil rating:* No

**Thebo**

*Percent of map unit:* 5 percent  
*Landform:* Plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

**65—Vanda variant-Thebo-Lisam complex, 4 to 15 percent slopes**

**Map Unit Setting**

*National map unit symbol:* cpdl  
*Elevation:* 1,970 to 2,680 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Vanda and similar soils:* 45 percent  
*Thebo and similar soils:* 30 percent  
*Lisam and similar soils:* 15 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Vanda**

**Setting**

*Landform:* Alluvial fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

**Typical profile**

*A - 0 to 8 inches:* silty clay  
*Cz1 - 8 to 24 inches:* silty clay loam  
*Cz2 - 24 to 60 inches:* silty clay

**Properties and qualities**

*Slope:* 4 to 10 percent

## Custom Soil Resource Report

*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 10 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 7.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* D  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

### Description of Thebo

#### Setting

*Landform:* Plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Residuum weathered from shale

#### Typical profile

*A - 0 to 2 inches:* clay  
*Bk - 2 to 25 inches:* clay  
*Ck - 25 to 32 inches:* clay  
*Cr - 32 to 60 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 6 to 15 percent  
*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* Low (about 4.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* D  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R052XC205MT)  
*Hydric soil rating:* No

## Description of Lisam

### Setting

*Landform:* Plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Residuum weathered from calcareous shale

### Typical profile

*A - 0 to 4 inches:* silty clay

*C - 4 to 17 inches:* silty clay

*Cr - 17 to 60 inches:* weathered bedrock

### Properties and qualities

*Slope:* 10 to 15 percent

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

*Natural 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 in profile:* 5 percent

*Salinity, maximum in profile:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)

*Available water storage in profile:* Very low (about 2.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* D

*Ecological site:* Shallow Clay (SwC) 10-14" p.z. (R052XC215MT)

*Hydric soil rating:* No

## Minor Components

### Zahill

*Percent of map unit:* 5 percent

*Landform:* Hills, knolls

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)

*Hydric soil rating:* No

### Hillon

*Percent of map unit:* 5 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

## 69—Williams loam, 2 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* cpdq

*Elevation:* 1,920 to 2,910 feet

*Mean annual precipitation:* 12 to 15 inches

*Mean annual air temperature:* 34 to 45 degrees F

*Frost-free period:* 105 to 120 days

*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Williams and similar soils:* 90 percent

*Minor components:* 10 percent

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

### Description of Williams

#### Setting

*Landform:* Plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Loamy glacial till

#### Typical profile

*Ap - 0 to 7 inches:* loam

*Bt - 7 to 12 inches:* clay loam

*Btk - 12 to 31 inches:* clay loam

*Ck - 31 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 2 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 5.0

*Available water storage in profile:* High (about 10.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

## Custom Soil Resource Report

*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

### Minor Components

#### Farnuf

*Percent of map unit:* 3 percent  
*Landform:* Hills, alluvial fans  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

#### Dooley

*Percent of map unit:* 2 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R053AE062MT)  
*Hydric soil rating:* No

#### Savage

*Percent of map unit:* 2 percent  
*Landform:* Terraces, alluvial fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) LRU 53A-Y (R053AE061MT)  
*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 1 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)  
*Hydric soil rating:* Yes

#### Bowbells

*Percent of map unit:* 1 percent  
*Landform:* Swales, depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)  
*Hydric soil rating:* No

#### Zahill

*Percent of map unit:* 1 percent  
*Landform:* Plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

## 70—Williams-Zahill loams, 2 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* cpds  
*Elevation:* 1,910 to 2,820 feet  
*Mean annual precipitation:* 12 to 15 inches  
*Mean annual air temperature:* 34 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Williams and similar soils:* 65 percent  
*Zahill and similar soils:* 25 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Williams

#### Setting

*Landform:* Plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy glacial till

#### Typical profile

*Ap - 0 to 7 inches:* loam  
*Bt - 7 to 12 inches:* clay loam  
*Btk - 12 to 31 inches:* clay loam  
*Ck - 31 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 5.0  
*Available water storage in profile:* High (about 10.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)

## Custom Soil Resource Report

*Hydric soil rating:* No

### Description of Zahill

#### Setting

*Landform:* Plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy glacial till

#### Typical profile

*Ap - 0 to 7 inches:* loam  
*Ck - 7 to 24 inches:* clay loam  
*C - 24 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

### Minor Components

#### Savage

*Percent of map unit:* 3 percent  
*Landform:* Terraces, alluvial fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) LRU 53A-Y (R053AE061MT)  
*Hydric soil rating:* No

#### Farnuf

*Percent of map unit:* 3 percent  
*Landform:* Hills, alluvial fans  
*Landform position (two-dimensional):* Footslope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

#### Bowbells

*Percent of map unit:* 2 percent  
*Landform:* Depressions, swales



## Custom Soil Resource Report

*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)  
*Hydric soil rating:* No

### **Nishon**

*Percent of map unit:* 1 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)  
*Hydric soil rating:* Yes

### **Zahl**

*Percent of map unit:* 1 percent  
*Landform:* Plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

## **71—Zahill loam, 8 to 15 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* cpdt  
*Elevation:* 1,910 to 2,830 feet  
*Mean annual precipitation:* 12 to 15 inches  
*Mean annual air temperature:* 34 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

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

### **Description of Zahill**

#### **Setting**

*Landform:* Hills, knolls  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy glacial till

#### **Typical profile**

*A - 0 to 4 inches:* loam  
*Ck - 4 to 22 inches:* clay loam  
*C - 22 to 60 inches:* clay loam

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 8 to 15 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 10 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 9.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)

*Hydric soil rating:* No

### Minor Components

#### Zahill, steeper slopes

*Percent of map unit:* 5 percent

*Landform:* Hills, knolls

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)

*Hydric soil rating:* No

#### Zahl

*Percent of map unit:* 4 percent

*Landform:* Plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)

*Hydric soil rating:* No

#### Williams

*Percent of map unit:* 3 percent

*Landform:* Plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)

*Hydric soil rating:* No

#### Farnuf

*Percent of map unit:* 3 percent

*Landform:* Hills, alluvial fans

*Landform position (two-dimensional):* Footslope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)

*Hydric soil rating:* No

## 76—Zahill-Tinsley complex, 15 to 45 percent slopes

### Map Unit Setting

*National map unit symbol:* cpdz  
*Elevation:* 1,950 to 2,880 feet  
*Mean annual precipitation:* 12 to 15 inches  
*Mean annual air temperature:* 34 to 45 degrees F  
*Frost-free period:* 105 to 120 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Zahill and similar soils:* 75 percent  
*Tinsley and similar soils:* 15 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Zahill

#### Setting

*Landform:* Hills, knolls  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy glacial till

#### Typical profile

*A - 0 to 4 inches:* loam  
*Ck - 4 to 22 inches:* clay loam  
*C - 22 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 15 to 45 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R053AE064MT)  
*Hydric soil rating:* No

## Description of Tinsley

### Setting

*Landform:* Terraces, ridges, knolls  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Sandy and gravelly outwash

### Typical profile

*A - 0 to 3 inches:* very gravelly sandy loam  
*C - 3 to 45 inches:* very gravelly sand  
*Ck - 45 to 60 inches:* very gravelly sand

### Properties and qualities

*Slope:* 15 to 45 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Very low (about 1.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* A  
*Ecological site:* Gravelly (Gr) LRU 53A-Y (R053AE621MT)  
*Hydric soil rating:* No

## Minor Components

### Wabek

*Percent of map unit:* 3 percent  
*Landform:* Terraces, plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Gravelly (Gr) LRU 53A-Y (R053AE621MT)  
*Hydric soil rating:* No

### Zahl

*Percent of map unit:* 3 percent  
*Landform:* Plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R053AE060MT)  
*Hydric soil rating:* No

### Tally

*Percent of map unit:* 2 percent  
*Landform:* Hills, terraces  
*Landform position (two-dimensional):* Footslope

## Custom Soil Resource Report

*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Sandy (Sy) 10-14" p.z. (R053AE062MT)  
*Hydric soil rating:* No

### **Cabba**

*Percent of map unit:* 2 percent  
*Landform:* Hills  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow (Sw) 10-14" p.z. (R053AE077MT)  
*Hydric soil rating:* No

## Valley County, Montana

### 1—Absher-Vaeda complex, 1 to 5 percent slopes

#### Map Unit Setting

*National map unit symbol:* cljx  
*Elevation:* 2,000 to 4,800 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Absher and similar soils:* 50 percent  
*Vaeda and similar soils:* 40 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Absher

##### Setting

*Landform:* Fans, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

##### Typical profile

*E - 0 to 2 inches:* clay loam  
*Btn - 2 to 14 inches:* clay  
*Bkyz - 14 to 60 inches:* clay loam

##### Properties and qualities

*Slope:* 1 to 5 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Salinity, maximum in profile:* Strongly saline (16.0 to 32.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 70.0  
*Available water storage in profile:* Low (about 4.1 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)  
*Hydric soil rating:* No

#### Description of Vaeda

##### Setting

*Landform:* Fans, terraces

## Custom Soil Resource Report

*Down-slope shape:* Linear

*Across-slope shape:* Linear

### Typical profile

*E - 0 to 3 inches:* silty clay

*By1 - 3 to 10 inches:* silty clay

*By2 - 10 to 72 inches:* silty clay

### Properties and qualities

*Slope:* 1 to 5 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 5 percent

*Salinity, maximum in profile:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 20.0

*Available water storage in profile:* Moderate (about 7.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6s

*Hydrologic Soil Group:* D

*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)

*Hydric soil rating:* No

### Minor Components

#### Nobe

*Percent of map unit:* 6 percent

*Landform:* Fans, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)

*Hydric soil rating:* No

#### Phillips

*Percent of map unit:* 4 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

## 5—Bowdoin clay

### Map Unit Setting

*National map unit symbol:* cllb  
*Elevation:* 1,800 to 4,000 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Bowdoin

#### Setting

*Landform:* Flood plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Clayey alluvium

#### Typical profile

*A - 0 to 5 inches:* clay  
*Bss - 5 to 22 inches:* clay  
*By - 22 to 60 inches:* clay

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 30.0  
*Available water storage in profile:* Moderate (about 7.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* D  
*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)  
*Hydric soil rating:* No



## Minor Components

### Harlem

*Percent of map unit:* 6 percent

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

### Vaeda

*Percent of map unit:* 4 percent

*Landform:* Flood plains, terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)

*Hydric soil rating:* No

## 23—Harlem clay

### Map Unit Setting

*National map unit symbol:* clkd

*Elevation:* 1,800 to 6,000 feet

*Mean annual precipitation:* 10 to 13 inches

*Mean annual air temperature:* 37 to 45 degrees F

*Frost-free period:* 110 to 130 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Harlem and similar soils:* 90 percent

*Minor components:* 10 percent

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

### Description of Harlem

#### Setting

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Clayey alluvium and/or clayey glaciolacustrine deposits

#### Typical profile

*A - 0 to 6 inches:* clay

*C1 - 6 to 36 inches:* stratified clay to silty clay loam

*C2 - 36 to 72 inches:* stratified silty clay loam to fine sandy loam

#### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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:* Rare

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Salinity, maximum in profile:* Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 4.0

*Available water storage in profile:* Moderate (about 8.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4s

*Land capability classification (nonirrigated):* 4s

*Hydrologic Soil Group:* C

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

### Minor Components

#### Bowdoin

*Percent of map unit:* 6 percent

*Landform:* Stream terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)

*Hydric soil rating:* No

#### Havre

*Percent of map unit:* 4 percent

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

## 25—Havre silty clay loam

### Map Unit Setting

*National map unit symbol:* clkg

*Elevation:* 1,900 to 6,000 feet

*Mean annual precipitation:* 10 to 13 inches

*Mean annual air temperature:* 37 to 45 degrees F

*Frost-free period:* 110 to 130 days

*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Havre and similar soils:* 90 percent

*Minor components:* 10 percent

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

## Description of Havre

### Setting

*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy alluvium

### Typical profile

*A - 0 to 5 inches:* silty clay loam  
*C - 5 to 65 inches:* stratified fine sandy loam to clay loam

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

## Minor Components

### Harlem

*Percent of map unit:* 5 percent  
*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

### Glendive

*Percent of map unit:* 5 percent  
*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

## 27—Havre-Harlem silty clays

### Map Unit Setting

*National map unit symbol:* clkj  
*Elevation:* 1,900 to 6,000 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 37 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Havre and similar soils:* 50 percent  
*Harlem and similar soils:* 40 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Havre

#### Setting

*Landform:* Terraces, flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loamy alluvium and/or glaciolacustrine deposits

#### Typical profile

*A - 0 to 5 inches:* silty clay  
*C - 5 to 65 inches:* stratified fine sandy loam to clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

## Description of Harlem

### Setting

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Clayey alluvium and/or clayey glaciolacustrine deposits

### Typical profile

*A - 0 to 6 inches:* silty clay

*C1 - 6 to 36 inches:* stratified clay to silty clay loam

*C2 - 36 to 72 inches:* stratified silty clay loam to fine sandy loam

### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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:* Rare

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Salinity, maximum in profile:* Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 4.0

*Available water storage in profile:* Moderate (about 8.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

## 38—Marias clay, 1 to 9 percent slopes

### Map Unit Setting

*National map unit symbol:* clkx

*Elevation:* 1,900 to 4,800 feet

*Mean annual precipitation:* 10 to 14 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 105 to 135 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Marias and similar soils:* 95 percent

*Marias and similar soils:* 85 percent

*Minor components:* 5 percent

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

## Description of Marias

### Setting

*Landform:* Lake plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

### Typical profile

*A - 0 to 6 inches:* clay

*Bss - 6 to 27 inches:* clay

*Bssy - 27 to 74 inches:* clay

### Properties and qualities

*Slope:* 1 to 9 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 10 percent

*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 13.0

*Available water storage in profile:* Moderate (about 8.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* D

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

## Description of Marias

### Setting

*Landform:* Alluvial fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Clayey alluvium

### Typical profile

*A - 0 to 15 inches:* silty clay

*Bss - 15 to 33 inches:* clay

*Bssy - 33 to 60 inches:* clay

### Properties and qualities

*Slope:* 2 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 10 percent

## Custom Soil Resource Report

*Gypsum, maximum in profile:* 6 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 13.0  
*Available water storage in profile:* Moderate (about 8.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* D  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

### Minor Components

#### Sunburst

*Percent of map unit:* 2 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) 10-14" p.z. (R054XE530MT)  
*Hydric soil rating:* No

#### Lonna

*Percent of map unit:* 1 percent  
*Landform:* Lake plains, fans  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)  
*Hydric soil rating:* No

#### Absher

*Percent of map unit:* 1 percent  
*Landform:* Terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)  
*Hydric soil rating:* No

#### Vaeda

*Percent of map unit:* 1 percent  
*Landform:* Flood plains, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)  
*Hydric soil rating:* No

## 47—Phillips-Elloam complex, 1 to 9 percent slopes

### Map Unit Setting

*National map unit symbol:* cll7  
*Elevation:* 1,900 to 4,500 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 100 to 130 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Phillips and similar soils:* 50 percent  
*Elloam and similar soils:* 25 percent  
*Minor components:* 25 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Phillips

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

#### Typical profile

*E - 0 to 5 inches:* loam  
*Bt - 5 to 12 inches:* clay  
*Bk - 12 to 36 inches:* clay loam  
*C - 36 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 1 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)



## Custom Soil Resource Report

*Hydric soil rating:* No

### Description of Elloam

#### Setting

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Till

#### Typical profile

*E - 0 to 3 inches:* clay loam

*Btn - 3 to 10 inches:* clay

*Bkn - 10 to 20 inches:* clay loam

*Bknyz - 20 to 43 inches:* clay loam

*C - 43 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 1 to 9 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 25.0

*Available water storage in profile:* Moderate (about 6.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 6s

*Land capability classification (nonirrigated):* 6s

*Hydrologic Soil Group:* D

*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)

*Hydric soil rating:* No

### Minor Components

#### Scobey

*Percent of map unit:* 10 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

#### Delpoint

*Percent of map unit:* 7 percent

*Landform:* Hills, ridges

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)

*Hydric soil rating:* No

**Cabbart**

*Percent of map unit:* 5 percent  
*Landform:* Hillslopes, ridges  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow (Sw) RRU 58A-E 10-14" p.z. (R058AE019MT)  
*Hydric soil rating:* No

**Nobe**

*Percent of map unit:* 2 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Saline Upland (SU) 10-14" p.z. (R052XC210MT)  
*Hydric soil rating:* No

**Nishon**

*Percent of map unit:* 1 percent  
*Landform:* Depressions  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Overflow (Ov) 10-14" p.z. (R053AE067MT)  
*Hydric soil rating:* Yes

**49—Phillips-Kevin complex, 2 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2vyr1  
*Elevation:* 2,000 to 3,870 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 100 to 140 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Phillips and similar soils:* 45 percent  
*Kevin and similar soils:* 40 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Phillips**

**Setting**

*Landform:* Moraines  
*Landform position (two-dimensional):* Footslope, toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Clayey till

## Custom Soil Resource Report

### Typical profile

*A - 0 to 2 inches:* loam  
*E - 2 to 7 inches:* loam  
*Bt - 7 to 11 inches:* clay  
*Btk - 11 to 15 inches:* clay loam  
*Bk - 15 to 36 inches:* clay loam  
*BCyz - 36 to 50 inches:* clay loam  
*Cz - 50 to 79 inches:* clay loam

### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 12 percent  
*Gypsum, maximum in profile:* 4 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 9.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

### Description of Kevin

#### Setting

*Landform:* Moraines  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Clayey till

#### Typical profile

*Ap - 0 to 6 inches:* clay loam  
*Bt - 6 to 9 inches:* clay loam  
*Bk1 - 9 to 23 inches:* clay loam  
*Bk2 - 23 to 41 inches:* clay loam  
*BCyz - 41 to 57 inches:* clay loam  
*Cz - 57 to 79 inches:* clay loam

#### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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

## Custom Soil Resource Report

*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 14 percent  
*Gypsum, maximum in profile:* 4 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* High (about 10.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

### Minor Components

#### Hillon

*Percent of map unit:* 4 percent  
*Landform:* Moraines  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Crest  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Thoeny

*Percent of map unit:* 4 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Elloam

*Percent of map unit:* 3 percent  
*Landform:* Moraines  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Ethridge

*Percent of map unit:* 3 percent  
*Landform:* Ground moraines  
*Microfeatures of landform position:* Swales  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 1 percent  
*Landform:* Depressions on ground moraines  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

## 51—Phillips-Thoeny loams, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* cld  
*Elevation:* 1,900 to 4,800 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Phillips and similar soils:* 70 percent  
*Thoeny and similar soils:* 25 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Phillips

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Till

#### Typical profile

*E - 0 to 5 inches:* loam  
*Bt - 5 to 12 inches:* clay  
*Bk - 12 to 36 inches:* clay loam  
*C - 36 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

## Custom Soil Resource Report

*Hydric soil rating:* No

### Description of Thoeny

#### Setting

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

#### Typical profile

*E - 0 to 7 inches:* loam

*Bt - 7 to 12 inches:* clay

*Btk - 12 to 28 inches:* clay loam

*Bk - 28 to 52 inches:* clay loam

*By - 52 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Salinity, maximum in profile:* Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 25.0

*Available water storage in profile:* Moderate (about 7.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4s

*Land capability classification (nonirrigated):* 4s

*Hydrologic Soil Group:* D

*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)

*Hydric soil rating:* No

### Minor Components

#### Absher

*Percent of map unit:* 5 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)

*Hydric soil rating:* No

## 52—Redvale loam, 0 to 3 percent slopes

### Map Unit Setting

*National map unit symbol:* clf  
*Elevation:* 2,000 to 6,600 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 36 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

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

### Description of Redvale

#### Setting

*Landform:* Fans, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 6 inches:* loam  
*Bt1 - 6 to 11 inches:* clay loam  
*Bt2 - 11 to 20 inches:* clay  
*Bk - 20 to 30 inches:* gravelly clay loam  
*2C - 30 to 60 inches:* extremely gravelly loamy sand

#### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (1.0 to 3.0 mmhos/cm)  
*Available water storage in profile:* Low (about 5.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

**Minor Components**

**Attewan**

*Percent of map unit:* 6 percent  
*Landform:* Fans, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)  
*Hydric soil rating:* No

**Evanston**

*Percent of map unit:* 4 percent  
*Landform:* Fans, terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)  
*Hydric soil rating:* No

**57—Scobey-Kevin clay loams, 2 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2t3k4  
*Elevation:* 2,000 to 3,870 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 46 degrees F  
*Frost-free period:* 100 to 140 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Scobey and similar soils:* 45 percent  
*Kevin and similar soils:* 40 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Scobey**

**Setting**

*Landform:* Moraines  
*Landform position (two-dimensional):* Footslope, toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Clayey till

**Typical profile**

*Ap - 0 to 6 inches:* clay loam  
*Bt - 6 to 15 inches:* clay  
*Bk1 - 15 to 29 inches:* clay loam  
*Bk2 - 29 to 44 inches:* clay loam



## Custom Soil Resource Report

*BCyz - 44 to 61 inches: clay loam*

*Cz - 61 to 79 inches: clay loam*

### Properties and qualities

*Slope: 2 to 8 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural 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 in profile: 14 percent*

*Gypsum, maximum in profile: 4 percent*

*Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)*

*Sodium adsorption ratio, maximum in profile: 12.0*

*Available water storage in profile: High (about 9.9 inches)*

### Interpretive groups

*Land capability classification (irrigated): 3e*

*Land capability classification (nonirrigated): 3e*

*Hydrologic Soil Group: C*

*Hydric soil rating: No*

### Description of Kevin

#### Setting

*Landform: Moraines*

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

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

*Down-slope shape: Convex*

*Across-slope shape: Linear*

*Parent material: Clayey till*

#### Typical profile

*Ap - 0 to 6 inches: clay loam*

*Bt - 6 to 9 inches: clay loam*

*Bk1 - 9 to 23 inches: clay loam*

*Bk2 - 23 to 41 inches: clay loam*

*BCyz - 41 to 57 inches: clay loam*

*Cz - 57 to 79 inches: clay loam*

### Properties and qualities

*Slope: 2 to 8 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural 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 in profile: 14 percent*

*Gypsum, maximum in profile: 4 percent*

*Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)*

*Sodium adsorption ratio, maximum in profile: 12.0*

## Custom Soil Resource Report

*Available water storage in profile:* High (about 10.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

### Minor Components

#### Hillon

*Percent of map unit:* 8 percent

*Landform:* Moraines

*Landform position (two-dimensional):* Shoulder

*Landform position (three-dimensional):* Crest

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Elloam

*Percent of map unit:* 3 percent

*Landform:* Moraines

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Acel

*Percent of map unit:* 2 percent

*Landform:* Moraines

*Microfeatures of landform position:* Swales

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Hydric soil rating:* No

#### Nishon

*Percent of map unit:* 2 percent

*Landform:* Depressions on moraines

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

## 59—Scobey-Sunburst clay loams, 5 to 25 percent slopes

### Map Unit Setting

*National map unit symbol:* clln

*Elevation:* 1,900 to 4,000 feet

*Mean annual precipitation:* 10 to 13 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 110 to 130 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Scobey and similar soils:* 50 percent

*Sunburst and similar soils:* 30 percent

*Minor components:* 20 percent

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

**Description of Scobey**

**Setting**

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Till

**Typical profile**

*A - 0 to 5 inches:* clay loam

*Bt - 5 to 15 inches:* clay loam

*Bky - 15 to 60 inches:* clay loam

**Properties and qualities**

*Slope:* 5 to 15 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* High (about 10.2 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

*Hydric soil rating:* No

**Description of Sunburst**

**Setting**

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

**Typical profile**

*A - 0 to 4 inches:* clay loam

*Bk - 4 to 28 inches:* clay loam

*Bky - 28 to 60 inches:* clay loam

**Properties and qualities**

*Slope:* 5 to 25 percent

*Depth to restrictive feature:* More than 80 inches

*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 8.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Thin Hilly (TH) 10-14" p.z. (R052XC220MT)  
*Hydric soil rating:* No

### Minor Components

#### Phillips

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

#### Elloam

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

#### Hillon

*Percent of map unit:* 4 percent  
*Landform:* Hillslopes on till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

#### Telstad

*Percent of map unit:* 3 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

#### Thoeny

*Percent of map unit:* 3 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)

## Custom Soil Resource Report

*Hydric soil rating:* No

### **60—Sunburst clay loam, 9 to 35 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* clq  
*Elevation:* 1,900 to 5,500 feet  
*Mean annual precipitation:* 10 to 13 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 110 to 130 days  
*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

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

#### **Description of Sunburst**

##### **Setting**

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

##### **Typical profile**

*A - 0 to 4 inches:* clay loam  
*Bk - 4 to 28 inches:* clay loam  
*Bky - 28 to 60 inches:* clay loam

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

*Slope:* 9 to 35 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 8.5 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Thin Hilly (TH) 10-14" p.z. (R052XC220MT)  
*Hydric soil rating:* No

**Minor Components**

**Scobey**

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

**Hillon**

*Percent of map unit:* 4 percent  
*Landform:* Hillslopes on till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty-Steep (SiStp) 10-14" p.z. (R052XC223MT)  
*Hydric soil rating:* No

**Thebo**

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

**Phillips**

*Percent of map unit:* 4 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)  
*Hydric soil rating:* No

**Cabbart**

*Percent of map unit:* 2 percent  
*Landform:* Hillslopes, ridges  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow (Sw) RRU 58A-E 10-14" p.z. (R058AE019MT)  
*Hydric soil rating:* No

**Lisam**

*Percent of map unit:* 2 percent  
*Landform:* Hillslopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Shallow Clay (SwC) RRU 58A-E 10-14" p.z. (R058AE199MT)  
*Hydric soil rating:* No

## 61—Sunburst-Lisam complex, 9 to 35 percent slopes

### Map Unit Setting

*National map unit symbol:* cllr  
*Elevation:* 1,900 to 5,500 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 39 to 45 degrees F  
*Frost-free period:* 100 to 130 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Sunburst and similar soils:* 40 percent  
*Lisam and similar soils:* 35 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Sunburst

#### Setting

*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear

#### Typical profile

*A - 0 to 4 inches:* clay loam  
*Bk - 4 to 28 inches:* clay loam  
*Bky - 28 to 60 inches:* clay loam

#### Properties and qualities

*Slope:* 9 to 35 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural 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 in profile:* 15 percent  
*Salinity, maximum in profile:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 8.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* Thin Hilly (TH) 10-14" p.z. (R052XC220MT)  
*Hydric soil rating:* No

## Description of Lisam

### Setting

*Landform:* Hillslopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Residuum weathered from clayey shale

### Typical profile

*A - 0 to 12 inches:* clay  
*Cr - 12 to 60 inches:* weathered bedrock

### Properties and qualities

*Slope:* 9 to 35 percent  
*Depth to restrictive feature:* 10 to 20 inches to paralithic bedrock  
*Natural 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 in profile:* 5 percent  
*Salinity, maximum in profile:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)  
*Available water storage in profile:* Very low (about 1.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* D  
*Ecological site:* Shallow Clay (SwC) 10-14" p.z. (R052XC215MT)  
*Hydric soil rating:* No

## Minor Components

### Thebo

*Percent of map unit:* 10 percent  
*Landform:* Hillslopes  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)  
*Hydric soil rating:* No

### Elloam

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)  
*Hydric soil rating:* No

### Phillips

*Percent of map unit:* 3 percent  
*Landform:* Till plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)



*Hydric soil rating:* No

**Tinsley**

*Percent of map unit:* 2 percent

*Landform:* Hillslopes

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Gravelly (Gr) LRU 53A-Y (R053AE621MT)

*Hydric soil rating:* No

**68—Thebo-Lisam clays, 2 to 15 percent slopes**

**Map Unit Setting**

*National map unit symbol:* clz

*Elevation:* 1,900 to 5,500 feet

*Mean annual precipitation:* 10 to 13 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 110 to 130 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Thebo and similar soils:* 50 percent

*Lisam and similar soils:* 40 percent

*Minor components:* 10 percent

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

**Description of Thebo**

**Setting**

*Landform:* Hillslopes

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Residuum weathered from shale

**Typical profile**

*A - 0 to 4 inches:* clay

*Bss - 4 to 23 inches:* clay

*Cr - 23 to 60 inches:* bedrock

**Properties and qualities**

*Slope:* 2 to 15 percent

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

*Natural 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 in profile:* 5 percent

*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

## Custom Soil Resource Report

*Available water storage in profile:* Low (about 3.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* D

*Ecological site:* Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

*Hydric soil rating:* No

### Description of Lisam

#### Setting

*Landform:* Hillslopes

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Residuum weathered from clayey shale

#### Typical profile

*A - 0 to 12 inches:* clay

*Cr - 12 to 60 inches:* weathered bedrock

#### Properties and qualities

*Slope:* 3 to 15 percent

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

*Natural 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 in profile:* 5 percent

*Salinity, maximum in profile:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)

*Available water storage in profile:* Very low (about 1.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* D

*Ecological site:* Shallow Clay (SwC) RRU 58A-E 10-14" p.z. (R058AE199MT)

*Hydric soil rating:* No

### Minor Components

#### Vaeda

*Percent of map unit:* 3 percent

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)

*Hydric soil rating:* No

#### Phillips

*Percent of map unit:* 3 percent

*Landform:* Till plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Silty (Si) 10-14" p.z. (R052XC217MT)

## Custom Soil Resource Report

*Hydric soil rating:* No

### **Absher**

*Percent of map unit:* 2 percent

*Landform:* Terraces, fans

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Dense Clay (DC) 10-14" p.z. (R052XC206MT)

*Hydric soil rating:* No

### **Rock outcrop**

*Percent of map unit:* 2 percent

*Hydric soil rating:* No

## **75—Ustic Torrfluents, gently sloping**

### **Map Unit Setting**

*National map unit symbol:* clm7

*Mean annual precipitation:* 10 to 13 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 110 to 130 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Ustic torrfluents and similar soils:* 100 percent

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

### **Description of Ustic Torrfluents**

#### **Setting**

*Landform:* Terraces, flood plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium

#### **Typical profile**

*C - 7 to 40 inches:* stratified sandy loam to clay loam

*2C - 40 to 60 inches:* gravelly loamy sand

#### **Properties and qualities**

*Slope:* 0 to 5 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Moderately well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* About 36 to 72 inches

*Frequency of flooding:* Occasional

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 10 percent

*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

## Custom Soil Resource Report

*Available water storage in profile:* Moderate (about 7.3 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6w

*Hydrologic Soil Group:* B

*Ecological site:* Overflow (Ov) 10-14" p.z. (R052XC207MT)

*Hydric soil rating:* No

## **79—Water**

### **Map Unit Composition**

*Water:* 100 percent

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

# **Soil Information for All Uses**

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## **Soil Properties and Qualities**

The Soil Properties and Qualities section includes various soil properties and qualities 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 property or quality.

## **Soil Qualities and Features**

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

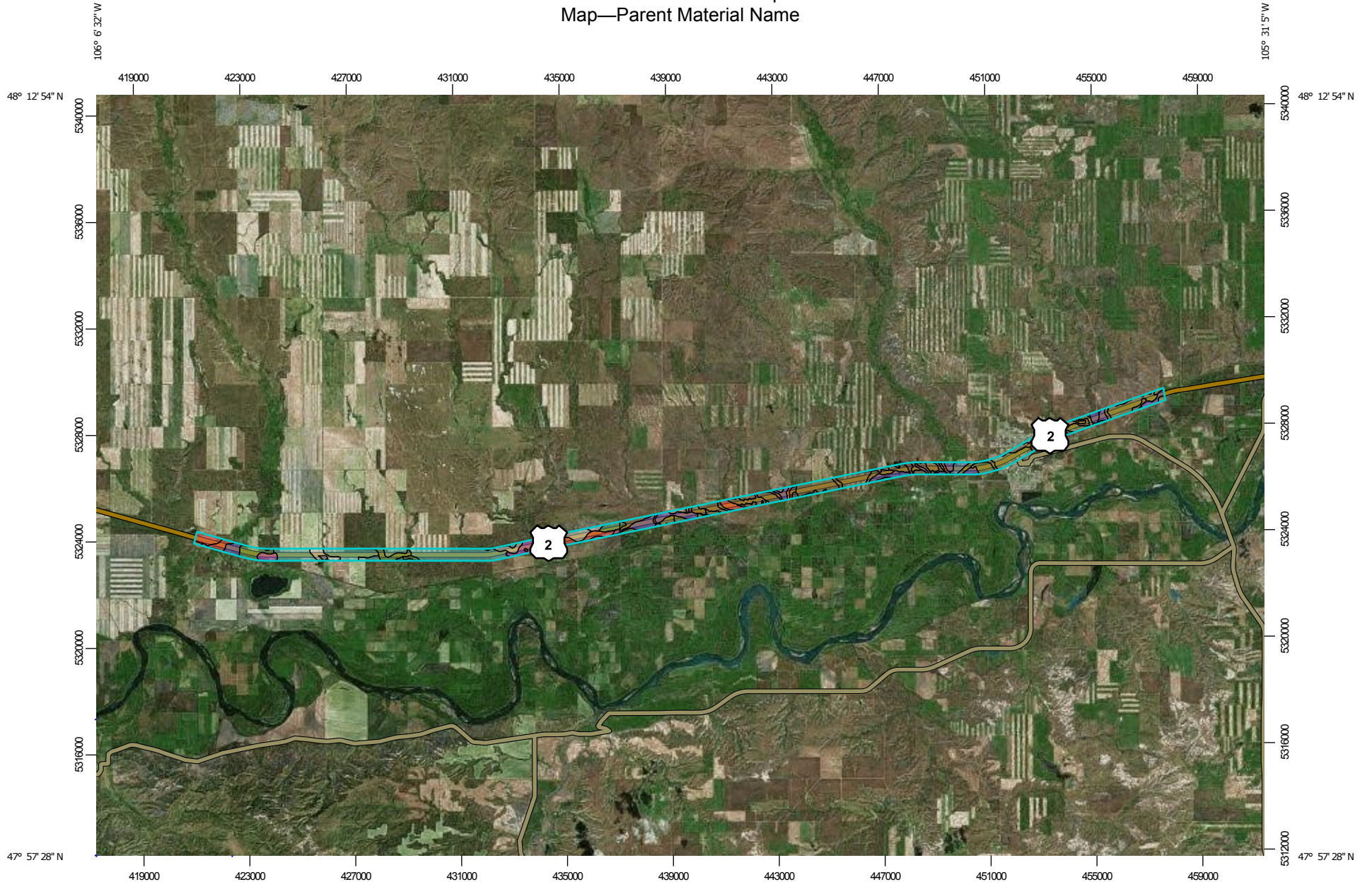
## **Parent Material Name**

Parent material name is a term for the general physical, chemical, and mineralogical composition of the unconsolidated material, mineral or organic, in which the soil forms. Mode of deposition and/or weathering may be implied by the name.

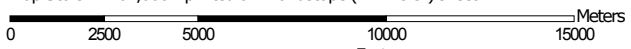
The soil surveyor uses parent material to develop a model used for soil mapping. Soil scientists and specialists in other disciplines use parent material to help interpret soil boundaries and project performance of the material below the soil. Many soil properties relate to parent material. Among these properties are proportions of sand, silt, and clay; chemical content; bulk density; structure; and the kinds and amounts of rock fragments. These properties affect interpretations and may be criteria used to separate soil series. Soil properties and landscape information may imply the kind of parent material.

For each soil in the database, one or more parent materials may be identified. One is marked as the representative or most commonly occurring. The representative parent material name is presented here.

# Custom Soil Resource Report Map—Parent Material Name



Map Scale: 1:201,000 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84













### MAP LEGEND

**Area of Interest (AOI)**




 Area of Interest (AOI)



**Soils**

**Soil Rating Polygons**

-  alluvium
-  clayey alluvium
-  clayey alluvium and/or clayey glaciolacustrine deposits
-  clayey till
-  coarse-loamy alluvium
-  fine-loamy till
-  loamy alluvium
-  loamy alluvium and/or glaciolacustrine deposits
-  loamy glacial till
-  residuum weathered from shale
-  till
-  Not rated or not available



**Soil Rating Lines**

-  alluvium
-  clayey alluvium
-  clayey alluvium and/or clayey glaciolacustrine deposits


-  clayey till
-  coarse-loamy alluvium
-  fine-loamy till
-  loamy alluvium
-  loamy alluvium and/or glaciolacustrine deposits
-  loamy glacial till
-  residuum weathered from shale
-  till
-  Not rated or not available

**Soil Rating Points**






-  alluvium
-  clayey alluvium
-  clayey alluvium and/or clayey glaciolacustrine deposits
-  clayey till
-  coarse-loamy alluvium
-  fine-loamy till
-  loamy alluvium
-  loamy alluvium and/or glaciolacustrine deposits
-  loamy glacial till
-  residuum weathered from shale

-  till
-  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: Roosevelt and Daniels Counties, Montana  
 Survey Area Data: Version 14, Sep 28, 2015

Soil Survey Area: Valley County, Montana  
 Survey Area Data: Version 19, Sep 28, 2015

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

**MAP LEGEND**

**MAP INFORMATION**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



Custom Soil Resource Report

**Table—Parent Material Name**

Parent Material Name— Summary by Map Unit — Roosevelt and Daniels Counties, Montana (MT661)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Adger silty clay loam, 1 to 8 percent slopes	clayey alluvium	21.8	0.5%
8	Bowdoin clay, protected	clayey alluvium	27.9	0.7%
15	Evanston loam, 2 to 8 percent slopes	loamy alluvium	256.2	6.0%
18	Farnuf loam, 2 to 8 percent slopes	loamy alluvium	69.4	1.6%
20	Fluvaquents, saline, 0 to 2 percent slopes	alluvium	19.7	0.5%
21	Glendive fine sandy loam, protected, 0 to 2 percent slopes	coarse-loamy alluvium	7.1	0.2%
23	Harlem silty clay loam, protected, 0 to 2 percent slopes	clayey alluvium	33.1	0.8%
24	Havre silt loam, protected, 0 to 2 percent slopes	loamy alluvium	24.3	0.6%
26	Havrelon loam, 0 to 2 percent slopes	loamy alluvium	29.5	0.7%
29	Havrelon-Trembles complex, protected, 0 to 2 percent slopes	loamy alluvium	54.4	1.3%
30	Hillon loam, 8 to 15 percent slopes	loamy glacial till	186.6	4.4%
31	Hillon loam, 15 to 45 percent slopes	loamy glacial till	125.1	2.9%
32	Hillon-Tinsley complex, 8 to 15 percent slopes	loamy glacial till	18.3	0.4%
33	Hillon-Tinsley complex, 15 to 45 percent slopes	loamy glacial till	106.5	2.5%
34	Lallie silty clay, saline, 0 to 2 percent slopes	clayey alluvium	113.7	2.7%
37	Lohler silty clay, protected, 0 to 2 percent slopes	clayey alluvium	197.4	4.6%
50	Telstad loam, 2 to 8 percent slopes	fine-loamy till	43.3	1.0%
51	Telstad-Hillon loams, 2 to 8 percent slopes	loamy glacial till	467.4	11.0%
52	Thebo-Lisam complex, 15 to 45 percent slopes	residuum weathered from shale	9.6	0.2%
55	Trembles fine sandy loam, protected, 0 to 2 percent slopes	coarse-loamy alluvium	44.8	1.1%

Custom Soil Resource Report

Parent Material Name— Summary by Map Unit — Roosevelt and Daniels Counties, Montana (MT661)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
62	Ustic Torrifluvents, 0 to 2 percent slopes	alluvium	79.4	1.9%
63	Ustifluvents, saline, 0 to 2 percent slopes	alluvium	4.5	0.1%
64	Vanda variant silty clay, 4 to 10 percent slopes	clayey alluvium	167.4	3.9%
65	Vanda variant-Thebo-Lisam complex, 4 to 15 percent slopes	clayey alluvium	72.4	1.7%
69	Williams loam, 2 to 8 percent slopes	loamy glacial till	3.3	0.1%
70	Williams-Zahill loams, 2 to 8 percent slopes	loamy glacial till	44.1	1.0%
71	Zahill loam, 8 to 15 percent slopes	loamy glacial till	81.8	1.9%
76	Zahill-Tinsley complex, 15 to 45 percent slopes	loamy glacial till	103.9	2.4%
<b>Subtotals for Soil Survey Area</b>			<b>2,413.0</b>	<b>56.8%</b>
<b>Totals for Area of Interest</b>			<b>4,246.4</b>	<b>100.0%</b>

Parent Material Name— Summary by Map Unit — Valley County, Montana (MT105)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Absher-Vaeda complex, 1 to 5 percent slopes	alluvium	115.4	2.7%
5	Bowdoin clay	clayey alluvium	2.2	0.1%
23	Harlem clay	clayey alluvium and/or clayey glaciolacustrine deposits	214.0	5.0%
25	Havre silty clay loam	loamy alluvium	63.4	1.5%
27	Havre-Harlem silty clays	loamy alluvium and/or glaciolacustrine deposits	18.5	0.4%
38	Marias clay, 1 to 9 percent slopes		149.5	3.5%
47	Phillips-Elloam complex, 1 to 9 percent slopes	till	20.8	0.5%
49	Phillips-Kevin complex, 2 to 8 percent slopes	clayey till	785.6	18.5%
51	Phillips-Thoeny loams, 0 to 2 percent slopes	till	101.8	2.4%
52	Redvale loam, 0 to 3 percent slopes	alluvium	76.2	1.8%
57	Scobey-Kevin clay loams, 2 to 8 percent slopes	clayey till	29.4	0.7%
59	Scobey-Sunburst clay loams, 5 to 25 percent slopes	till	70.2	1.7%

## Custom Soil Resource Report

Parent Material Name— Summary by Map Unit — Valley County, Montana (MT105)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
60	Sunburst clay loam, 9 to 35 percent slopes		54.2	1.3%
61	Sunburst-Lisam complex, 9 to 35 percent slopes		20.6	0.5%
68	Thebo-Lisam clays, 2 to 15 percent slopes	residuum weathered from shale	48.1	1.1%
75	Ustic Torrifuvents, gently sloping	alluvium	53.3	1.3%
79	Water		10.3	0.2%
<b>Subtotals for Soil Survey Area</b>			<b>1,833.3</b>	<b>43.2%</b>
<b>Totals for Area of Interest</b>			<b>4,246.4</b>	<b>100.0%</b>

### Rating Options—Parent Material Name

*Aggregation Method: Dominant Condition*

*Component Percent Cutoff: None Specified*

*Tie-break Rule: Lower*

## 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.

## Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

## Prime and other Important Farmlands

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

*Prime farmland* is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate

## Custom Soil Resource Report

quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

*Unique farmland* is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

### Report—Prime and other Important Farmlands

Prime and other Important Farmlands—Roosevelt and Daniels Counties, Montana		
Map Symbol	Map Unit Name	Farmland Classification
1	Adger silty clay loam, 1 to 8 percent slopes	Not prime farmland
8	Bowdoin clay, protected	Not prime farmland
15	Evanston loam, 2 to 8 percent slopes	Farmland of statewide importance
18	Farnuf loam, 2 to 8 percent slopes	Farmland of statewide importance
20	Fluvaquents, saline, 0 to 2 percent slopes	Not prime farmland

Custom Soil Resource Report

Prime and other Important Farmlands–Roosevelt and Daniels Counties, Montana		
Map Symbol	Map Unit Name	Farmland Classification
21	Glendive fine sandy loam, protected, 0 to 2 percent slopes	Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
23	Harlem silty clay loam, protected, 0 to 2 percent slopes	Farmland of statewide importance
24	Havre silt loam, protected, 0 to 2 percent slopes	Farmland of statewide importance
26	Havrelon loam, 0 to 2 percent slopes	Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
29	Havrelon-Trembles complex, protected, 0 to 2 percent slopes	Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
30	Hillon loam, 8 to 15 percent slopes	Not prime farmland
31	Hillon loam, 15 to 45 percent slopes	Not prime farmland
32	Hillon-Tinsley complex, 8 to 15 percent slopes	Not prime farmland
33	Hillon-Tinsley complex, 15 to 45 percent slopes	Not prime farmland
34	Lallie silty clay, saline, 0 to 2 percent slopes	Not prime farmland
37	Lohler silty clay, protected, 0 to 2 percent slopes	Not prime farmland
50	Telstad loam, 2 to 8 percent slopes	Not prime farmland
51	Telstad-Hillon loams, 2 to 8 percent slopes	Not prime farmland
52	Thebo-Lisam complex, 15 to 45 percent slopes	Not prime farmland
55	Trembles fine sandy loam, protected, 0 to 2 percent slopes	Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
62	Ustic Torrifluvents, 0 to 2 percent slopes	Not prime farmland
63	Ustifluvents, saline, 0 to 2 percent slopes	Not prime farmland
64	Vanda variant silty clay, 4 to 10 percent slopes	Not prime farmland
65	Vanda variant-Thebo-Lisam complex, 4 to 15 percent slopes	Not prime farmland
69	Williams loam, 2 to 8 percent slopes	Farmland of statewide importance
70	Williams-Zahill loams, 2 to 8 percent slopes	Not prime farmland
71	Zahill loam, 8 to 15 percent slopes	Not prime farmland
76	Zahill-Tinsley complex, 15 to 45 percent slopes	Not prime farmland

Prime and other Important Farmlands–Valley County, Montana		
Map Symbol	Map Unit Name	Farmland Classification
1	Absher-Vaeda complex, 1 to 5 percent slopes	Not prime farmland
5	Bowdoin clay	Not prime farmland
23	Harlem clay	Not prime farmland
25	Havre silty clay loam	Farmland of statewide importance
27	Havre-Harlem silty clays	Not prime farmland
38	Marias clay, 1 to 9 percent slopes	Not prime farmland
47	Phillips-Elloam complex, 1 to 9 percent slopes	Not prime farmland
49	Phillips-Kevin complex, 2 to 8 percent slopes	Not prime farmland

## Custom Soil Resource Report

<b>Prime and other Important Farmlands–Valley County, Montana</b>		
<b>Map Symbol</b>	<b>Map Unit Name</b>	<b>Farmland Classification</b>
51	Phillips-Thoeny loams, 0 to 2 percent slopes	Not prime farmland
52	Redvale loam, 0 to 3 percent slopes	Prime farmland if irrigated
57	Scobey-Kevin clay loams, 2 to 8 percent slopes	Not prime farmland
59	Scobey-Sunburst clay loams, 5 to 25 percent slopes	Not prime farmland
60	Sunburst clay loam, 9 to 35 percent slopes	Not prime farmland
61	Sunburst-Lisam complex, 9 to 35 percent slopes	Not prime farmland
68	Thebo-Lisam clays, 2 to 15 percent slopes	Not prime farmland
75	Ustic Torrifluvents, gently sloping	Not prime farmland
79	Water	Not prime farmland

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## Custom Soil Resource Report

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