United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with United States Department of the Interior, Bureau of Indian Affairs and Bureau of Land Management; University of Idaho, College of Agriculture; and Idaho Soil Conservation Commission

# Soil Survey of Lewis and Nez Perce Counties, Idaho

This CD contains the historical soil survey for Lewis and Nez Perce Counties, Idaho, published in 2004.

For more current maps and data, go to Web Soil Survey at http://websoilsurvey.nrcs.usda.gov/app/

or Soil Data Mart at http://soildatamart.nrcs.usda.gov/

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

# How to Use This Soil Survey

**General Soil Map**

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

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

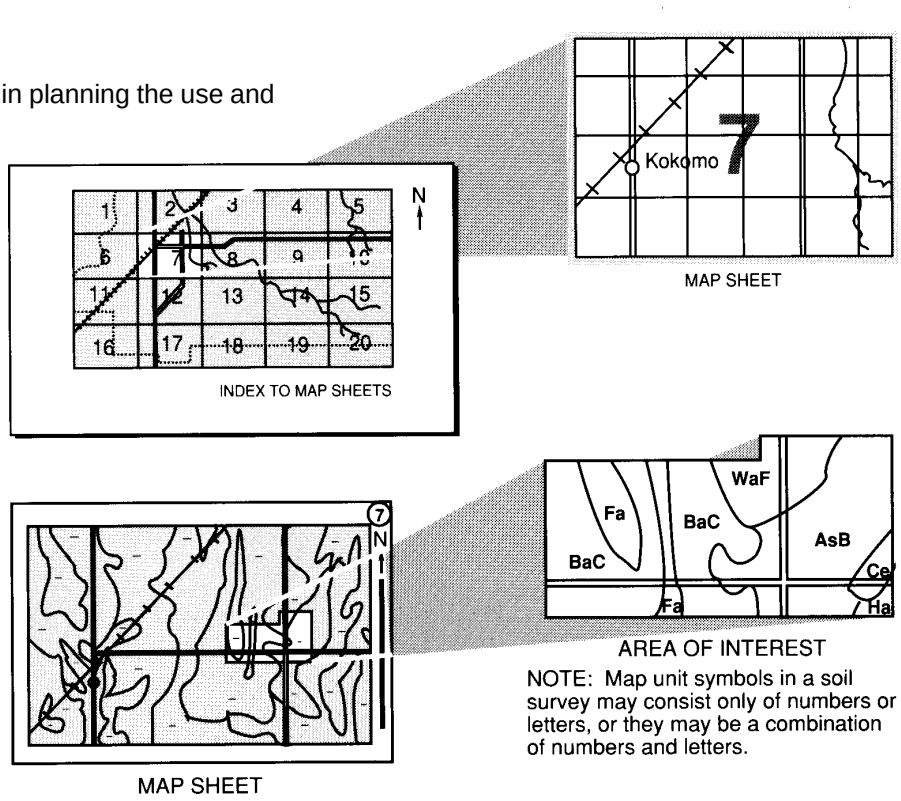
**Detailed Soil Maps**

The detailed soil maps can be useful in planning the use and management of small areas.

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

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

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.




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

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

Major fieldwork for this soil survey was completed in 1992. Soil names and descriptions were approved in 1993. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1993. This survey was made cooperatively by the Natural Resources Conservation Service and the Bureau of Indian Affairs; Bureau of Land Management; University of Idaho, College of Agriculture; and Idaho Soil Conservation Commission. The survey is part of the technical assistance furnished to the Lewis Soil Conservation District and the Nez Perce Soil and Water Conservation District.

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

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**Cover: Johnson and Labuck soils in timbered and cleared areas in foreground, and Uhlorn and Nez Perce soils in gently sloping areas of cropland in background. Distant hills are in Idaho County, Idaho.**

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# Foreword

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

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

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

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

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Richard Sims
State Conservationist
Natural Resources Conservation Service

**Location of Lewis and Nez Perce Counties in Idaho.**

# Soil Survey of
# Lewis and Nez Perce Counties, Idaho

By Thomas W. Hahn, Natural Resources Conservation Service

Fieldwork by Thomas W. Hahn, Mark P. Keller, Peter F. Biggam, Jr., Larry E. Wright, P. Neil Peterson, Jr., Susanne M. Murphy, Pamela L. Keller, and Karl W. Hipple, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
United States Department of the Interior, Bureau of Indian Affairs and Bureau of Land Management; University of Idaho, College of Agriculture; and Idaho Soil Conservation Commission

Lewis and Nez Perce Counties is in northern Idaho. It has a total area of 854,800 acres, or 1,336 square miles. Of this, 307,200 acres are in Lewis County and 547,600 acres are in Nez Perce County. The survey area is predominantly private land, but it includes some land administered by the State of Idaho, the Bureau of Land Management, and the Forest Service. A large part of the area is within the Nez Perce Indian Reservation. The Nez Perce Tribe owns 55,322 acres that are widely scattered within the reservation. The population of the survey area was 37,270 in 1990. The largest community is Lewiston, which had a population of 28,082 in 1990.

The survey area is characterized by rolling basalt plateaus dissected by deep canyons (fig. 1). The plateaus are mantled with deposits of loess that are tens of feet thick in places. Some of the plateaus gradually slope northward and westward toward the confluence of the Snake and Clearwater Rivers, forming an open valley around Lewiston (fig. 2). An extensive and rugged area of deep canyons is in the southwestern part of the survey area, between the Snake and Salmon Rivers. The area north of the Clearwater River is part of the Palouse region of the Inland Northwest.

The lowest elevation in the survey area, 720 feet, is at the confluence of the Snake and Clearwater Rivers. The highest elevation, 5,360 feet, is on the western rim of Craig Mountain. Most of the survey area consists of rolling plateaus that range in elevation from 2,000 to 4,000 feet.

The native vegetation is bunchgrass prairie at the lower elevations and coniferous forests in the cooler, more moist areas at the higher elevations.

Three major rivers are in the area: the Snake River, which forms the western boundary of the area; the Clearwater River, which flows through the northern part; and the Salmon River, which forms part of the southern boundary.

This soil survey updates the soil surveys of Lewiston Area, Idaho, published in 1902 *(15)* and Nez Perce and Lewis Counties, Idaho, published in 1917 *(16)*, and the reconnaissance soil survey of Nez Perce County, Idaho, published in 1976 *(20)*. It provides additional information and has larger maps, which show the soils in greater detail.

## General Nature of the Survey Area

This section gives general information about the survey area. It describes history and development, agriculture, and climate.

### History and Development

The history and development of the survey area have been strongly influenced by the major rivers

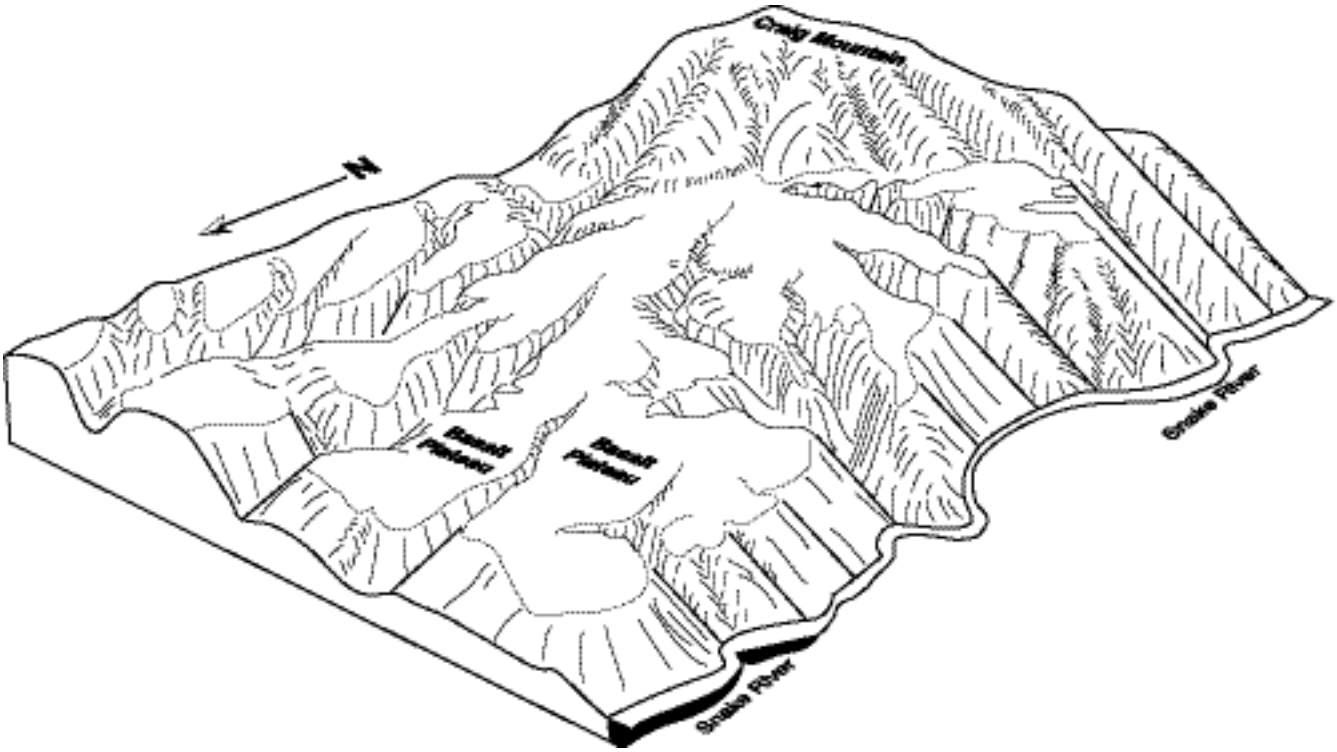


**Figure 1.—A plateau-canyon landscape typical of much of the survey area.**

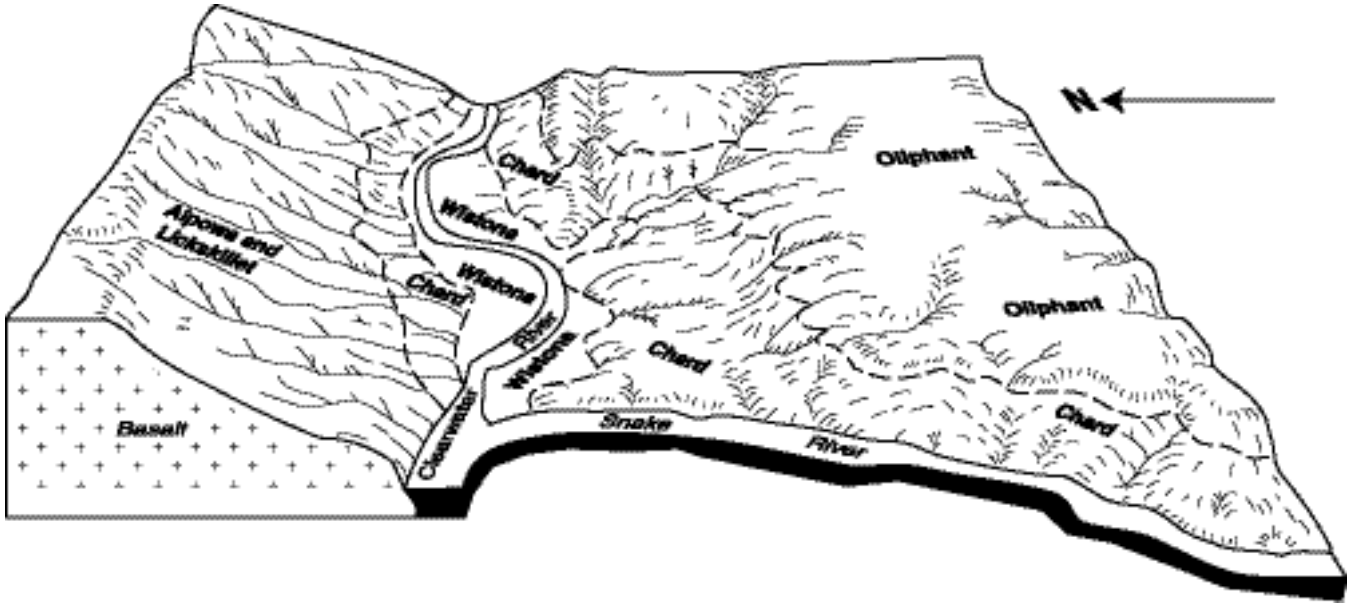


**Figure 2.—Generalized distribution of the dominant soils in the immediate Lewiston area.**

flowing through the area. The Snake and Clearwater Rivers provided routes of transportation through the region, and the valleys of these rivers provided suitable areas for settlement.

For centuries, the survey area has been the homeland of the Nez Perce Indians and their ancestors. They lived in the valleys, and they hunted, fished, and gathered roots and berries for food. Their

major sources of food were the salmon and steelhead trout in the rivers and the camas bulbs that grew on the prairies.

The Lewis and Clark expedition traveled down the Clearwater River in 1805 on their way west. Their reports encouraged others to move to the region.

In 1812 Donald MacKenzie established a fur trading post on the north bank of the Clearwater River, near present-day Lewiston. This enterprise was part of John Jacob Astor's Pacific Fur Company. The effort failed shortly after it was established.

In 1836 William Craig, a mountainman and trapper, became the first non-Indian settler in Idaho. He made a claim on land in the Lapwai Creek Valley and later acted as an interpreter for the Nez Perce Indians.

Also in 1836, Henry and Eliza Spalding established a Christian mission at the mouth of Lapwai Creek. They introduced the Nez Perce people to farming in the areas of alluvial soils along the creek.

In 1860 gold was discovered in the upper reaches of the Clearwater River Basin, east of the survey area. The Snake and Clearwater Rivers provided transportation routes for the influx of prospectors and miners. Lewiston was founded in 1861 at the confluence of the Snake and Clearwater Rivers as a supply post for the mining district. The deep, fertile soils and the long growing season near Lewiston allowed for the cultivation of a variety of orchard and vegetable crops.

The U.S. Army established a fort in the Lapwai Valley, south of the Spalding Mission, in 1862.

In 1855 a treaty between the U.S. Government and the Nez Perce Indians established a reservation that encompassed much of northern Idaho. In 1863 another treaty reduced the size of the reservation to that of its present boundaries. Conflicts over land between the white settlers and the Indians led to the Chief Joseph War in 1877.

The accessibility of Lewiston by steamboats from Portland, Oregon, quickly established the area as a trade center for the region. Railroads from the west were extended to Genesee in 1887, and they reached Lewiston in 1892.

Widespread agriculture began in the 1870's outside the Nez Perce Reservation, near Genesee and south of Lewiston. The early farmers found that the soils were very productive, and rapid settlement followed. As transportation improved and markets expanded and became more accessible, the demand for additional farmland increased.

In 1895 the land within the Nez Perce Reservation was opened to settlement by non-Indians. Most of the land on the rolling plateaus was claimed and then cultivated. Some of the land had to be cleared of timber. Sawmills were established to produce lumber for the new settlements and farms.

Nez Perce County was one of the first counties established in the Idaho Territory, and originally it included most of northern Idaho. Lewis County was formed from Nez Perce County in 1911, reducing Nez Perce County to its present boundaries. Communities in Lewis County include Nezperce, which is the county seat; Craigmont; Kamiah; Reubens; and Winchester. Cities and communities in Nez Perce County include Culdesac; Gifford; Lapwai; Lewiston, which is the county seat; Peck; and Spalding.

The main industries in the survey area are in Lewiston. A large mill that produces saw timber and paper is on the Clearwater River, and it is the largest employer in the survey area. Other notable employers include an ammunition manufacturing plant, a hospital, a food processing plant, and a jet boat manufacturing plant. Lewis-Clark State College is also located in Lewiston. Tourism and recreation associated with the rivers are becoming important to the local economy.

Construction of Lower Granite Dam on the Snake River in 1975 enabled oceangoing barges to reach Lewiston. This further improved the accessibility of the area to markets for lumber and agricultural products.

Two major highways serve the area. U.S. Highway 12 crosses from east to west, and it connects the survey area with Montana to the east and the Pacific Coast to the west. U.S. Highway 95 crosses from north to south, and it provides an important link with southern Idaho and with points north to the Canadian border.

## Agriculture

Agriculture is the backbone of the economy of the survey area. The area produces one of the highest amounts of nonirrigated wheat of any area in Idaho.

Farming in the area began when Lewiston was established in the early 1860's. The mild climate allowed for a variety of produce crops to be grown to supply the gold-mining districts.

Early settlers arrived in the 1860's and 1870's in the areas outside the Nez Perce Indian Reservation. At first, they typically raised livestock and cultivated only enough land to produce vegetables and grain for the needs of their own family. When outside markets for wheat improved and became more accessible, the steeper hillsides were cultivated and wheat became a cash crop. More land was cultivated when horses were replaced by mechanized equipment and land was no longer needed for hay and pasture.

When the Nez Perce Reservation was opened to settlement in 1895, the acreage of cultivated land in the area greatly increased. Almost every quarter section of land had one claimant. The Camas Prairie was settled quickly, and it became a prosperous wheat-growing area.

By the early 1900s, the land around Lewiston had become an important fruit-growing area. An irrigation system was built on the low plateau just south of Lewiston, now known as the Lewiston Orchards. The main fruits grown were apples, pears, cherries, and apricots. Of minor importance were prunes, plums, peaches, and various berries. Some nuts and vegetables were also grown. As the city grew, the orchards were replaced by suburban homes, small pastures, and gardens. At present only a few commercial orchards remain.

Livestock operations are an important industry in the survey area. Sheep were dominant in the early days, but now beef cattle, primarily cow-calf operations, are dominant.

At present the major crops grown are soft white wheat, barley, dry peas, and lentils. Minor crops are green peas, alfalfa hay, rapeseed, canola, bluegrass seed, and oats. Most of the grain is shipped by barge to Portland, where much is then exported. Green peas are processed at a frozen food plant in Lewiston.

Because local landowners recognized the problem of soil erosion and the need for an organized effort to conserve soil, the Lewis Soil Conservation District and the Nez Perce Soil and Water Conservation District were established on June 17, 1941.

## Climate

The climate of the survey area is strongly influenced by the wide range in elevation in the area and by the surrounding topography. Considerable variations in temperature and precipitation occur within relatively short distances.

In the low plateaus and valleys near Lewiston, the climate is relatively dry and mild. This mildness, particularly in winter, is a result of warm Pacific airmasses and the sheltering effect of the higher plateaus that almost completely surround the valley. Airmasses moving through the region tend to become warmer and drier as they descend from the higher elevations to the low plateaus and valleys.

As invading airmasses ascend to the higher elevations east of the valleys, they become cooler and are more likely to produce precipitation. The high plateaus are significantly cooler and more moist than the low plateaus and valleys.

Most of the precipitation reaching the survey area results from strong invasions of moist air from the northern Pacific Ocean. These invasions occur most commonly in winter and spring. In summer, invasions of moist air from the west are often blocked by dry, persistent high-pressure systems that reside over the intermountain region of the western United States. The average precipitation hits a small peak in winter, reaches a maximum in May and early in June, and then hits a distinct low point in July and August.

Periodically in summer, conditions are favorable for the formation of convective rainshowers and thundershowers. These showers are often scattered and of short duration, but they can nevertheless produce large amounts of precipitation in a short period of time. Thundershowers over the higher terrain tend to be more frequent and produce more rain.

Winters are cold, but they generally are not too severe. Infrequent cold waves occur when arctic air originating in the Yukon Territory moves southward. The Bitterroot Chain of the Rocky Mountains, which forms the Continental Divide about 75 miles to the east, shields the region from more frequent waves of frigid arctic air. Snowfall is light and often ephemeral at the low elevations, but snow accumulates to depths of several feet and remains on the ground into May at the high elevations.

Table 1 gives data on temperature and precipitation as recorded at Lewiston in the period 1949-92, at Nezperce in the period 1951-92, and at Winchester in the period 1966-92. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season. The climate of the low plateaus and adjacent valleys in the western part of the survey area is characterized by the data recorded at Lewiston. The climate of Camas Prairie and much of the farmland at middle elevations is characterized by the data recorded at Nezperce. The climate of the farmland at high elevations and most of the forest land is characterized by the data recorded at Winchester.

In January, the average temperature is about 32 degrees F at Lewiston, 28 degrees at Nezperce, and 26 degrees at Winchester. The lowest temperature on record, which occurred at Winchester on December 30, 1968, is -40 degrees. In July, the average temperature is about 74 degrees at Lewiston, 65 degrees at Nezperce, and 61 degrees at Winchester. The highest recorded temperature, which occurred at Lewiston on August 4, 1961, is 115 degrees.

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

temperature (40 degrees). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is about 13 inches at Lewiston, 22 inches at Nezperce, and 25 inches at Winchester. Of this, about 50 percent usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than about 3 inches at Lewiston and 6 inches at Nezperce and Winchester. The heaviest 1-day rainfall during the period of record was 2.32 inches at Nezperce on July 13, 1956. Thunderstorms occur on about 16 days each year, and most occur in summer.

The average seasonal snowfall is about 18 inches at Lewiston, 50 inches at Nezperce, and 115 inches at Winchester. The greatest snow depth at any one time during the period of record was 16 inches at Lewiston, 22 inches at Nezperce, and 44 inches at Winchester. On the average, 10 days of the year at Lewiston, 38 days at Nezperce, and 97 days at Winchester have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 75 percent. The sun shines 80 percent of the time possible in summer and 45 percent in winter. The prevailing wind is from the southeast. Average windspeed is highest, 10 miles per hour, in spring.

## How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

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

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

A special mapping procedure was used in the rugged canyons of the Snake and Salmon Rivers, which comprise an area of about 100,000 acres. Because of the steep slopes and limited access, soil scientists used photo interpretations to select typical sites that they then visited by helicopter. Complete descriptions of the soils and range vegetation were collected at each of these sites, and range production was measured at selected sites.

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

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil

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

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

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

# General Soil Map Units

The general soil map in this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The general soil map units in this survey have been grouped into general kinds of landscape for broad interpretive purposes. Each of the broad groups and the map units in each group are described in the following pages.

## Soils on Dissected Alluvial Terraces

*Number of map units:* 1
*Percentage of survey area:* 2 percent

### 1. Chard

*Nearly level to very steep, very deep, well drained soils that formed in alluvium*

*Percentage of survey area:* 2 percent
*Landscape position:* Dissected alluvial terraces
*Slope range:* 1 to 65 percent
*Elevation:* 740 to 1,360 feet
*Frost-free season (32 degrees F):* 170 to 190 days
*Average annual precipitation:* 12 to 15 inches
*Minor components:* Urban land, Wistona and Tammany soils
*Present uses:* Cropland, building site development, rangeland
*Limitations to use:* Droughtiness, limited average annual precipitation, hazard of erosion, sandy substratum, slope in some areas

## *Soils on Plateaus*

*Number of map units:* 8
*Percentage of survey area:* 64 percent

### 2. Broadax-Oliphant

*Very deep, well drained soils that have accumulations of carbonates and formed in loess*

*Percentage of survey area:* 7 percent
*Landscape position:* Broadax soils—sides of hills on plateaus, generally at higher elevations; Oliphant soils—commonly north- and east-facing side slopes of hills on plateaus, generally at lower elevations
*Slope range:* 1 to 40 percent
*Elevation:* 1,200 to 2,900 feet
*Frost-free season (32 degrees F):* 140 to 180 days
*Average annual precipitation:* 13 to 20 inches
*Minor components:* Endicott, Slickpoo, Hatwai, Bryden, Redmore, Calouse, Nez Perce, Stember, Athena, Alpowa, and Lickskillet soils
*Present uses:* Cropland, building site development, rangeland
*Limitations to use:* Hazard of erosion, limited average annual precipitation in some areas, strong alkalinity in some areas

### 3. Naff-Palouse-Thatuna

*Very deep, well drained and moderately well drained, warm soils that formed in loess*

*Percentage of survey area:* 10 percent
*Landscape position:* Naff soils—convex side slopes of hills on plateaus; Palouse soils—concave side slopes of hills on plateaus; Thatuna soils—

plane to concave side slopes of hills on plateaus
*Slope range:* 2 to 40 percent
*Elevation:* 1,800 to 2,900 feet
*Frost-free season (32 degrees F):* 110 to 160 days
*Average annual precipitation:* 18 to 22 inches
*Minor components:* Waha, Athena, Tilma, Calouse, Garfield, Latahco, and Linville soils
*Present use:* Cropland
*Limitations to use:* Hazard of erosion, seasonal perched water table in some areas

## 4. Uhlorn-Nez Perce

*Very deep, well drained and moderately well drained soils that have a high content of organic matter in the surface layer and formed in loess*

*Percentage of survey area:* 14 percent
*Landscape position:* Uhlorn soils—side slopes of hills on plateaus, commonly on north- and east-facing slopes; Nez Perce soils—summits, shoulders, and footslopes of hills on plateaus, commonly in plane to convex areas (fig. 3)
*Slope range:* 1 to 20 percent
*Elevation:* 2,600 to 4,100 feet
*Frost-free season (32 degrees F):* 100 to 140 days
*Average annual precipitation:* 20 to 24 inches
*Minor components:* Vollmer, Mohler, Gwin, Watama, Flybow, Westlake, and Latahco soils
*Present use:* Cropland
*Limitations to use:* Hazard of erosion, seasonal perched water table in some areas

## 5. Southwick-Driscoll-Larkin

*Very deep, moderately well drained and well drained soils that formed in loess*

*Percentage of survey area:* 11 percent
*Landscape position:* Southwick soils—plane to concave side slopes of hills on plateaus, commonly on north- and east-facing slopes; Driscoll soils—plane to convex side slopes and summits of hills on plateaus, commonly on south- and west-facing slopes; Larkin soils—plane to concave side slopes of hills on plateaus
*Slope range:* 2 to 25 percent
*Elevation:* 2,300 to 3,400 feet
*Frost-free season (32 degrees F):* 100 to 130 days
*Average annual precipitation:* 22 to 25 inches
*Minor components:* Jacket, Lauby, Bluesprin, and Wilkins soils
*Present uses:* Cropland, woodland, grazeable woodland
*Limitations to use:* Hazard of erosion, seasonal perched water table in some areas

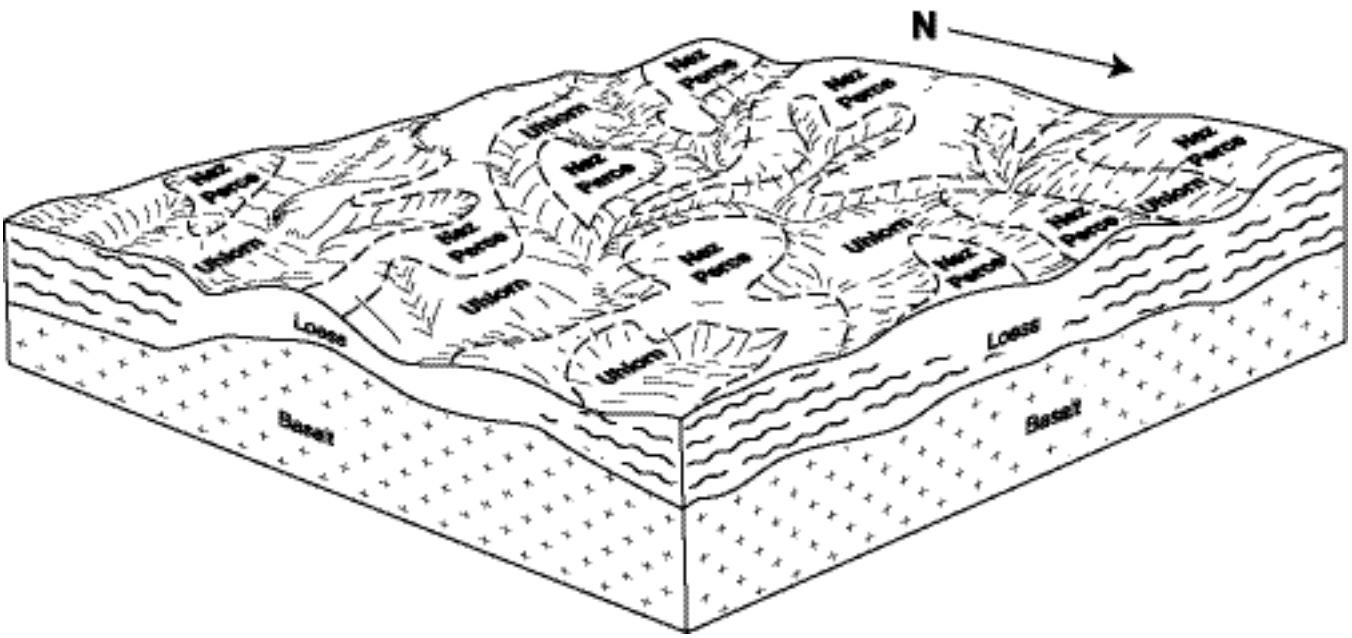


**Figure 3.—Typical pattern of the soils in general soil map unit 4.**

## 6. Taney-Setters

*Moderately deep to a fragipan and very deep, moderately well drained soils that formed in loess*

*Percentage of survey area:* 10 percent
*Landscape position:* Taney soils—plane to concave side slopes of hills on plateaus, commonly on north- and east-facing slopes; Setters soils—plane to convex side slopes and summits of hills on plateaus, commonly on south- and west-facing slopes
*Slope range:* 2 to 30 percent
*Elevation:* 2,300 to 4,200 feet
*Frost-free season (32 degrees F):* 100 to 120 days
*Average annual precipitation:* 23 to 26 inches
*Minor components:* Joel, Carlinton, Johnson, Kruse, Wilkins, Cavendish, Larabee, and Labuck soils
*Present uses:* Cropland, hayland, woodland, grazeable woodland, pastureland
*Limitations to use:* Hazard of erosion, seasonal perched water table in some areas, short growing season, restricted rooting depth

## 7. Joel-Boles

*Very deep, well drained and moderately well drained, cool soils that formed in loess*

*Percentage of survey area:* 3 percent
*Landscape position:* Joel soils—plane to concave side slopes of hills on plateaus, commonly on north- and east-facing slopes; Boles soils—summits and shoulders of hills on plateaus
*Slope range:* 1 to 20 percent
*Elevation:* 4,000 to 4,600 feet
*Frost-free season (32 degrees F):* 80 to 100 days
*Average annual precipitation:* 22 to 26 inches
*Minor components:* Wilkins, Sweiting, and Zaza soils
*Present uses:* Cropland, woodland, grazeable woodland, hayland, pastureland
*Limitations to use:* Hazard of erosion, short growing season, seasonal perched water table in some areas, restricted rooting depth in some areas

## 8. Cramont-Talmaks

*Very deep, well drained soils that formed in loess, volcanic ash, and material weathered from basalt*

*Percentage of survey area:* 6 percent
*Landscape position:* Cramont soils—side slopes and broad ridges of hills on high plateaus, commonly in plane to convex areas; Talmaks soils—side slopes and summits of hills on high plateaus, commonly on north- and east-facing slopes
*Slope range:* 2 to 20 percent
*Elevation:* 4,100 to 5,000 feet
*Frost-free season (32 degrees F):* 60 to 80 days
*Average annual precipitation:* 24 to 28 inches
*Minor components:* Culdesac, Seddow, Zaza, and Maloney soils, Aquolls, Sweiting and Carlinton soils
*Present uses:* Woodland, grazeable woodland, pastureland
*Limitations to use:* Hazard of erosion, short growing season

## 9. Shilla-Seddow-Larabee

*Deep and moderately deep, well drained soils that formed in volcanic ash and material weathered from basalt*

*Percentage of survey area:* 3 percent
*Landscape position:* Shilla soils—side slopes and summits of hills on high plateaus; Seddow soils—side slopes of hills on high plateaus, commonly on south- and west-facing slopes; Larabee soils—south- and west-facing side slopes of hills on high plateaus
*Slope range:* 2 to 40 percent
*Elevation:* 4,200 to 5,300 feet
*Frost-free season (32 degrees F):* 60 to 80 days
*Average annual precipitation:* 26 to 28 inches
*Minor components:* Zaza soils; Aquolls; Webbridge, Agatha, Cramont, and Culdesac soils
*Present uses:* Woodland, grazeable woodland
*Limitations to use:* Depth to bedrock, hazard of erosion, short growing season

## Soils on Canyonsides

*Number of map units:* 4
*Percentage of survey area:* 34 percent

## 10. Lickskillet-Limekiln-Crowers

*Shallow and very deep, well drained, medium textured soils that have an accumulation of carbonates and formed in loess and in colluvium derived from basalt*

*Percentage of survey area:* 6 percent
*Landscape position:* Lickskillet and Limekiln soils—

south- and west-facing canyonsides; Crowers soils—north- and east-facing canyonsides (fig. 4)
*Slope range:* 35 to 80 percent
*Elevation:* 740 to 2,800 feet
*Frost-free season (32 degrees F):* 160 to 190 days
*Average annual precipitation:* 12 to 16 inches
*Minor components:* Rock outcrop, Entic Haploxerolls, Haploxerolls, Chard soils
*Present uses:* Rangeland, wildlife habitat
*Limitations to use:* Steepness of slope, depth to bedrock in some areas, hazard of erosion, Rock outcrop in some areas

## 11. Kettenbach-Linville

*Moderately deep and very deep, well drained, moderately fine textured and medium textured, warm soils that formed in loess and in colluvium derived from basalt*

*Percentage of survey area:* 17 percent
*Landscape position:* Kettenbach soils—south- and west-facing canyonsides; Linville soils—north- and east-facing canyonsides (fig. 5)
*Slope range:* 25 to 90 percent
*Elevation:* 800 to 4,000 feet
*Frost-free season (32 degrees F):* 120 to 160 days
*Average annual precipitation:* 15 to 22 inches
*Minor components:* Keuterville and Gwin soils; Rock outcrop; Meland, Klickson, Waha, Immig, Bridgewater, Lapwai, Flybow, Jacket, Almota, Bakeoven, Watama, Athena, and Hatwai soils
*Present uses:* Rangeland, wildlife habitat
*Limitations to use:* Steepness of slope, hazard of erosion, depth to bedrock in some areas

**Figure 4.—Typical area of general soil map unit 10, along lower Captain John Creek.**

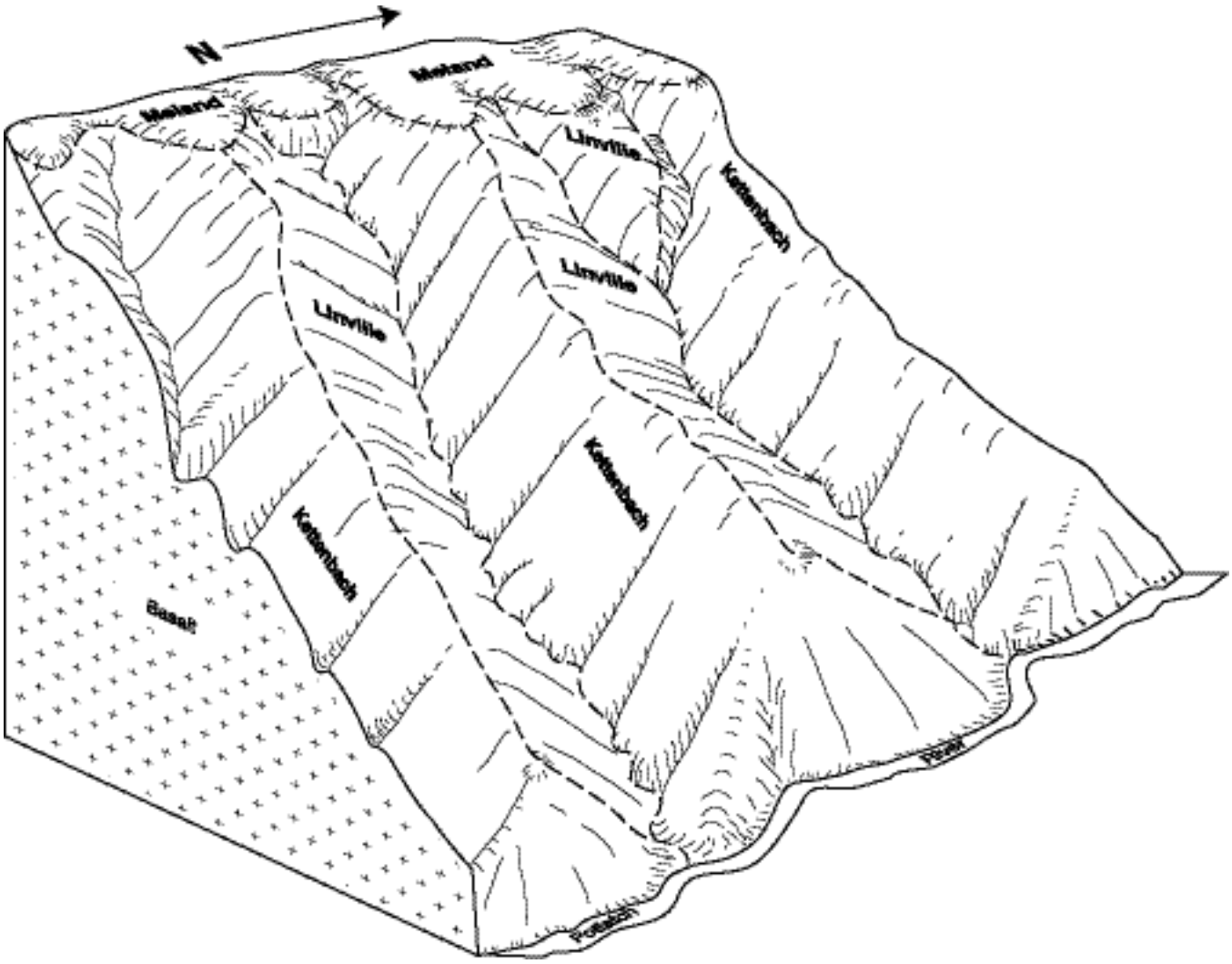


**Figure 5.—Typical pattern of the soils in general soil map unit 11.**

## 12. Klickson-Hooverton

*Very deep and moderately deep, well drained, medium textured to moderately fine textured, cool and warm soils that formed in loess and in colluvium derived from basalt*

*Percentage of survey area:* 9 percent
*Landscape position:* Klickson soils—north- and east-facing canyonsides; Hooverton soils—south- and west-facing canyonsides (fig. 6)
*Slope range:* 35 to 90 percent
*Elevation:* 1,500 to 5,300 feet
*Frost-free season (32 degrees F):* 70 to 120 days
*Average annual precipitation:* 22 to 28 inches
*Minor components:* Mallory, Larabee, Gwin, Jacket, Webbridge, and Agatha soils
*Present uses:* Woodland, grazeable woodland, rangeland, wildlife habitat
*Limitations to use:* Steepness of slope, depth to bedrock in some areas, hazard of erosion, short growing season

## 13. Johnson-Dragnot

*Very deep and moderately deep, well drained, moderately fine textured to moderately coarse textured soils that formed in granitic colluvium*

*Percentage of survey area:* 2 percent

*Landscape position:* Johnson soils—north- and east-facing canyonsides; Dragnot soils—south- and west-facing canyonsides
*Slope range:* 40 to 70 percent
*Elevation:* 1,000 to 3,000 feet
*Frost-free season (32 degrees F):* 80 to 150 days
*Average annual precipitation:* 22 to 26 inches
*Minor components:* Uvi, Ahsahka, and Klickson soils
*Present uses:* Woodland, grazeable woodland, hayland, pastureland
*Limitations to use:* Steepness of slope, hazard of erosion, depth to bedrock in some areas

**Figure 6.—Typical area of general soil map unit 12 overlooking the canyon of Maloney Creek, at the southern rim of Craig Mountain. Klickson soils are in areas of Douglas fir timber, and Hooverton soils are in areas of rangeland.**

# Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a 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 “included” areas that belong to other taxonomic classes.

Most included 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, inclusions. They are not mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. 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. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas 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 included areas 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 the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, 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, Oliphant silt loam, 1 to 4 percent slopes, is a phase of the Oliphant series.

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

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. Uhlorn-Nez Perce complex, 2 to 10 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. Klickson-Hooverton association, 35 to 90 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

This survey was mapped at two levels of detail. At the most detailed level, map unit boundaries were plotted and verified at closely spaced intervals. The valleys and rolling plateaus, used primarily as cropland, were mapped at the most detailed level. At the less detailed level, map unit boundaries were plotted and verified at wider intervals. The canyons were mapped at this level of detail. The detail of mapping was selected to meet the anticipated long-term use of the survey, and the map units were designed to meet the needs for that use.

In the map unit descriptions that follow, a semitabular format is used. In this format a centered heading (for example, ***Setting***) is used to identify the kind of information grouped directly below it. Introducing each item of information under the heading is an italicized term or phrase (for example, *Landform:*) that identifies or describes the information. Many of the centered headings and introductory terms or phrases are self-explanatory; however, some of them need further explanation. These explanations are provided in the following paragraphs, generally in the order in which they are used in the map unit descriptions.

*Composition* is given for the components identified in the name of the map unit as well as for the contrasting inclusions.

*Inclusions* are areas of components (soils or miscellaneous areas) that differ from the components for which the unit is named. Inclusions can be either similar or contrasting.

*Similar inclusions* are components that differ from the components for which the unit is named but that for purposes of use and management can be considered to be the same as the named components. Note that in the “Composition” paragraph a single percentage is provided for a named soil and the similar inclusions because their use and management are similar.

*Contrasting inclusions* are components that differ sufficiently from the components for which the unit is named that they would have different use and management if they were extensive enough to be managed separately. For most uses, contrasting inclusions have limited effect on use and management. Inclusions generally are in small areas, and they could not be mapped separately because of the scale used. Some small areas of strongly contrasting inclusions are identified by a special symbol on the detailed soil maps. A few inclusions 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 inclusions on the landscape.

*Landform* refers to the dominant three-dimensional part or parts of the land surface on which the component is located. In naming landforms, an effort has been made to name the specific landform on which the component occurs. In some instances, however, the component may occur on more than one landform.

*Position on landform* refers to the dominant position or positions on the landform or landforms on which the component is located. In naming landform positions, an effort has been made to give the specific position of the component rather than a general position that could encompass other components.

*Typical profile* is a vertical, two-dimensional section of the soil extending from the surface to a restrictive layer or to a depth of 60 inches or more.

*Depth class* is an adjective term (for example, moderately deep) for the depth of the soil.

*Permeability* is the quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil.

*Available water capacity* is the capacity of the soil to hold water available for use by most plants. It commonly is expressed as inches of water per inch of soil (see “Glossary”).

*Hazard of water erosion* refers to the hazard if protective plant cover is removed. The hazard of erosion is constant and cannot be increased or reduced.

*Major uses* are the dominant uses at the time the major part of the fieldwork for this survey was completed.

*General management considerations* provide additional perspective on the suitability and limitations of the unit for the major uses. They may apply to the entire unit or to a given component of the unit.

## 1—Agatha loam, 15 to 40 percent slopes

### *Composition*

*Agatha soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills and canyons
*Position on landform:* Backslopes and footslopes near draws
*Slope range:* 15 to 40 percent
*Elevation:* 3,000 to 4,400 feet
*Average annual precipitation:* About 26 inches
*Frost-free season (32 degrees F):* About 90 days

### *Characteristics of the Agatha Soil*

*Typical profile:*
1 inch to 0—organic mat
0 to 15 inches—brown loam
15 to 23 inches—brown cobbly clay loam
23 to 47 inches—light brown very cobbly clay loam and extremely cobbly loam
47 inches—fractured basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### *Contrasting Inclusions*

- Larabee soils on convex slopes of 35 to 50 percent (10 percent)
- Shilla soils on north- and east-facing slopes of 35 to 50 percent (5 percent)

### *Major Uses*

Woodland, grazeable woodland

### *Woodland*

*Natural potential plant community:* Grand fir/mallow ninebark
*Estimated average annual production of timber (CMAI):* Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—85 cubic feet per acre at 116 years of age; western larch—not measured
*General management considerations:*
- When openings are made in the canopy, the invasion of brushy plants can hinder natural tree regeneration.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### *Grazeable Woodland*

*Natural potential plant community:* Grand fir/mallow ninebark
*General management considerations:*
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

### *Capability Classification*

6e, nonirrigated

## 2—Agatha loam, 40 to 75 percent slopes

### *Composition*

*Agatha soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Canyons
*Position on landform:* Backslopes and footslopes near draws
*Slope range:* 40 to 75 percent
*Elevation:* 1,200 to 5,000 feet
*Average annual precipitation:* About 27 inches
*Frost-free season (32 degrees F):* About 90 days

### *Characteristics of the Agatha Soil*

*Typical profile:*
1 inch to 0—organic mat
0 to 15 inches—brown loam
15 to 23 inches—brown cobbly clay loam
23 to 47 inches—light brown very cobbly clay loam and extremely cobbly loam
47 inches—fractured basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Rock outcrop on sharply convex slopes and near ridges (5 percent)
- Webbridge soils on north- and east-facing slopes of 35 to 80 percent (5 percent)
- Larabee soils on convex slopes of 35 to 80 percent (5 percent)

### *Major Uses*

Woodland, grazeable woodland

### *Woodland*

*Natural potential plant community:* Grand fir/mallow ninebark
*Estimated average annual production of timber (CMAI):* Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—85 cubic feet per acre at 116 years of age; western larch—not measured
*General management considerations:*
• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

### *Grazeable Woodland*

*Natural potential plant community:* Grand fir/mallow ninebark
*General management considerations:*
• The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
• The characteristic understory plant community produces very little forage for livestock when the canopy is closed.
• The steepness of slope severely limits construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### *Capability Classification*

7e, nonirrigated

## 3—Agatha-Rock outcrop complex, 35 to 75 percent slopes

### *Composition*

*Agatha soil and similar inclusions:* 55 percent
*Rock outcrop:* 30 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Canyons
*Elevation:* 1,200 to 4,300 feet
*Average annual precipitation:* About 27 inches
*Frost-free season (32 degrees F):* About 90 days

### *Characteristics of the Agatha Soil*

*Position on landform:* Smooth and concave, north-facing slopes
*Slope range:* 35 to 75 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 15 inches—brown loam
15 to 23 inches—brown cobbly clay loam
23 to 47 inches—light brown very cobbly clay loam and extremely cobbly loam
47 inches—fractured basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Rock Outcrop*

*Slope range:* 35 to 75 percent
*Kind of rock:* Exposed basalt

### *Contrasting Inclusions*

• Gwin soils on convex slopes of 35 to 80 percent (10 percent)
• Webbridge soils on north- and east-facing slopes of 35 to 50 percent (5 percent)

### *Major Uses*

Woodland, grazeable woodland

### *Woodland*

*Natural potential plant community:* Agatha soil—grand fir/mallow ninebark; Rock outcrop—little or no vegetation
*Estimated average annual production of timber on the Agatha soil (CMAI):* Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—85 cubic feet per acre at 116 years of age; western larch—not measured
*General management considerations:*
• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.
• Rock outcrop may cause breakage of timber and hinder yarding.

### *Grazeable Woodland*

*Natural potential plant community:* Agatha soil—grand fir/mallow ninebark; Rock outcrop—little or no vegetation

*General management considerations:*

- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.
- The steepness of slope severely limits construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### *Capability Classification*

7e, nonirrigated

## 4—Ahsahka loam, 15 to 40 percent slopes

### *Composition*

*Ahsahka soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills
*Slope range:* 15 to 40 percent
*Elevation:* 1,300 to 1,850 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 140 days

### *Characteristics of the Ahsahka Soil*

*Typical profile:*

0 to 11 inches—dark brown loam
11 to 17 inches—brown loam
17 to 32 inches—yellowish brown loam
32 to 52 inches—brown clay
52 to 60 inches—brown silty clay loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Moderate or severe

### *Contrasting Inclusions*

- Johnson soils on hills (10 percent)
- Driscoll soils on hills (5 percent)

### *Major Uses*

Pastureland, hayland, woodland, grazeable woodland

### *Pastureland and Hayland*

*General management considerations:*

- The steepness of slope limits the use of equipment for tillage, seeding, and other grazing improvement practices.

### *Woodland*

*Natural potential plant community:* Ponderosa pine/Idaho fescue
*Estimated average annual production of timber (CMAI):* Ponderosa pine—122 cubic feet per acre at 40 years of age

*General management considerations:*

- This unit has few limitations for use as woodland.

### *Grazeable Woodland*

*Natural potential plant community:* Ponderosa pine/Idaho fescue

*General management considerations:*

- This unit has few limitations for use as grazeable woodland.

### *Capability Classification*

6e, nonirrigated

## 5—Almota-Athena-Hatwai complex, 45 to 65 percent slopes

### *Composition*

*Almota soil and similar inclusions:* 30 percent
*Athena soil and similar inclusions:* 30 percent
*Hatwai soil and similar inclusions:* 25 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Canyons
*Elevation:* 1,800 to 2,200 feet
*Average annual precipitation:* About 17 inches
*Frost-free season (32 degrees F):* About 155 days

### *Characteristics of the Almota Soil*

*Position on landform:* East-facing slopes
*Slope range:* 45 to 65 percent
*Typical profile:*

0 to 17 inches—dark grayish brown and dark brown silt loam
17 to 24 inches—brown silt loam
24 to 35 inches—pale brown, calcareous gravelly silt loam

35 to 39 inches—pale brown, calcareous very gravelly silt loam
39 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Moderate
*Potential rooting depth:* 30 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Athena Soil*

*Position on landform:* Mounds on east-facing slopes
*Slope range:* 45 to 65 percent
*Typical profile:*
0 to 14 inches—dark grayish brown silt loam
14 to 21 inches—brown silt loam
21 to 44 inches—yellowish brown and light yellowish brown silt loam
44 to 64 inches—very pale brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Hatwai Soil*

*Description of areas:* Circular slick spots
*Position on landform:* Small depressions and intermound areas on east-facing slopes
*Slope range:* 45 to 65 percent
*Typical profile:*
0 to 13 inches—dark grayish brown silt loam
13 to 16 inches—brown silt loam
16 to 22 inches—brown silty clay loam
22 to 28 inches—yellowish brown silt loam
28 to 60 inches—yellowish brown and pale brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe
*Sodicity:* Moderate or strong

### *Contrasting Inclusions*

- Lickskillet soils on convex ridges (10 percent)
- Rock outcrop on convex ridges (5 percent)

### *Major Use*

Rangeland

### *Rangeland*

*Natural potential plant community:* Almota and Athena soils—Idaho fescue/forbs; Hatwai soil—Idaho fescue-bluebunch wheatgrass
*General management considerations:*
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.
- Because of the slow permeability and poor tilth, the Hatwai soil is susceptible to compaction during wet periods.

### *Capability Classification*

7e, nonirrigated

## 6—Almota-Linville complex, 30 to 50 percent slopes

### *Composition*

*Almota soil and similar inclusions:* 45 percent
*Linville soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 20 percent

### *Setting*

*Landform:* Canyons
*Elevation:* 1,500 to 2,200 feet
*Average annual precipitation:* About 17 inches
*Frost-free season (32 degrees F):* About 155 days

### *Characteristics of the Almota Soil*

*Position on landform:* Convex, east-facing slopes
*Slope range:* 30 to 50 percent
*Typical profile:*
0 to 17 inches—dark grayish brown and dark brown silt loam
17 to 24 inches—brown silt loam
24 to 35 inches—pale brown, calcareous gravelly silt loam
35 to 39 inches—pale brown, calcareous very gravelly silt loam
39 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Moderate
*Potential rooting depth:* 30 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Linville Soil*

*Position on landform:* Smooth and concave, east-facing slopes
*Slope range:* 30 to 50 percent
*Typical profile:*
0 to 19 inches—dark grayish brown silt loam
19 to 31 inches—dark grayish brown gravelly silt loam
31 to 67 inches—brown gravelly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Kettenbach soils on south- and west-facing slopes (10 percent)
- Lickskillet soils on convex, south- and west-facing ridges (5 percent)
- Crowers soils in areas below an elevation of about 1,800 feet (3 percent)
- Hatwai soils that occur as scattered slick spots on east-facing slopes (2 percent)

### *Major Use*

Rangeland

### *Rangeland*

*Natural potential plant community:* Idaho fescue/forbs
*General management considerations:*
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### *Capability Classification*

7e, nonirrigated

## 7—Alpowa-Lickskillet complex, 15 to 35 percent slopes

### *Composition*

*Alpowa soil and similar inclusions:* 50 percent
*Lickskillet soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills and canyons
*Elevation:* 1,000 to 2,400 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### *Characteristics of the Alpowa Soil*

*Position on landform:* Concave slopes and mounds in areas of patterned ground
*Slope range:* 15 to 35 percent
*Typical profile:*
0 to 8 inches—dark grayish brown cobbly silt loam
8 to 13 inches—brown very cobbly silt loam
13 to 30 inches—brown and pale brown, calcareous very cobbly silt loam
30 to 60 inches—very pale brown, calcareous very cobbly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Lickskillet Soil*

*Position on landform:* Convex slopes and intermound areas in areas of patterned ground
*Slope range:* 15 to 35 percent
*Typical profile:*
0 to 5 inches—dark grayish brown stony silt loam
5 to 13 inches—brown very gravelly silty clay loam
13 to 16 inches—yellowish brown, calcareous extremely gravelly silty clay loam
16 inches—basalt
*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Very low
*Potential rooting depth:* 12 to 20 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Watama soils on mounds in areas of patterned ground (10 percent)
- Rock outcrop on convex slopes (5 percent)

### *Major Use*

Rangeland

### *Rangeland*

*Natural potential plant community:* Alpowa soil—bluebunch wheatgrass-Sandberg bluegrass; Lickskillet soil—bluebunch wheatgrass/plains pricklypear

*General management considerations:*
• The shallow depth and content of rock fragments in the surface layer of the Lickskillet soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds.
• The very low available water capacity of the Lickskillet soil limits the production of forage.

### *Capability Classification*

6e, nonirrigated

## 8—Alpowa-Lickskillet complex, 35 to 50 percent slopes

### *Composition*

*Alpowa soil and similar inclusions:* 50 percent
*Lickskillet soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 20 percent

### *Setting*

*Landform:* Canyons
*Elevation:* 800 to 2,500 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### *Characteristics of the Alpowa Soil*

*Position on landform:* West-facing slopes
*Slope range:* 35 to 50 percent
*Typical profile:*
0 to 8 inches—dark grayish brown cobbly silt loam
8 to 13 inches—brown very cobbly silt loam
13 to 30 inches—brown and pale brown, calcareous very cobbly silt loam
30 to 60 inches—very pale brown, calcareous very cobbly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Lickskillet Soil*

*Position on landform:* South-facing slopes
*Slope range:* 35 to 50 percent
*Typical profile:*
0 to 5 inches—dark grayish brown stony silt loam
5 to 13 inches—brown very gravelly silty clay loam
13 to 16 inches—yellowish brown, calcareous extremely gravelly silty clay loam
16 inches—basalt
*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Very low
*Potential rooting depth:* 12 to 20 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

• Almota soils on toeslopes and east-facing slopes (5 percent)
• Watama soils on concave slopes (5 percent)
• Bakeoven soils on ridges (5 percent)
• Chard soils on footslopes and summits (3 percent)
• Rock outcrop on convex slopes (2 percent)

### *Major Use*

Rangeland

### *Rangeland*

*Natural potential plant community:* Alpowa soil—bluebunch wheatgrass-Sandberg bluegrass; Lickskillet soil—bluebunch wheatgrass/plains pricklypear
*General management considerations:*
• The steepness of slope, shallow depth of the Lickskillet soil, and rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds. The steepness of slope and rock fragments may also restrict the movement of livestock.
• The very low available water capacity of the Lickskillet soil limits the production of forage.

### *Capability Classification*

7e, nonirrigated

## 9—Aquolls, nearly level

### *Composition*

*Aquolls and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Flood plains and drainageways on plateaus
*Slope range:* 0 to 3 percent
*Elevation:* 4,000 to 5,200 feet
*Average annual precipitation:* About 27 inches
*Frost-free season (32 degrees F):* About 70 days

### *Characteristics of the Aquolls*

*Representative profile:*
0 to 3 inches—very dark gray silt loam

3 to 10 inches—dark gray silty clay loam
10 to 18 inches—very pale brown and light gray, mottled silt loam
18 to 38 inches—light brownish gray and light gray, mottled silty clay loam
38 to 42 inches—light gray, mottled extremely gravelly clay loam
42 inches—fractured basalt

*Depth class:* Deep and very deep
*Drainage class:* Poorly drained
*Permeability:* Moderately slow
*Available water capacity:* Low and moderate
*Potential rooting depth:* More than 40 inches
*Restriction to rooting depth:* Seasonal high water table
*Runoff:* Slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (apparent):* 6 inches above the surface (ponded) to a depth of 18 inches below the surface in March through June
*Frequency of flooding:* Occasional in March through June

### Contrasting Inclusions

- Talmaks soils on footslopes of adjacent hills (10 percent)
- Wilkins soils in higher areas of flood plains (5 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Tufted hairgrass-sedge
*General management considerations:*
- This unit is susceptible to compaction during wet periods.
- The cold temperatures limit plant growth in spring.
- Deep snowpack in most years limits the grazing season to summer and fall.

### Capability Classification

5w, nonirrigated

## 10—Athena silt loam, 20 to 45 percent slopes

### Composition

*Athena soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Position on landform:* North- and east-facing slopes
*Slope range:* 20 to 45 percent
*Elevation:* 1,500 to 2,000 feet
*Average annual precipitation:* About 18 inches
*Frost-free season (32 degrees F):* About 170 days

### Characteristics of the Athena Soil

*Typical profile:*
0 to 14 inches—dark grayish brown silt loam
14 to 21 inches—brown silt loam
21 to 44 inches—yellowish brown and light yellowish brown silt loam
44 to 64 inches—very pale brown, calcareous silt loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Waha soils on shoulders and ridges (5 percent)
- Very deep soils that are fine sandy loam throughout and are on hills (5 percent)
- Crowers soils on convex slopes of 15 to 25 percent (5 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### Capability Classification

6e, nonirrigated

## 11—Bakeoven-Watama complex, 10 to 35 percent slopes

### Composition

*Bakeoven soil and similar inclusions:* 55 percent
*Watama soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Canyons
*Elevation:* 1,000 to 2,400 feet

*Average annual precipitation:* About 15 inches
*Frost-free season (32 degrees F):* About 160 days

### *Characteristics of the Bakeoven Soil*

*Position on landform:* Intermound areas in areas of patterned ground
*Slope range:* 10 to 35 percent
*Typical profile:*
0 to 3 inches—dark grayish brown very stony loam
3 to 6 inches—brown very gravelly clay loam
6 inches—basalt
*Depth class:* Very shallow
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Very low
*Potential rooting depth:* 4 to 10 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Watama Soil*

*Position on landform:* Mounds in areas of patterned ground
*Slope range:* 10 to 35 percent
*Typical profile:*
0 to 11 inches—dark grayish brown silt loam
11 to 34 inches—grayish brown and brown silt loam
34 to 38 inches—yellowish brown gravelly silt loam
38 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Moderate
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Rock outcrop on convex slopes (10 percent)

### *Major Use*

Rangeland

### *Rangeland*

*Natural potential plant community:* Bakeoven soil—stiff sagebrush/Sandberg bluegrass; Watama soil—Idaho fescue-bluebunch wheatgrass
*General management considerations:*
- The very shallow depth and the content of rock fragments in the surface layer of the Bakeoven soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds and make the soil very poorly suited to range seeding.
- The very low available water capacity of the Bakeoven soil limits the production of forage.

### *Capability Classification*

Bakeoven soil—7s, nonirrigated; Watama soil—4e, nonirrigated

## 12—Boles-Joel complex, 1 to 8 percent slopes

### *Composition*

*Boles soil and similar inclusions:* 55 percent
*Joel soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 4,000 to 4,500 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 90 days

### *Characteristics of the Boles Soil*

*Position on landform:* Convex summits and shoulders
*Slope range:* 1 to 6 percent
*Typical profile:*
0 to 13 inches—dark grayish brown and grayish brown silt loam
13 to 17 inches—light brownish gray and light gray silt loam
17 to 45 inches—brown silty clay
45 to 70 inches—yellowish brown, calcareous silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 14 to 22 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate
*Depth to seasonal high water table (perched):* 10 to 18 inches in February through April

### *Characteristics of the Joel Soil*

*Position on landform:* Plane to concave slopes
*Slope range:* 3 to 8 percent
*Typical profile:*
0 to 5 inches—dark grayish brown silt loam
5 to 18 inches—brown and yellowish brown silt loam
18 to 24 inches—yellowish brown silt loam
24 to 60 inches—yellowish brown and light yellowish brown silty clay loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Medium
*Hazard of water erosion:* Slight or moderate

### Contrasting Inclusions

- Wilkins soils in and near drainageways (10 percent)
- Taney soils on convex, north- and west-facing side slopes and toeslopes (5 percent)

### Major Uses

Cropland, pastureland and hayland, woodland, grazeable woodland

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- The short growing season limits the production of some crops.
- The abrupt silty clay subsoil of the Boles soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.
- Wetness of the Boles soil in spring increases the risk of compaction if farm equipment is used.

### Pastureland and Hayland

*General management considerations:*
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- Because of wetness of the Boles soil in spring, trampling by livestock can cause compaction of the soil and can damage plants.

### Woodland

*Natural potential plant community:* Boles soil—ponderosa pine/common snowberry; Joel soil—Douglas fir/mallow ninebark
*Estimated average annual production of timber on the Boles soil (CMAI):* Ponderosa pine—118 cubic feet per acre at 40 years of age
*Estimated average annual production of timber on the Joel soil (CMAI):* Ponderosa pine—122 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
*General management considerations:*
- The seasonal perched water table in the Boles soil limits the survival rate of planted seedlings.
- Because of the seasonal perched water table, the Boles soil is susceptible to compaction.
- Because of the abrupt silty clay subsoil and the seasonal perched water table, trees on the Boles soil are susceptible to windthrow.

### Grazeable Woodland

*Natural potential plant community:* Boles soil—ponderosa pine/common snowberry; Joel soil—Douglas fir/mallow ninebark
*General management considerations:*
- The surface layer of the Boles soil is susceptible to compaction in wet seasons because of the seasonal perched water table.

### Capability Classification

3e, nonirrigated

## 13—Bridgewater-Joseph complex, 1 to 3 percent slopes

### Composition

*Bridgewater soil and similar inclusions:* 50 percent
*Joseph soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Stream terraces and flood plains
*Elevation:* 750 to 2,300 feet
*Average annual precipitation:* About 18 inches
*Frost-free season (32 degrees F):* About 160 days

### Characteristics of the Bridgewater Soil

*Position on landform:* Low stream terraces
*Slope range:* 1 to 3 percent
*Typical profile:*
0 to 16 inches—dark brown extremely gravelly sandy loam
16 to 22 inches—brown extremely gravelly loam
22 to 34 inches—brown extremely cobbly sandy loam
34 to 60 inches—dark grayish brown extremely gravelly loamy coarse sand
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part, very rapid in the lower part
*Available water capacity:* Very low
*Potential rooting depth:* More than 60 inches
*Runoff:* Very slow
*Hazard of water erosion:* Slight
*Frequency of flooding:* Rare

### Characteristics of the Joseph Soil

*Position on landform:* Flood plains

*Slope range:* 1 to 2 percent
*Typical profile:*
0 to 10 inches—grayish brown extremely cobbly loamy coarse sand
10 to 26 inches—grayish brown extremely cobbly loamy coarse sand
26 to 36 inches—grayish brown extremely cobbly sand
36 to 60 inches—grayish brown extremely gravelly coarse sand
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Very rapid
*Available water capacity:* Very low
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Seasonal high water table at a depth of 36 to 60 inches
*Runoff:* Very slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (apparent):* 36 to 60 inches in December through June
*Frequency of flooding:* Frequent in December through June

### *Contrasting Inclusions*

- Lapwai soils on terraces (10 percent)
- Tombeall soils in sloughs and stream channels (5 percent)

### *Major Uses*

Pastureland, hayland, rangeland

### *Pastureland and Hayland*

*General management considerations:*
- Periodic flooding and the seasonal high water table in the Joseph soil limit the choice of plants suitable for maximum production of forage.
- Because of wetness of the Joseph soil in spring, trampling by livestock can result in compaction and can damage plants.
- The high content of coarse fragments in the surface layer of the soils limits some tillage and seeding operations.
- The very low available water capacity limits the production of forage and the choice of suitable plants. Irrigation may be needed for maximum production of forage.

### *Rangeland*

*Natural potential plant community:* Bridgewater soil—common snowberry/bluebunch wheatgrass; Joseph soil—alder/wildrye
*General management considerations:*
- Because of the seasonal high water table in the Joseph soil, this unit is susceptible to compaction.
- Flooding in spring may prevent access by livestock.

### *Capability Classification*

Bridgewater soil—6s, nonirrigated; Joseph soil—6w, nonirrigated

## 14—Broadax silt loam, 2 to 8 percent slopes

### *Composition*

*Broadax soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus and benches
*Slope range:* 2 to 8 percent
*Elevation:* 1,900 to 2,500 feet
*Average annual precipitation:* About 17 inches
*Frost-free season (32 degrees F):* About 155 days

### *Characteristics of the Broadax Soil*

*Typical profile:*
0 to 16 inches—dark grayish brown silt loam
16 to 33 inches—brown and light yellowish brown silt loam
33 to 37 inches—pale brown silt loam
37 to 65 inches—light yellowish brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate
*Sodicity:* Slight

### *Contrasting Inclusions*

- Hatwai soils that occur as circular slick spots and commonly are on convex, west-facing slopes (10 percent)
- Slickpoo soils on south- and west-facing slopes of 5 to 15 percent (5 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
- The hazard of erosion is a concern.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

### *Capability Classification*

2e, nonirrigated

## 15—Broadax silt loam, 8 to 20 percent slopes

### *Composition*

*Broadax soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Position on landform:* Dominantly north- and east-facing slopes
*Slope range:* 8 to 20 percent
*Elevation:* 1,900 to 2,500 feet
*Average annual precipitation:* About 17 inches
*Frost-free season (32 degrees F):* About 155 days

### *Characteristics of the Broadax Soil*

*Typical profile:*
0 to 16 inches—dark grayish brown silt loam
16 to 33 inches—brown and light yellowish brown silt loam
33 to 37 inches—pale brown silt loam
37 to 65 inches—light yellowish brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe
*Sodicity:* Slight

### *Contrasting Inclusions*

- Slickpoo soils on south- and west-facing slopes of 10 to 25 percent (10 percent)
- Hatwai soils that occur as circular slick spots on south- and west-facing, convex slopes (5 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

### *Capability Classification*

3e, nonirrigated

## 16—Broadax-Hatwai complex, 1 to 8 percent slopes

### *Composition*

*Broadax soil and similar inclusions:* 45 percent
*Hatwai soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 1,500 to 2,200 feet
*Average annual precipitation:* About 16 inches
*Frost-free season (32 degrees F):* About 160 days

### *Characteristics of the Broadax Soil*

*Slope range:* 1 to 8 percent
*Typical profile:*
0 to 16 inches—dark grayish brown silt loam
16 to 33 inches—brown and light yellowish brown silt loam
33 to 37 inches—pale brown silt loam
37 to 65 inches—light yellowish brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate
*Sodicity:* Slight

### *Characteristics of the Hatwai Soil*

*Description of areas:* Small, circular slick spots
*Position on landform:* Commonly on convex shoulders and summits
*Slope range:* 1 to 8 percent
*Typical profile:*
0 to 13 inches—dark grayish brown silt loam
13 to 21 inches—brown silt loam
21 to 26 inches—brown silt loam
26 to 36 inches—brown, calcareous silt loam
36 to 66 inches—brown and yellowish brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches

*Restriction to rooting depth:* Dense subsoil at a depth of 15 to 21 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe
*Sodicity:* Moderate or strong

### Contrasting Inclusions

- Bryden soils on south- and west-facing shoulders and ridges (5 percent)
- Soils that have a light-colored, eroded surface layer and a clayey subsoil and are on convex, south- and west-facing nose slopes (5 percent)
- Slickpoo soils on south- and west-facing slopes of 5 to 15 percent (5 percent)

### Major Uses

Cropland, building site development

### Cropland

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
- The hazard of erosion is a concern.
- The sodicity of the Hatwai soil creates special soil management concerns such as limited availability of nutrients, restricted infiltration rate, and poor structure in the surface layer.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

### Building Site Development

*General management considerations:*
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.
- This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.

### Capability Classification

Broadax soil—2e, nonirrigated; Hatwai soil—4e, nonirrigated

## 17—Broadax-Hatwai complex, 8 to 15 percent slopes

### Composition

*Broadax soil and similar inclusions:* 50 percent
*Hatwai soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 1,500 to 1,800 feet
*Average annual precipitation:* About 16 inches
*Frost-free season (32 degrees F):* About 160 days

### Characteristics of the Broadax Soil

*Position on landform:* Dominantly south- and west-facing slopes
*Slope range:* 8 to 15 percent
*Typical profile:*
0 to 16 inches—dark grayish brown silt loam
16 to 33 inches—brown and light yellowish brown silt loam
33 to 37 inches—pale brown silt loam
37 to 65 inches—light yellowish brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Medium
*Hazard of water erosion:* Severe
*Sodicity:* Slight

### Characteristics of the Hatwai Soil

*Description of areas:* Small, circular slick spots
*Position on landform:* Commonly on convex, south- and west-facing shoulders
*Slope range:* 8 to 15 percent
*Typical profile:*
0 to 13 inches—dark grayish brown silt loam
13 to 21 inches—brown silt loam
21 to 26 inches—brown silt loam
26 to 36 inches—brown, calcareous silt loam
36 to 66 inches—brown and yellowish brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Dense subsoil at a depth of 15 to 21 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Sodicity:* Moderate or strong

### Contrasting Inclusions

- Slickpoo soils on south- and west-facing slopes of 10 to 25 percent (10 percent)
- Light-colored, eroded soils that have a clayey subsoil and are on convex nose slopes (3 percent)

• Bryden soils on south- and west-facing slopes of 4 to 12 percent on shoulders (2 percent)

### Major Uses

Cropland, building site development

### Cropland

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• The sodicity of the Hatwai soil creates special management concerns such as limited availability of nutrients, restricted infiltration rate, and poor structure in the surface layer.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.

### Building Site Development

*General management considerations:*
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.
• This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
• The steepness of slope limits the use of construction equipment.

### Capability Classification

Broadax soil—3e, nonirrigated; Hatwai soil—4e, nonirrigated

## 18—Caldwell-Latah complex, 0 to 3 percent slopes

### Composition

*Caldwell soil and similar inclusions:* 50 percent
*Latah soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Flood plains
*Elevation:* 2,570 to 2,780 feet
*Average annual precipitation:* About 20 inches
*Frost-free season (32 degrees F):* About 130 days

### Characteristics of the Caldwell Soil

*Slope range:* 0 to 3 percent
*Typical profile:*
0 to 9 inches—grayish brown silt loam
9 to 26 inches—dark gray silt loam
26 to 39 inches—gray silty clay loam
39 to 60 inches—light brownish gray, mottled silty clay loam
*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Seasonal high water table at a depth of 36 to 60 inches
*Runoff:* Very slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (apparent):* 36 to 60 inches in November through June
*Frequency of flooding:* Occasional in January through May

### Characteristics of the Latah Soil

*Position on landform:* Commonly near toeslopes of adjacent hills
*Slope range:* 0 to 3 percent
*Typical profile:*
0 to 19 inches—dark grayish brown silt loam
19 to 30 inches—light brownish gray and light gray silt loam
30 to 60 inches—brown, mottled silty clay loam
*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Permeability:* Very slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Seasonal high water table at a depth of 6 to 18 inches
*Runoff:* Very slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (perched):* 6 to 18 inches in December through April
*Frequency of flooding:* Occasional in December through April

### Contrasting Inclusions

• Poorly drained, stratified sandy and loamy soils that are near stream channels (10 percent)

### Major Uses

Pastureland, hayland

### Pastureland and Hayland

*General management considerations:*
• Periodic flooding and the seasonal high water table limit the choice of plants that are suitable for maximum production of forage.

• Because of wetness in spring, trampling by livestock can compact the soil and damage plants.

### *Capability Classification*

Caldwell soil—3w, nonirrigated; Latah soil—4w, nonirrigated

## 19—Calouse-Almota complex, 2 to 15 percent slopes

### *Composition*

*Calouse soil and similar inclusions:* 55 percent
*Almota soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 1,900 to 2,700 feet
*Average annual precipitation:* About 18 inches
*Frost-free season (32 degrees F):* About 135 days

### *Characteristics of the Calouse Soil*

*Slope range:* 2 to 15 percent
*Typical profile:*
0 to 10 inches—dark grayish brown silt loam
10 to 32 inches—brown and yellowish brown silt loam
32 to 68 inches—light yellowish brown, white, and very pale brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Medium
*Hazard of water erosion:* Severe
*Sodicity:* Slight

### *Characteristics of the Almota Soil*

*Position on landform:* South- and west-facing, convex slopes
*Slope range:* 5 to 15 percent
*Typical profile:*
0 to 17 inches—dark grayish brown and dark brown silt loam
17 to 24 inches—brown silt loam
24 to 35 inches—pale brown, calcareous gravelly silt loam
35 to 39 inches—pale brown, calcareous very gravelly silt loam
39 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Moderate
*Potential rooting depth:* 30 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

• Naff soils (10 percent)
• Palouse soils on north- and east-facing, concave slopes (5 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• The moderate rooting depth of the Almota soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.
• The sodicity of the subsoil of the Calouse soil causes some nutrients to become unavailable to plants.

### *Capability Classification*

Calouse soil—3e, nonirrigated; Almota soil—4e, nonirrigated

## 20—Calouse-Endicott-Bryden complex, 2 to 6 percent slopes

### *Composition*

*Calouse soil and similar inclusions:* 55 percent
*Endicott soil and similar inclusions:* 20 percent
*Bryden soil and similar inclusions:* 15 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 1,900 to 2,500 feet
*Average annual precipitation:* About 15 inches
*Frost-free season (32 degrees F):* About 160 days

### *Characteristics of the Calouse Soil*

*Position on landform:* Commonly on north- and east-facing slopes
*Slope range:* 2 to 6 percent
*Typical profile:*
0 to 10 inches—grayish brown silt loam

10 to 32 inches—brown and yellowish brown silt loam
32 to 68 inches—light yellowish brown, white, and very pale brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate
*Sodicity:* Slight

### *Characteristics of the Endicott Soil*

*Position on landform:* Commonly on ridges and south- and west-facing slopes
*Slope range:* 2 to 6 percent
*Typical profile:*
0 to 15 inches—brown silt loam
15 to 22 inches—brown silt loam
22 to 29 inches—very pale brown, calcareous silt loam
29 to 38 inches—white, calcareous gravelly loam
38 to 60 inches—white, strongly cemented duripan
*Depth class:* Moderately deep to a duripan
*Drainage class:* Well drained
*Permeability:* Moderate above the duripan
*Available water capacity:* Moderate
*Potential rooting depth:* 28 to 40 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate

### *Characteristics of the Bryden Soil*

*Description of areas:* Small, circular slick spots
*Position on landform:* Commonly on ridges and south- and west-facing slopes
*Slope range:* 2 to 6 percent
*Typical profile:*
0 to 10 inches—dark grayish brown silt loam
10 to 13 inches—dark brown silty clay loam
13 to 19 inches—brown silt loam
19 to 31 inches—brown and pale brown, calcareous silt loam
31 to 37 inches—white, calcareous very gravelly silt loam
37 to 60 inches—white, indurated duripan
*Depth class:* Moderately deep to a duripan
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate above the duripan
*Potential rooting depth:* 25 to 40 inches
*Runoff:* Medium
*Hazard of water erosion:* Severe
*Sodicity:* Moderate

### *Contrasting Inclusions*

• Hatwai soils that occur as circular slick spots (10 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
• The hazard of erosion is a concern.
• The sodicity of the Bryden soil creates special management concerns such as limited availability of nutrients, restricted infiltration rate, and poor structure of the surface layer.
• The sodicity of the subsoil of the Calouse and Bryden soils causes some nutrients to become unavailable to plants.

### *Capability Classification*

Calouse soil—2e, nonirrigated; Endicott and Bryden soils—4e, nonirrigated

## 21—Carlinton silt loam, 2 to 10 percent slopes

### *Composition*

*Carlinton soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Slope range:* 2 to 10 percent
*Elevation:* 3,800 to 4,200 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 100 days

### *Characteristics of the Carlinton Soil*

*Typical profile:*
0 to 8 inches—brown silt loam
8 to 22 inches—yellowish brown silt loam
22 to 26 inches—light yellowish brown and very pale brown silt loam
26 to 28 inches—light gray, mottled silt loam
28 to 50 inches—pale brown and light yellowish brown silty clay loam fragipan
50 to 61 inches—light yellowish brown silty clay loam
*Depth class:* Moderately deep to a fragipan
*Drainage class:* Moderately well drained
*Permeability:* Moderate above the fragipan and very slow through it

*Available water capacity:* Moderate
*Potential rooting depth:* 26 to 36 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate or severe
*Depth to seasonal high water table (perched):* 18 to 36 inches in February through May

### Contrasting Inclusions

- Wilkins soils in draws and drainageways (10 percent)
- Larabee soils on south- and west-facing slopes (3 percent)
- Setters soils near canyons (2 percent)

### Major Uses

Cropland, woodland, grazeable woodland, pastureland and hayland

### Cropland

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
- The short growing season limits the production of some crops.
- Because of the moderate erodibility of the soil, limited soil depth, and steepness of slope, the hazard of erosion is a primary concern.
- The seasonal perched water table and the abundant precipitation in spring and fall limit the length of the field season.
- Wetness in spring increases the susceptibility of the soil to compaction if farm equipment is used.
- The fragipan restricts the growth of deep-rooted crops such as alfalfa.

### Woodland

*Natural potential plant community:* Grand fir/mallow ninebark
*Estimated average annual production of timber (CMAI):* Ponderosa pine—102 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age; grand fir—85 cubic feet per acre at 116 years of age
*General management considerations:*
- Because of the fragipan and the seasonal perched water table, trees on this unit are susceptible to windthrow.
- When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

### Grazeable Woodland

*Natural potential plant community:* Grand fir/mallow ninebark
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### Pastureland and Hayland

*General management considerations:*
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The fragipan restricts the growth of deep-rooted crops such as alfalfa.

### Capability Classification

4e, nonirrigated

## 22—Carlinton silt loam, 10 to 20 percent slopes

### Composition

*Carlinton soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Slope range:* 10 to 20 percent
*Elevation:* 3,800 to 4,200 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 100 days

### Characteristics of the Carlinton Soil

*Typical profile:*
0 to 8 inches—brown silt loam
8 to 22 inches—yellowish brown silt loam
22 to 26 inches—light yellowish brown and very pale brown silt loam
26 to 28 inches—light gray, mottled silt loam
28 to 50 inches—pale brown and light yellowish brown silty clay loam fragipan
50 to 61 inches—light yellowish brown silty clay loam
*Depth class:* Moderately deep to a fragipan
*Drainage class:* Moderately well drained
*Permeability:* Moderate above the fragipan and very slow through it
*Available water capacity:* Moderate
*Potential rooting depth:* 26 to 36 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Depth to seasonal high water table (perched):* 18 to 36 inches in February through May

### Contrasting Inclusions

- Cavendish soils on summits of ridges and on

south- and west-facing slopes (10 percent)
• Joel soils on north- and east-facing slopes of 12 to 25 percent (5 percent)

### Major Uses

Cropland, woodland, grazeable woodland, pastureland and hayland

### Cropland

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
• The short growing season limits the production of some crops.
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• The seasonal perched water table and the abundant precipitation in spring and fall limit the length of the field season.
• Wetness in spring increases the susceptibility of the soil to compaction if farm equipment is used.
• The fragipan restricts the growth of deep-rooted crops such as alfalfa.

### Woodland

*Natural potential plant community:* Grand fir/mallow ninebark
*Estimated average annual production of timber (CMAI):* Ponderosa pine—102 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age; grand fir—85 cubic feet per acre at 116 years of age
*General management considerations:*
• Because of the fragipan and the seasonal perched water table, trees on this unit are susceptible to windthrow.
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### Grazeable Woodland

*Natural potential plant community:* Grand fir/mallow ninebark
*General management considerations:*
• This unit has few limitations for use as grazeable woodland.

### Pastureland and Hayland

*General management considerations:*
• The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
• The fragipan restricts the growth of deep-rooted crops such as alfalfa.

### Capability Classification

4e, nonirrigated

## 23—Carlinton-Talmaks complex, 2 to 8 percent slopes

### Composition

*Carlinton soil and similar inclusions:* 45 percent
*Talmaks soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 4,350 to 4,500 feet
*Average annual precipitation:* About 26 inches
*Frost-free season (32 degrees F):* About 80 days

### Characteristics of the Carlinton Soil

*Position on landform:* Broad hilltops and shoulders
*Slope range:* 2 to 8 percent
*Typical profile:*
0 to 5 inches—grayish brown silt loam
5 to 32 inches—yellowish brown silt loam
32 to 36 inches—light yellowish brown silt loam
36 to 55 inches—light yellowish brown silty clay loam fragipan
55 to 60 inches—light yellowish brown silty clay loam
*Depth class:* Moderately deep to a fragipan
*Drainage class:* Moderately well drained
*Permeability:* Moderate above the fragipan and very slow through it
*Available water capacity:* Moderate
*Potential rooting depth:* 26 to 36 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate or severe
*Depth to seasonal high water table (perched):* 18 to 36 inches in February through May

### Characteristics of the Talmaks Soil

*Position on landform:* Commonly on plane to concave slopes
*Slope range:* 2 to 8 percent
*Typical profile:*
0 to 3 inches—brown silt loam
3 to 16 inches—yellowish brown silt loam
16 to 47 inches—light yellowish brown silty clay loam and silt loam
47 to 70 inches—brown silty clay loam
*Depth class:* Very deep

*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight or moderate

### Contrasting Inclusions

- Seddow soils on south- and west-facing slopes of 6 to 20 percent (10 percent)
- Setters soils on summits (5 percent)

### Major Uses

Cropland, woodland, grazeable woodland, pastureland and hayland

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- The short growing season limits the production of some crops.
- The hazard of erosion is a primary concern because of the moderate erodibility of the soils, limited depth of the Carlinton soil, and steepness of slope.
- The seasonal perched water table in the Carlinton soil and the abundant precipitation in spring and fall limit the length of the field season.
- Wetness in spring increases the susceptibility of the soil to compaction if farm equipment is used.
- The fragipan in the Carlinton soil restricts the growth of deep-rooted crops such as alfalfa.

### Woodland

*Natural potential plant community:* Grand fir/longtube twinflower
*Estimated average annual production of timber on the Carlinton soil (CMAI):* Ponderosa pine—116 cubic feet per acre at 40 years of age; Douglas fir—65 cubic feet per acre at 102 years of age; grand fir—98 cubic feet per acre at 112 years of age; western larch—not measured; lodgepole pine—not measured
*Estimated average annual production of timber on the Talmaks soil (CMAI):* Ponderosa pine—106 cubic feet per acre at 40 years of age; Douglas fir—77 cubic feet per acre at 98 years of age; grand fir—122 cubic feet per acre at 103 years of age; western larch—not measured; lodgepole pine—not measured
*General management considerations:*
- Because of the fragipan and the seasonal perched water table, trees on the Carlinton soil are susceptible to windthrow.

### Grazeable Woodland

*Natural potential plant community:* Grand fir/longtube twinflower
*General management considerations:*
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

### Pastureland and Hayland

*General management considerations:*
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The fragipan in the Carlinton soil restricts the growth of deep-rooted crops such as alfalfa.

### Capability Classification

4e, nonirrigated

## 24—Cavendish-Taney complex, 8 to 20 percent slopes

### Composition

*Cavendish soil and similar inclusions:* 50 percent
*Taney soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 2,600 to 4,000 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 110 days

### Characteristics of the Cavendish Soil

*Position on landform:* Ridges and convex slopes, commonly south- and west-facing
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 8 inches—brown silt loam
8 to 30 inches—reddish brown and yellowish red silty clay loam
30 to 43 inches—yellowish red gravelly clay loam
43 inches—weathered basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### *Characteristics of the Taney Soil*

*Position on landform:* North- and east-facing, commonly concave slopes
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 14 inches—dark brown silt loam
14 to 23 inches—brown and pale brown, mottled silt loam
23 to 29 inches—very pale brown and white, mottled silt loam
29 to 36 inches—light yellowish brown silt loam fragipan
36 to 63 inches—light yellowish brown and yellowish brown silty clay loam
*Depth class:* Moderately deep to a fragipan
*Drainage class:* Moderately well drained
*Permeability:* Moderate above the fragipan and very slow through it
*Available water capacity:* Moderate
*Potential rooting depth:* 27 to 36 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe
*Depth to seasonal high water table (perched):* 23 to 30 inches in February through April

### *Contrasting Inclusions*

- Setters soils on convex slopes of 2 to 15 percent (5 percent)
- Wilkins soils near drainageways (5 percent)
- Joel soils on south- and west-facing slopes (5 percent)

### *Major Uses*

Cropland, woodland, grazeable woodland, pastureland and hayland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soils and the steepness of slope, the hazard of erosion is a primary concern.
- The seasonal perched water table in the Taney soil and the abundant precipitation in spring and fall limit the length of the field season.
- The fragipan in the Taney soil restricts the growth of deep-rooted crops such as alfalfa.

### *Woodland*

*Natural potential plant community:* Douglas fir/common snowberry
*Estimated average annual production of timber on the Cavendish soil (CMAI):* Ponderosa pine—102 cubic feet per acre at 40 years of age; Douglas fir—73 cubic feet per acre at 99 years of age
*Estimated average annual production of timber on the Taney soil (CMAI):* Ponderosa pine—104 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
*General management considerations:*
- Because of the fragipan and the seasonal perched water table, trees on the Taney soil are susceptible to windthrow.
- The limited rooting depth and the high content of coarse fragments in the Cavendish soil limit the amount of water available for tree growth and thus limit productivity.
- Reforestation of the Cavendish soil may be limited because of droughtiness.

### *Grazeable Woodland*

*Natural potential plant community:* Douglas fir/common snowberry
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### *Pastureland and Hayland*

*General management considerations:*
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The fragipan in the Taney soil restricts the growth of deep-rooted crops such as alfalfa.

### *Capability Classification*

Cavendish soil—3e, nonirrigated; Taney soil—4e, nonirrigated

## 25—Chard silt loam, 2 to 10 percent slopes

### *Composition*

*Chard soil and similar inclusions:* 95 percent
*Contrasting inclusions:* 5 percent

### *Setting*

*Landform:* Alluvial terraces
*Position on landform:* Low terraces; broad ridges on higher, dissected terraces
*Slope range:* 2 to 10 percent
*Elevation:* 800 to 1,320 feet
*Average annual precipitation:* About 14 inches

*Frost-free season (32 degrees F):* About 180 days

### Characteristics of the Chard Soil

*Typical profile:*
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part, rapid in the substratum
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate
*Sodicity:* Moderate

### Contrasting Inclusions

- Lapwai soils near streams and drainageways (5 percent)

### Major Uses

Cropland, building site development, rangeland

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- In most years, annual cropping is not practical because of the low precipitation.
- The hazard of erosion is a concern.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

### Rangeland

*Natural potential plant community:* Bluebunch wheatgrass-Sandberg bluegrass
*General management considerations:*
- This unit has few limitations for use as rangeland.

### Building Site Development

*General management considerations:*
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.
- This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
- The sandy substratum may result in unstable cutbanks.
- Septic systems may function poorly because of the rapid permeability of the substratum.

### Capability Classification

3e, nonirrigated

## 26—Chard silt loam, 10 to 25 percent slopes

### Composition

*Chard soil and similar inclusions:* 90 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Dissected alluvial terraces
*Slope range:* 10 to 25 percent
*Elevation:* 740 to 1,360 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### Characteristics of the Chard Soil

*Typical profile:*
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part, rapid in the substratum
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Sodicity:* Moderate

### Contrasting Inclusions

- Very deep soils that have a cobbly substratum and are on south- and west-facing slopes (5 percent)
- Very deep, sandy soils on terraces along the Snake River (5 percent)

### Major Uses

Cropland, rangeland, building site development

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- In most years, annual cropping is not practical because of the low precipitation.
- Because of the moderate erodibility of the soil and

the steepness of slope, the hazard of erosion is a primary concern.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.

### Rangeland

*Natural potential plant community:* Bluebunch wheatgrass-Sandberg bluegrass
*General management considerations:*
• This unit has few limitations for use as rangeland.

### Building Site Development

*General management considerations:*
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.
• This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
• The sandy substratum may result in unstable cutbanks.

### Capability Classification

4e, nonirrigated

## 27—Chard silt loam, 25 to 45 percent slopes

### Composition

*Chard soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Dissected alluvial terraces
*Slope range:* 25 to 45 percent
*Elevation:* 740 to 1,360 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 175 days

### Characteristics of the Chard Soil

*Typical profile:*
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part, rapid in the substratum
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Sodicity: Moderate*

### Contrasting Inclusions

• Moderately deep soils in draws and on steep, convex slopes (10 percent)
• Limekiln soils on convex slopes and in draws (5 percent)

### Major Uses

Rangeland, building site development, cropland

### Rangeland

*Natural potential plant community:* Bluebunch wheatgrass-Sandberg bluegrass
*General management considerations:*
• The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### Building Site Development

*General management considerations:*
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.
• The steepness of slope limits the use of construction equipment.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.
• This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
• The sandy substratum may result in unstable cutbanks.

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
• This unit is poorly suited to cultivated crops because of the steepness of slope and the hazard of erosion.

### Capability Classification

7e, nonirrigated

## 28—Chard complex, 30 to 50 percent slopes

### Composition

*Chard soil and similar inclusions:* 50 percent
*Chard soil, moist, and similar inclusions:* 40 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Dissected alluvial terraces
*Elevation:* 800 to 1,320 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 180 days

### *Characteristics of the Chard Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 30 to 50 percent
*Typical profile:*
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part, rapid in the substratum
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Sodicity:* Moderate

### *Characteristics of the Chard Soil, Moist*

*Position on landform:* North- and east-facing slopes
*Slope range:* 30 to 50 percent
*Typical profile:*
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part, rapid in the substratum
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Sodicity:* Moderate

### *Contrasting Inclusions*

- Limekiln soils on convex, south- and west-facing slopes (5 percent)
- Moderately deep soils on convex, south- and west-facing slopes (5 percent)

### *Major Uses*

Rangeland, building site development, cropland

### *Rangeland*

*Natural potential plant community:* Chard soil—bluebunch wheatgrass-Sandberg bluegrass; Chard soil, moist—Idaho fescue-bluebunch wheatgrass
*General management considerations:*
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### *Building Site Development*

*General management considerations:*
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The steepness of slope limits the use of construction equipment.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.
- This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
- The sandy substratum may result in unstable cutbanks.

### *Cropland*

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- This unit is poorly suited to cultivated crops because of the steepness of slope and the hazard of erosion.

### *Capability Classification*

7e, nonirrigated

## 29—Chard-Tammany complex, 20 to 45 percent slopes

### *Composition*

*Chard soil and similar inclusions:* 50 percent
*Tammany soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Dissected alluvial terraces
*Elevation:* 850 to 1,200 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### *Characteristics of the Chard Soil*

*Slope range:* 20 to 45 percent

*Typical profile:*
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part, rapid in the substratum
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Sodicity:* Moderate

### Characteristics of the Tammany Soil

*Position on landform:* South- and west-facing slopes
*Slope range:* 20 to 45 percent
*Typical profile:*
0 to 4 inches—brown silt loam
4 to 17 inches—brown and yellowish brown very gravelly loam
17 to 29 inches—pale brown, calcareous extremely gravelly coarse sandy loam
29 to 60 inches—light gray, calcareous extremely gravelly coarse sand
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part, very rapid in the substratum
*Available water capacity:* Low
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Sand and gravel at a depth of 25 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Moderately deep soils on south- and west-facing slopes of 30 to 50 percent (10 percent)

### Major Uses

Cropland, rangeland, building site development

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- In most years, annual cropping is not practical because of the low precipitation.
- Because of the moderate erodibility of the soils and the steepness of slope, the hazard of erosion is a primary concern.
- Because of the high content of coarse fragments, the Tammany soil is susceptible to droughtiness in dry years.
- The sodicity of the subsoil of the Chard soil causes some nutrients to become unavailable to plants.

### Rangeland

*Natural potential plant community:* Bluebunch wheatgrass-Sandberg bluegrass
*General management considerations:*
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### Building Site Development

*General management considerations:*
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The steepness of slope limits the use of construction equipment.
- The sandy substratum may result in unstable cutbanks.

### Capability Classification

6e, nonirrigated

## 30—Chard-Urban land complex, gently sloping

### Composition

*Chard soil and similar inclusions:* 60 percent
*Urban land:* 30 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Alluvial terraces
*Elevation:* 740 to 1,360 feet
*Average annual precipitation:* About 13 inches
*Frost-free season (32 degrees F):* About 185 days

### Characteristics of the Chard Soil

*Slope range:* 1 to 8 percent
*Typical profile:*
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part, rapid in the substratum
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate
*Sodicity:* Moderate

### Characteristics of the Urban Land

*Slope range:* 1 to 4 percent
*Description of areas:* Streets, buildings, parking lots, and other structures in the city of Lewiston

### Contrasting Inclusions

- Tammany soils in areas below an elevation of 1,100 feet (10 percent)

### Major Use

Building site development

### Building Site Development

*General management considerations:*
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.
- This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.

### Capability Classification

Chard soil—3e, nonirrigated; Urban land—not assigned

## 31—Cramont silt loam, 2 to 10 percent slopes

### Composition

*Cramont soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on high plateaus (fig. 7)
*Position on landform:* Broad ridges
*Slope range:* 2 to 10 percent
*Elevation:* 4,500 to 4,700 feet
*Average annual precipitation:* About 28 inches
*Frost-free season (32 degrees F):* About 80 days

### Characteristics of the Cramont Soil

*Typical profile:*
1 inch to 0—organic mat
0 to 2 inches—light brownish gray silt loam
2 to 14 inches—pale brown and light yellowish brown silt loam
14 to 65 inches—dark yellowish brown and brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate or severe

### Contrasting Inclusions

- Culdesac soils on concave, north-facing slopes (10 percent)
- Seddow soils on slopes of 8 to 20 percent (3 percent)
- Aquolls in drainageways (2 percent)

### Major Uses

Woodland, grazeable woodland

### Woodland

*Natural potential plant community:* Grand fir/longtube twinflower
*Estimated average annual production of timber (CMAI):* Ponderosa pine—92 cubic feet per acre at 40 years of age; Douglas fir—63 cubic feet per acre at 102 years of age; grand fir—100 cubic feet per acre at 111 years of age; western larch—72 cubic feet per acre at 70 years of age; lodgepole pine—not measured
*General management considerations:*
- This unit has few limitations for use as woodland.

### Grazeable Woodland

*Natural potential plant community:* Grand fir/longtube twinflower
*General management considerations:*
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

### Capability Classification

4e, nonirrigated

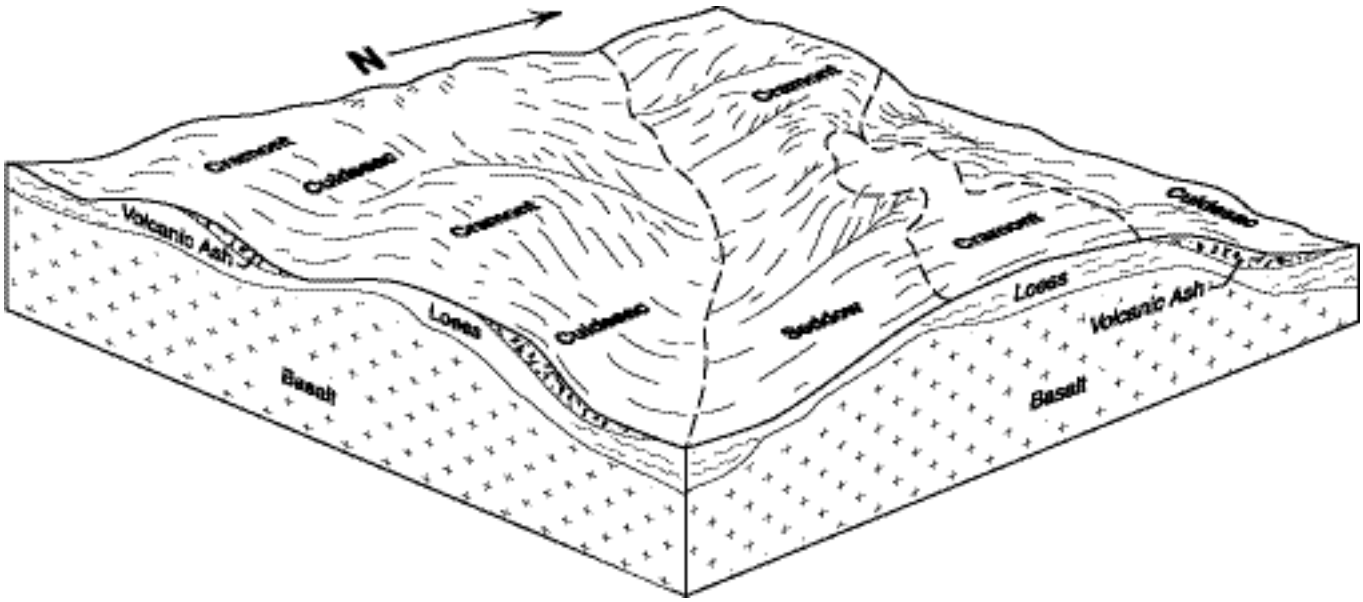


**Figure 7.—Landscape relationships among the major soils in detailed soil map units 31, 32, and 33.**

## 32—Cramont-Culdesac complex, 2 to 20 percent slopes

### *Composition*

*Cramont soil and similar inclusions:* 55 percent
*Culdesac soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on high plateaus (fig. 7)
*Elevation:* 4,100 to 5,000 feet
*Average annual precipitation:* About 28 inches
*Frost-free season (32 degrees F):* About 80 days

### *Characteristics of the Cramont Soil*

*Position on landform:* Broad ridges and plane to convex slopes
*Slope range:* 2 to 10 percent
*Typical profile:*
- 1 inch to 0—organic mat
- 0 to 2 inches—light brownish gray silt loam
- 2 to 14 inches—pale brown and light yellowish brown silt loam
- 14 to 65 inches—dark yellowish brown and brown silty clay loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate or severe

### *Characteristics of the Culdesac Soil*

*Position on landform:* North- and east-facing, concave slopes
*Slope range:* 10 to 20 percent
*Typical profile:*
- 2 inches to 0—organic mat
- 0 to 3 inches—yellowish brown silt loam
- 3 to 18 inches—light yellowish brown silt loam
- 18 to 54 inches—light yellowish brown and brown silty clay loam
- 54 to 60 inches—brown clay loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate

### *Contrasting Inclusions*

- Seddow soils on south-facing slopes of 10 to 25 percent (10 percent)
- Shilla soils on north-facing slopes of 15 to 35 percent (3 percent)
- Aquolls in drainageways (2 percent)

### *Major Uses*

Woodland, grazeable woodland

### *Woodland*

*Natural potential plant community:* Grand fir/longtube twinflower

*Estimated average annual production of timber on the Cramont soil (CMAI):* Ponderosa pine—92 cubic feet per acre at 40 years of age; Douglas fir—63 cubic feet per acre at 102 years of age; grand fir—100 cubic feet per acre at 111 years of age; western larch—72 cubic feet per acre at 70 years of age; lodgepole pine—not measured

*Estimated average annual production of timber on the Culdesac soil (CMAI):* Ponderosa pine—not measured; Douglas fir—51 cubic feet per acre at 107 years of age; grand fir—87 cubic feet per acre at 116 years of age; western larch—81 cubic feet per acre at 70 years of age; lodgepole pine—not measured

*General management considerations:*

- Because the volcanic ash surface layer of the Culdesac soil is fragile, excessive disturbance or compaction reduces productivity and seedling survival.

### *Grazeable Woodland*

*Natural potential plant community:* Grand fir/longtube twinflower

*General management considerations:*

- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.
- The volcanic ash surface layer of the Culdesac soil is easily compacted during wet periods.

### *Capability Classification*

4e, nonirrigated

## 33—Cramont-Seddow complex, 10 to 25 percent slopes

### *Composition*

*Cramont soil and similar inclusions:* 55 percent
*Seddow soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on high plateaus (fig. 7)
*Elevation:* 4,500 to 4,700 feet
*Average annual precipitation:* About 28 inches
*Frost-free season (32 degrees F):* About 80 days

### *Characteristics of the Cramont Soil*

*Slope range:* 10 to 20 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 2 inches—light brownish gray silt loam
2 to 14 inches—pale brown and light yellowish brown silt loam
14 to 65 inches—dark yellowish brown and brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### *Characteristics of the Seddow Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 15 to 25 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 4 inches—brown silt loam
4 to 13 inches—yellowish brown and light yellowish brown silt loam
13 to 21 inches—light yellowish brown silty clay loam
21 to 29 inches—dark yellowish brown gravelly clay loam
29 to 48 inches—dark yellowish brown extremely cobbly clay loam
48 inches—fractured basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 55 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Culdesac soils on concave, north-facing slopes (10 percent)
- Aquolls in drainageways (5 percent)

### *Major Uses*

Woodland, grazeable woodland

### *Woodland*

*Natural potential plant community:* Grand fir/longtube twinflower

*Estimated average annual production of timber on the Cramont soil (CMAI):* Ponderosa pine—92 cubic feet per acre at 40 years of age; Douglas fir—63

cubic feet per acre at 102 years of age; grand fir—100 cubic feet per acre at 111 years of age; western larch—72 cubic feet per acre at 70 years of age; lodgepole pine—not measured

*Estimated average annual production of timber on the Seddow soil (CMAI):* Ponderosa pine—77 cubic feet per acre at 40 years of age; Douglas fir—51 cubic feet per acre at 107 years of age; grand fir—83 cubic feet per acre at 117 years of age; western larch—not measured; lodgepole pine—not measured

*General management considerations:*

• The limited rooting depth and high content of coarse fragments in the Seddow soil limit the amount of water available for tree growth and thus limit productivity.

• Reforestation of the Seddow soil may be limited because of droughtiness.

• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### *Grazeable Woodland*

*Natural potential plant community:* Grand fir/longtube twinflower

*General management considerations:*

• The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.

• The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

### *Capability Classification*

4e, nonirrigated

## 34—Crowers silt loam, 50 to 80 percent slopes

### *Composition*

*Crowers soil and similar inclusions:* 85 percent

*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Canyons

*Position on landform:* North- and east-facing slopes

*Slope range:* 50 to 80 percent

*Elevation:* 740 to 2,800 feet

*Average annual precipitation:* About 15 inches

*Frost-free season (32 degrees F):* About 170 days

### *Characteristics of the Crowers Soil*

*Typical profile:*

0 to 10 inches—very dark grayish brown silt loam

10 to 31 inches—brown silt loam

31 to 41 inches—brown, calcareous very cobbly silt loam

41 to 62 inches—brown, calcareous cobbly silt loam

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Available water capacity:* High

*Potential rooting depth:* More than 60 inches

*Runoff:* Very rapid

*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

• Almota soils on convex slopes (10 percent)

• Oliphant soils on concave slopes (5 percent)

### *Major Use*

Rangeland

### *Rangeland*

*Natural potential plant community:* Idaho fescue-bluebunch wheatgrass

*General management considerations:*

• The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### *Capability Classification*

7e, nonirrigated

## 35—Driscoll silt loam, 3 to 12 percent slopes

### *Composition*

*Driscoll soil and similar inclusions:* 85 percent

*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus

*Position on landform:* Broad ridges and summits

*Slope range:* 3 to 12 percent

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

*Average annual precipitation:* About 23 inches

*Frost-free season (32 degrees F):* About 125 days

### *Characteristics of the Driscoll Soil*

*Typical profile:*

0 to 13 inches—dark grayish brown silt loam

13 to 27 inches—brown silt loam

27 to 31 inches—light gray, mottled silt loam

31 to 46 inches—pale brown, light brown, and light yellowish brown silty clay

46 to 60 inches—light yellowish brown and brownish yellow silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 18 to 36 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate
*Depth to seasonal high water table (perched):* 15 to 30 inches in January through April

### Contrasting Inclusions

- Southwick soils on backslopes of 8 to 12 percent (10 percent)
- Wilkins soils in drainageways (5 percent)

### Major Uses

Cropland, woodland, grazeable woodland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- The hazard of erosion is a concern.
- The abrupt silty clay subsoil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

### Woodland

*Natural potential plant community:* Ponderosa pine/common snowberry
*Estimated average annual production of timber (CMAI):* Ponderosa pine—132 cubic feet per acre at 40 years of age
*General management considerations:*
- Because of the abrupt silty clay subsoil and the seasonal perched water table, trees on this unit are susceptible to windthrow.

### Grazeable Woodland

*Natural potential plant community:* Ponderosa pine/common snowberry
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### Capability Classification

2e, nonirrigated

## 36—Driscoll-Larkin complex, 2 to 10 percent slopes

### Composition

*Driscoll soil and similar inclusions:* 45 percent
*Larkin soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 2,500 to 3,400 feet
*Average annual precipitation:* About 23 inches
*Frost-free season (32 degrees F):* About 120 days

### Characteristics of the Driscoll Soil

*Position on landform:* Shoulders and south- and west-facing slopes
*Slope range:* 2 to 8 percent
*Typical profile:*
0 to 13 inches—dark grayish brown silt loam
13 to 27 inches—brown silt loam
27 to 31 inches—light gray, mottled silt loam
31 to 46 inches—pale brown, light brown, and light yellowish brown silty clay
46 to 60 inches—light yellowish brown and brownish yellow silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 18 to 36 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate
*Depth to seasonal high water table (perched):* 15 to 30 inches in January through April

### Characteristics of the Larkin Soil

*Slope range:* 2 to 10 percent
*Typical profile:*
0 to 15 inches—dark grayish brown silt loam
15 to 19 inches—yellowish brown silt loam
19 to 61 inches—brown and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight or moderate

### *Contrasting Inclusions*

- Bluesprin soils on south- and west-facing slopes of 6 to 18 percent (5 percent)
- Wilkins soils in drainageways (5 percent)
- Southwick soils on concave, north-facing slopes (5 percent)

### *Major Uses*

Cropland, woodland, grazeable woodland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- The hazard of erosion is a concern.
- The abrupt silty clay subsoil of the Driscoll soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

### *Woodland*

*Natural potential plant community:* Ponderosa pine/common snowberry
*Estimated average annual production of timber on the Driscoll soil (CMAI):* Ponderosa pine—132 cubic feet per acre at 40 years of age
*Estimated average annual production of timber on the Larkin soil (CMAI):* Ponderosa pine—85 cubic feet per acre at 40 years of age
*General management considerations:*
- Because of the abrupt silty clay subsoil and the seasonal perched water table, trees on the Driscoll soil are susceptible to windthrow.

### *Grazeable Woodland*

*Natural potential plant community:* Ponderosa pine/common snowberry
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### *Capability Classification*

2e, nonirrigated

## 37—Endicott-Bryden complex, 2 to 6 percent slopes

### *Composition*

*Endicott soil and similar inclusions:* 55 percent
*Bryden soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 1,400 to 2,300 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### *Characteristics of the Endicott Soil*

*Slope range:* 2 to 6 percent
*Typical profile:*
- 0 to 12 inches—dark grayish brown silt loam
- 12 to 20 inches—brown silt loam
- 20 to 30 inches—pale brown, calcareous silt loam
- 30 to 36 inches—white, calcareous gravelly silt loam
- 36 to 60 inches—white, strongly cemented duripan

*Depth class:* Moderately deep to a duripan
*Drainage class:* Well drained
*Permeability:* Moderate above the duripan
*Available water capacity:* Moderate
*Potential rooting depth:* 28 to 40 inches
*Runoff:* Slow
*Hazard of water erosion:* Severe

### *Characteristics of the Bryden Soil*

*Description of areas:* Small, circular slick spots
*Slope range:* 2 to 6 percent
*Typical profile:*
- 0 to 10 inches—dark grayish brown silt loam
- 10 to 13 inches—dark brown silty clay loam
- 13 to 19 inches—brown silt loam
- 19 to 31 inches—brown and pale brown, calcareous silt loam
- 31 to 37 inches—white, calcareous very gravelly silt loam
- 37 to 60 inches—white, indurated duripan

*Depth class:* Moderately deep to a duripan
*Drainage class:* Well drained
*Permeability:* Moderately slow above the duripan
*Available water capacity:* Moderate
*Potential rooting depth:* 25 to 40 inches
*Runoff:* Medium
*Hazard of water erosion:* Severe
*Sodicity:* Moderate

### *Contrasting Inclusions*

- Soils that are sand and gravel below the duripan and are in the upper Tammany Creek Valley (5 percent)
- Stember soils on south- and west-facing slopes (5 percent)
- Oliphant soils on north- and east-facing slopes (5 percent)

### *Major Uses*

Cropland, building site development

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
• In most years, annual cropping is not practical because of the low precipitation and the limited available water capacity.
• Because of the moderate erodibility of the soils, limited soil depth, and steepness of slope, the hazard of erosion is a primary concern.
• The sodicity of the Bryden soil creates special management concerns such as limited availability of nutrients, restricted infiltration rate, and poor structure of the surface layer.
• The sodicity of the subsoil of the Bryden soil causes some nutrients to become unavailable to plants.

### *Building Site Development*

*General management considerations:*
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.
• The moderate depth to the duripan interferes with excavation for basements and utilities.
• The sodicity of the subsoil of the Bryden soil causes some nutrients to become unavailable to plants.
• This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
• Septic systems may function poorly because of the limited soil depth.

### *Capability Classification*

4e, nonirrigated

## 38—Endicott-Bryden complex, 6 to 12 percent slopes

### *Composition*

*Endicott soil and similar inclusions:* 50 percent
*Bryden soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 1,400 to 2,300 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### *Characteristics of the Endicott Soil*

*Slope range:* 6 to 12 percent
*Typical profile:*
0 to 12 inches—dark grayish brown silt loam
12 to 20 inches—brown silt loam
20 to 30 inches—pale brown, calcareous silt loam
30 to 36 inches—white, calcareous gravelly silt loam
36 to 60 inches—white, strongly cemented duripan
*Depth class:* Moderately deep to a duripan
*Drainage class:* Well drained
*Permeability:* Moderate above the duripan
*Available water capacity:* Moderate
*Potential rooting depth:* 28 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### *Characteristics of the Bryden Soil*

*Description of areas:* Small, circular slick spots
*Position on landform:* Commonly on south-facing slopes
*Slope range:* 6 to 12 percent
*Typical profile:*
0 to 10 inches—dark grayish brown silt loam
10 to 13 inches—dark brown silty clay loam
13 to 19 inches—brown silt loam
19 to 31 inches—brown and pale brown, calcareous silt loam
31 to 37 inches—white, calcareous very gravelly silt loam
37 to 60 inches—white, indurated duripan
*Depth class:* Moderately deep to a duripan
*Drainage class:* Well drained
*Permeability:* Moderately slow above the duripan
*Available water capacity:* Moderate
*Potential rooting depth:* 25 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Sodicity:* Moderate

### *Contrasting Inclusions*

• Stember soils on south- and west-facing slopes (10 percent)
• Oliphant soils on north and east-facing slopes (5 percent)

### *Major Uses*

Cropland, building site development

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
• In most years, annual cropping is not practical because of the low precipitation and the limited available water capacity.
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

• The sodicity of the Bryden soil creates special management concerns such as limited availability of nutrients, restricted infiltration rate, and poor structure of the surface layer.
• The sodicity of the subsoil of the Bryden soil causes some nutrients to become unavailable to plants.

### Building Site Development

*General management considerations:*
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.
• The moderate depth to the duripan interferes with excavation for basements and utilities.
• The sodicity of the subsoil of the Bryden soil causes some nutrients to become unavailable to plants.
• This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
• Septic systems may function poorly because of the limited soil depth.

### Capability Classification

4e, nonirrigated

## 39—Endicott-Oliphant complex, 8 to 20 percent slopes

### Composition

*Endicott soil and similar inclusions:* 50 percent
*Oliphant soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 1,400 to 1,900 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### Characteristics of the Endicott Soil

*Position on landform:* Shoulders and upper backslopes
*Slope range:* 8 to 16 percent
*Typical profile:*
0 to 12 inches—dark grayish brown silt loam
12 to 20 inches—brown silt loam
20 to 30 inches—pale brown, calcareous silt loam
30 to 36 inches—white, calcareous gravelly silt loam
36 to 60 inches—white, strongly cemented duripan
*Depth class:* Moderately deep to a duripan
*Drainage class:* Well drained
*Permeability:* Moderate above the duripan
*Available water capacity:* Moderate
*Potential rooting depth:* 28 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Oliphant Soil

*Position on landform:* Lower backslopes and footslopes
*Slope range:* 10 to 20 percent
*Typical profile:*
0 to 16 inches—dark grayish brown and brown silt loam
16 to 29 inches—brown silt loam
29 to 62 inches—pale brown and very pale brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### Contrasting Inclusions

• Alpowa soils on slopes of 10 to 25 percent (5 percent)
• Stember soil on south- and west-facing, convex slopes and shoulders (5 percent)
• Bryden soils that occur as circular slick spots (5 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
• In most years, annual cropping is not practical because of the low precipitation and the limited available water capacity of the Endicott soil.
• Because of the moderate erodibility of the soils and the steepness of slope, the hazard of erosion is a primary concern.

### Capability Classification

4e, nonirrigated

## 40—Entic Haploxerolls, very steep

### Composition

*Entic Haploxerolls and similar inclusions:* 80 percent
*Contrasting inclusions:* 20 percent

### Setting

*Landform:* Canyons

*Position on landform:* South- and west-facing slopes
*Slope range:* 40 to 80 percent
*Elevation:* 1,300 to 2,400 feet
*Average annual precipitation:* About 13 inches
*Frost-free season (32 degrees F):* About 170 days

### Characteristics of the Entic Haploxerolls

*Representative profile:*
0 to 8 inches—dark grayish brown, calcareous gravelly loam
8 to 17 inches—dark gray, calcareous gravelly loam
17 to 28 inches—gray, calcareous, weathered phyllite
28 inches—unweathered phyllite
*Depth class:* Shallow and moderately deep to weathered bedrock
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Low
*Potential rooting depth:* 12 to 30 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Soils that are very shallow to weathered phyllite and are on convex slopes (10 percent)
- Crowers soils on north- and east-facing slopes of 50 to 90 percent (10 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Bluebunch wheatgrass/plains pricklypear
*General management considerations:*
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock. The shallow depth in some areas also limits the construction of improvements.
- The low available water capacity limits the production of forage.

### Capability Classification

7e, nonirrigated

## 41—Gwin-Vollmer complex, 5 to 25 percent slopes

### Composition

*Gwin soil and similar inclusions:* 45 percent
*Vollmer soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills
*Elevation:* 2,500 to 3,800 feet
*Average annual precipitation:* About 22 inches
*Frost-free season (32 degrees F):* About 115 days

### Characteristics of the Gwin Soil

*Position on landform:* South- and west-facing, convex slopes and intermound areas of patterned ground
*Slope range:* 5 to 25 percent
*Typical profile:*
0 to 6 inches—brown very stony silt loam
6 to 12 inches—brown extremely gravelly silty clay loam
12 inches—basalt
*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Very low
*Potential rooting depth:* 10 to 20 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Vollmer Soil

*Position on landform:* Plane to concave slopes and mounds in areas of patterned ground
*Slope range:* 5 to 25 percent
*Typical profile:*
0 to 12 inches—grayish brown and brown silt loam
12 to 28 inches—brown silt loam
28 to 36 inches—pale brown cobbly silt loam
36 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Uhlorn soils on slopes of 2 to 10 percent on summits and shoulders (10 percent)
- Kettenbach soils on convex slopes of 15 to 35 percent (5 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Gwin soil—bluebunch wheatgrass-Sandberg bluegrass; Vollmer soil—Idaho fescue-bluebunch wheatgrass
*General management considerations:*
• The shallow depth and content of rock fragments in the surface layer of the Gwin soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds.
• The very low available water capacity of the Gwin soil limits the production of forage.

### Capability Classification

Gwin soil—6e, nonirrigated; Vollmer soil—4e, nonirrigated

## 42—Haploxerolls, rolling

### Composition

*Haploxerolls and similar inclusions:* 90 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Landslides
*Slope range:* 2 to 20 percent
*Elevation:* 800 to 1,300 feet
*Average annual precipitation:* About 13 inches
*Frost-free season (32 degrees F):* About 185 days

### Characteristics of the Haploxerolls

*Representative profile:*
0 to 14 inches—very dark grayish brown silty clay loam
14 to 23 inches—olive brown silty clay loam
23 to 34 inches—light olive brown, calcareous silty clay loam
34 to 60 inches—light gray, calcareous gravelly clay loam
*Depth class:* Moderately deep to very deep
*Drainage class:* Well drained
*Permeability:* Moderate and moderately slow
*Available water capacity:* Moderate and high
*Potential rooting depth:* 30 to 60 inches or more
*Runoff:* Medium
*Hazard of water erosion:* Severe
*Sodicity:* Slight

### Contrasting Inclusions

• Lickskillet soils (10 percent)

### Major Uses

Building site development, rangeland

### Building Site Development

*General management considerations:*
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.
• This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.

### Rangeland

*Natural potential plant community:* Bluebunch wheatgrass-Sandberg bluegrass
*General management considerations:*
• This unit has few limitations for use as rangeland.

### Capability Classification

4e, nonirrigated

## 43—Hooverton stony loam, 35 to 75 percent slopes

### Composition

*Hooverton soil and similar inclusions:* 80 percent
*Contrasting inclusions:* 20 percent

### Setting

*Landform:* Canyons
*Position on landform:* South- and west-facing backslopes
*Slope range:* 35 to 75 percent
*Elevation:* 2,800 to 5,300 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 110 days

### Characteristics of the Hooverton Soil

*Typical profile:*
0 to 11 inches—very dark grayish brown stony loam
11 to 17 inches—brown very cobbly loam
17 to 35 inches—dark yellowish brown very cobbly clay loam and extremely cobbly clay loam
35 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Low
*Potential rooting depth:* 24 to 40 inches
*Runoff:* Very rapid

*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Klickson soils on north- and east-facing slopes (10 percent)
- Gwin soils on convex shoulders of ridges (5 percent)
- Linville soils on concave, south- and west-facing slopes (5 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Bluebunch wheatgrass-Idaho fescue

*General management considerations:*

- The steepness of slope and the rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.
- The cold temperatures restrict plant growth in spring. The grazing season is limited to summer and fall.

### Capability Classification

7e, nonirrigated

## 44—Immig very stony clay loam, 40 to 80 percent slopes

### Composition

*Immig soil and similar inclusions:* 80 percent
*Contrasting inclusions:* 20 percent

### Setting

*Landform:* Canyons
*Position on landform:* South- and west-facing slopes
*Slope range:* 40 to 80 percent
*Elevation:* 2,000 to 4,000 feet
*Average annual precipitation:* About 17 inches
*Frost-free season (32 degrees F):* About 140 days

### Characteristics of the Immig Soil

*Typical profile:*

0 to 5 inches—dark brown very stony clay loam
5 to 10 inches—dark brown gravelly clay loam
10 to 29 inches—dark brown and strong brown extremely gravelly clay
29 inches—greenstone

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* Very low
*Potential rooting depth:* 26 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Gwin soils on convex slopes (10 percent)
- Linville soils on north- and east-facing slopes (10 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Bluebunch wheatgrass/arrowleaf balsamroot

*General management considerations:*

- The steepness of slope and rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### Capability Classification

7e, nonirrigated

## 45—Jacket silt loam, 3 to 12 percent slopes

### Composition

*Jacket soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus, canyon benches
*Slope range:* 3 to 12 percent
*Elevation:* 1,200 to 3,000 feet
*Average annual precipitation:* About 22 inches
*Frost-free season (32 degrees F):* About 120 days

### Characteristics of the Jacket Soil

*Typical profile:*

0 to 7 inches—dark grayish brown silt loam
7 to 27 inches—dark grayish brown and brown silty clay loam
27 to 56 inches—brown and yellowish brown silty clay
56 to 63 inches—strong brown and yellowish brown silty clay loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High

*Potential rooting depth:* More than 60 inches
*Runoff:* Medium
*Hazard of water erosion:* Severe

### Contrasting Inclusions

- Driscoll soils on convex, north-facing slopes (5 percent)
- Larkin soils on north-facing slopes (5 percent)
- Mallory soils on convex, south- and west-facing slopes (5 percent)

### Major Uses

Cropland, pastureland, hayland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### Pastureland and Hayland

*General management considerations:*
- This unit has few limitations for use as pastureland and hayland.

### Capability Classification

2e, nonirrigated

## 46—Jacket silt loam, 12 to 30 percent slopes

### Composition

*Jacket soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus, canyon benches
*Position on landform:* South-, east-, and west-facing slopes
*Slope range:* 12 to 30 percent
*Elevation:* 1,200 to 3,000 feet
*Average annual precipitation:* About 22 inches
*Frost-free season (32 degrees F):* About 120 days

### Characteristics of the Jacket Soil

*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 27 inches—dark grayish brown and brown silty clay loam
27 to 56 inches—brown and yellowish brown silty clay
56 to 63 inches—strong brown and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Mallory soils on south- and west-facing slopes (10 percent)
- Driscoll soils on convex slopes of 8 to 15 percent (5 percent)

### Major Uses

Cropland, rangeland, pastureland, hayland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### Rangeland

*Natural potential plant community:* Common snowberry/Idaho fescue
*General management considerations:*
- This unit has few limitations for use as rangeland.

### Pastureland and Hayland

*General management considerations:*
- The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.

### Capability Classification

4e, nonirrigated

## 47—Jacket-Larkin complex, 20 to 50 percent slopes

### Composition

*Jacket soil and similar inclusions:* 45 percent
*Larkin soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 2,300 to 3,400 feet
*Average annual precipitation:* About 23 inches
*Frost-free season (32 degrees F):* About 120 days

### *Characteristics of the Jacket Soil*

*Position on landform:* Convex slopes
*Slope range:* 20 to 50 percent
*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 27 inches—dark grayish brown and brown silty clay loam
27 to 56 inches—brown and yellowish brown silty clay
56 to 63 inches—strong brown and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Larkin Soil*

*Position on landform:* Plane to concave slopes
*Slope range:* 20 to 50 percent
*Typical profile:*
0 to 15 inches—dark grayish brown silt loam
15 to 19 inches—yellowish brown silt loam
19 to 61 inches—brown and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Driscoll soils on shoulders and ridges (5 percent)
- Keuterville soils on convex slopes of 30 to 60 percent (5 percent)
- Klickson soils on north-facing slopes (5 percent)

### *Major Uses*

Woodland, grazeable woodland, cropland

### *Woodland*

*Natural potential plant community:* Ponderosa pine/common snowberry
*Estimated average annual production of timber on the Jacket soil (CMAI):* Ponderosa pine—128 cubic feet per acre at 40 years of age
*Estimated average annual production of timber on the Larkin soil (CMAI):* Ponderosa pine—85 cubic feet per acre at 40 years of age
*General management considerations:*
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### *Grazeable Woodland*

*Natural potential plant community:* Ponderosa pine/common snowberry
*General management considerations:*
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### *Cropland*

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- This unit is poorly suited to cultivated crops because of the steepness of slope and the hazard of erosion.

### *Capability Classification*

7e, nonirrigated

## 48—Joel silt loam, 1 to 8 percent slopes

### *Composition*

*Joel soil and similar inclusions:* 90 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Slope range:* 1 to 8 percent
*Elevation:* 4,000 to 4,600 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 80 days

### *Characteristics of the Joel Soil*

*Typical profile:*
0 to 5 inches—dark grayish brown silt loam
5 to 18 inches—brown and yellowish brown silt loam
18 to 24 inches—yellowish brown silt loam
24 to 60 inches—yellowish brown and light yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow

*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight

### Contrasting Inclusions

- Boles soils on summits and toeslopes (5 percent)
- Wilkins soils in drainageways (5 percent)

### Major Uses

Woodland, grazeable woodland, pastureland, hayland, cropland

### Woodland

*Natural potential plant community:* Douglas fir/mallow ninebark
*Estimated average annual production of timber (CMAI):* Ponderosa pine—122 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
*General management considerations:*
- This unit has few limitations for use as woodland.

### Grazeable Woodland

*Natural potential plant community:* Douglas fir/mallow ninebark
*General management considerations:*
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.

### Pastureland and Hayland

*General management considerations:*
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- The short growing season limits the production of some crops.
- The hazard of erosion is a concern.

### Capability Classification

3e, nonirrigated

## 49—Joel silt loam, 8 to 16 percent slopes

### Composition

*Joel soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Position on landform:* Plane to concave slopes
*Slope range:* 8 to 16 percent
*Elevation:* 4,000 to 4,600 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 90 days

### Characteristics of the Joel Soil

*Typical profile:*
0 to 5 inches—dark grayish brown silt loam
5 to 18 inches—brown and yellowish brown silt loam
18 to 24 inches—yellowish brown silt loam
24 to 60 inches—yellowish brown and light yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Slight or moderate

### Contrasting Inclusions

- Boles soils on summits and toeslopes of 1 to 10 percent (10 percent)
- Sweiting soils on south- and west-facing slopes of 10 to 20 percent (5 percent)

### Major Uses

Cropland, pastureland, hayland, woodland, grazeable woodland

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- The short growing season limits the production of some crops.
- The hazard of erosion is a concern.

### Pastureland and Hayland

*General management considerations:*
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.

### Woodland

*Natural potential plant community:* Douglas fir/mallow ninebark
*Estimated average annual production of timber (CMAI):* Ponderosa pine—122 cubic feet per acre

at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age

*General management considerations:*

- This unit has few limitations for use as woodland.

### Grazeable Woodland

*Natural potential plant community:* Douglas fir/mallow ninebark

*General management considerations:*

- This unit has few limitations for use as grazeable woodland.

### Capability Classification

3e, nonirrigated

## 50—Joel-Setters complex, 2 to 10 percent slopes

### Composition

*Joel soil and similar inclusions:* 65 percent
*Setters soil and similar inclusions:* 20 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 3,300 to 3,700 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 115 days

### Characteristics of the Joel Soil

*Slope range:* 2 to 10 percent
*Typical profile:*

0 to 10 inches—dark grayish brown silt loam
10 to 18 inches—grayish brown and brown silt loam
18 to 25 inches—pale brown silt loam
25 to 66 inches—light yellowish brown and light brown silty clay loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight or moderate

### Characteristics of the Setters Soil

*Position on landform:* Summits and south- and west-facing slopes
*Slope range:* 2 to 8 percent
*Typical profile:*

0 to 12 inches—grayish brown and brown silt loam
12 to 17 inches—pale brown silt loam
17 to 19 inches—light brownish gray, mottled silt loam
19 to 49 inches—brown and pale brown silty clay
49 to 61 inches—pale brown silty clay loam

*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Silty clay subsoil at a depth of 18 to 24 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate or severe
*Depth to seasonal high water table (perched):* 14 to 22 inches in February through April

### Contrasting Inclusions

- Taney soils on concave, north- and east-facing slopes (10 percent)
- Wilkins soils in drainageways (5 percent)

### Major Uses

Cropland, woodland, grazeable woodland, pastureland, hayland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils

*General management considerations:*

- The hazard of erosion is a concern.
- The silty clay subsoil of the Setters soil restricts the growth of deep-rooted crops.

### Woodland

*Natural potential plant community:* Joel soil—Douglas fir/mallow ninebark; Setters soil—Douglas fir/common snowberry

*Estimated average annual production of timber on the Joel soil (CMAI):* Ponderosa pine—110 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age

*Estimated average annual production of timber on the Setters soil (CMAI):* Ponderosa pine—100 cubic feet per acre at 40 years of age; Douglas fir—69 cubic feet per acre at 101 years of age

*General management considerations:*

- Because of the silty clay subsoil and the seasonal perched water table, trees on the Setters soil are susceptible to windthrow.

### Grazeable Woodland

*Natural potential plant community:* Joel soil—

Douglas fir/mallow ninebark; Setters soil—Douglas fir/common snowberry

*General management considerations:*

• This unit has few limitations for use as grazeable woodland.

### Pastureland and Hayland

*General management considerations:*

• The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.

• The silty clay subsoil of the Setters soil restricts the growth of deep-rooted crops such as alfalfa.

### Capability Classification

3e, nonirrigated

## 51—Joel-Setters complex, 10 to 20 percent slopes

### Composition

*Joel soil and similar inclusions:* 55 percent
*Setters soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 2,300 to 4,000 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 115 days

### Characteristics of the Joel Soil

*Slope range:* 12 to 20 percent
*Typical profile:*
0 to 10 inches—dark grayish brown silt loam
10 to 18 inches—grayish brown and brown silt loam
18 to 25 inches—pale brown silt loam
25 to 66 inches—light yellowish brown and light brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate

### Characteristics of the Setters Soil

*Position on landform:* Shoulders and lower lying knobs
*Slope range:* 10 to 14 percent
*Typical profile:*
0 to 12 inches—grayish brown and brown silt loam
12 to 17 inches—pale brown silt loam
17 to 19 inches—light brownish gray, mottled silt loam
19 to 49 inches—brown and pale brown silty clay
49 to 61 inches—pale brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Silty clay subsoil at a depth of 18 to 24 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe
*Depth to seasonal high water table (perched):* 14 to 22 inches in February through April

### Contrasting Inclusions

• Taney soils on concave slopes (10 percent)
• Cavendish soils on south- and west-facing slopes of 15 to 25 percent (3 percent)
• Wilkins soils near drainageways (2 percent)

### Major Uses

Cropland, woodland, grazeable woodland, pastureland, hayland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils

*General management considerations:*

• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

• The silty clay subsoil of the Setters soil restricts the growth of deep-rooted crops.

### Woodland

*Natural potential plant community:* Joel soil—Douglas fir/mallow ninebark; Setters soil—Douglas fir/common snowberry

*Estimated average annual production of timber on the Joel soil (CMAI):* Ponderosa pine—110 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age

*Estimated average annual production of timber on the Setters soil (CMAI):* Ponderosa pine—100 cubic feet per acre at 40 years of age; Douglas fir—69 cubic feet per acre at 101 years of age

*General management considerations:*

• Because of the silty clay subsoil and the seasonal

perched water table, trees on the Setters soil are susceptible to windthrow.

### *Grazeable Woodland*

*Natural potential plant community:* Joel soil—Douglas fir/mallow ninebark; Setters soil—Douglas fir/common snowberry
*General management considerations:*
• This unit has few limitations for use as grazeable woodland.

### *Pastureland and Hayland*

*General management considerations:*
• The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
• The silty clay subsoil of the Setters soil restricts the growth of deep-rooted crops such as alfalfa.

### *Capability Classification*

4e, nonirrigated

## 52—Johnson loam, 45 to 65 percent slopes

### *Composition*

*Johnson soil and similar inclusions:* 80 percent
*Contrasting inclusions:* 20 percent

### *Setting*

*Landform:* Canyons
*Position on landform:* North- and east-facing slopes
*Slope range:* 45 to 65 percent
*Elevation:* 1,000 to 3,000 feet
*Average annual precipitation:* About 23 inches
*Frost-free season (32 degrees F):* About 120 days

### *Characteristics of the Johnson Soil*

*Typical profile:*
2 inches to 0—organic mat
0 to 10 inches—brown loam
10 to 50 inches—brown and dark brown clay loam
50 to 63 inches—brown loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

• Dragnot soils on south- and west-facing slopes (10 percent)
• Rock outcrop near drainageways (5 percent)
• Uvi soils on concave slopes (5 percent)

### *Major Uses*

Woodland, grazeable woodland

### *Woodland*

*Natural potential plant community:* Douglas fir/mallow ninebark
*Estimated average annual production of timber (CMAI):* Ponderosa pine—114 cubic feet per acre at 40 years of age; Douglas fir—56 cubic feet per acre at 105 years of age
*General management considerations:*
• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

### *Grazeable Woodland*

*Natural potential plant community:* Douglas fir/mallow ninebark
*General management considerations:*
• The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### *Capability Classification*

7e, nonirrigated

## 53—Johnson-Dragnot association, 40 to 70 percent slopes

### *Composition*

*Johnson soil and similar inclusions:* 45 percent
*Dragnot soil and similar inclusions:* 20 percent
*Dragnot soil, dry, and similar inclusions:* 20 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Canyons
*Elevation:* 1,200 to 3,000 feet
*Average annual precipitation:* About 23 inches
*Frost-free season (32 degrees F):* About 120 days

### *Characteristics of the Johnson Soil*

*Position on landform:* North- and east-facing slopes

*Slope range:* 40 to 70 percent
*Typical profile:*
2 inches to 0—organic mat
0 to 10 inches—brown loam
10 to 50 inches—brown and dark brown clay loam
50 to 63 inches—brown loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Dragnot Soil

*Position on landform:* South- and west-facing backslopes and footslopes
*Slope range:* 40 to 70 percent
*Typical profile:*
0 to 4 inches—brown stony loam
4 to 11 inches—brown loam
11 to 18 inches—brown fine gravelly loam
18 to 31 inches—brown very gravelly sandy loam
31 inches—granodiorite
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Low
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Dragnot Soil, Dry

*Position on landform:* South- and west-facing backslopes and footslopes
*Slope range:* 40 to 70 percent
*Typical profile:*
0 to 4 inches—brown stony loam
4 to 18 inches—brown loam
18 to 31 inches—brown very gravelly sandy loam
31 inches—granodiorite
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Low
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Rock outcrop on south- and west-facing slopes (5 percent)
- Ahsahka soils on summits of ridges and on benches and knobs (5 percent)
- Uvi soils on north- and east-facing slopes (5 percent)

### Major Uses

Woodland, grazeable woodland, rangeland

### Woodland

*Natural potential plant community:* Johnson soil—Douglas fir/mallow ninebark; Dragnot soil—ponderosa pine/common snowberry
*Estimated average annual production of timber on the Johnson soil (CMAI):* Ponderosa pine—114 cubic feet per acre at 40 years of age; Douglas fir—56 cubic feet per acre at 105 years of age
*Estimated average annual production of timber on the Dragnot soil (CMAI):* Ponderosa pine—85 cubic feet per acre at 40 years of age
*General management considerations:*
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- The droughtiness of the Dragnot soil limits productivity and the survival of seedlings.
- Because of the moderate rooting depth, trees on the Dragnot soil are susceptible to windthrow.
- When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees on the Johnson soil.

### Grazeable Woodland

*Natural potential plant community:* Johnson soil—Douglas fir/mallow ninebark; Dragnot soil—ponderosa pine/common snowberry
*General management considerations:*
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### Rangeland

*Natural potential plant community:* Dragnot soil, dry—common snowberry/bluebunch wheatgrass
*General management considerations:*
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### Capability Classification

7e, nonirrigated

## 54—Johnson-Kruse complex, 5 to 40 percent slopes

### *Composition*

*Johnson soil and similar inclusions:* 45 percent
*Kruse soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills
*Elevation:* 3,900 to 4,640 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 90 days

### *Characteristics of the Johnson Soil*

*Position on landform:* Gently sloping hillsides and summits
*Slope range:* 5 to 25 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 13 inches—brown loam
13 to 20 inches—light yellowish brown loam
20 to 60 inches—light yellowish brown clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### *Characteristics of the Kruse Soil*

*Position on landform:* Commonly on north- and east-facing slopes
*Slope range:* 10 to 40 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 3 inches—brown loam
3 to 16 inches—light yellowish brown and pale brown loam
16 to 49 inches—yellowish brown, brown, and strong brown clay loam
49 to 65 inches—light brown coarse sandy loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Labuck soils on south- and west-facing slopes (10 percent)
- Ahsahka soils on convex, south- and west-facing slopes (3 percent)
- Uvi soils on north- and east-facing, concave slopes (2 percent)

### *Major Uses*

Woodland, grazeable woodland, cropland, pastureland, hayland

### *Woodland*

*Natural potential plant community:* Johnson soil—Douglas fir/common snowberry; Kruse soil—grand fir/longtube twinflower
*Estimated average annual production of timber on the Johnson soil (CMAI):* Ponderosa pine—114 cubic feet per acre at 40 years of age; Douglas fir—56 cubic feet per acre at 105 years of age
*Estimated average annual production of timber on the Kruse soil (CMAI):* Ponderosa pine—118 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age; grand fir—106 cubic feet per acre at 109 years of age; western larch—not measured
*General management considerations:*
- The hazard of erosion is a concern.

### *Grazeable Woodland*

*Natural potential plant community:* Johnson soil—Douglas fir/common snowberry; Kruse soil—grand fir/longtube twinflower
*General management considerations:*
- The characteristic understory plant community on the Kruse soil produces very little forage for livestock when the canopy is closed.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### *Cropland*

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- The short growing season limits the production of some crops.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### *Pastureland and Hayland*

*General management considerations:*
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.

### *Capability Classification*

4e, nonirrigated

## 55—Johnson-Labuck complex, 15 to 35 percent slopes

### *Composition*

*Johnson soil and similar inclusions:* 50 percent
*Labuck soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills
*Elevation:* 3,700 to 4,640 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 90 days

### *Characteristics of the Johnson Soil*

*Slope range:* 15 to 25 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 13 inches—brown loam
13 to 20 inches—light yellowish brown loam
20 to 60 inches—light yellowish brown clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### *Characteristics of the Labuck Soil*

*Position on landform:* Convex slopes on shoulders, knobs, and ridges
*Slope range:* 15 to 35 percent
*Typical profile:*
0 to 15 inches—brown coarse sandy loam
15 to 26 inches—light yellowish brown fine gravelly coarse sandy loam
26 to 60 inches—multicolored, weathered granodiorite
*Depth class:* Moderately deep to weathered rock
*Drainage class:* Well drained
*Permeability:* Moderately rapid
*Available water capacity:* Moderate
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### *Contrasting Inclusions*

- Kruse soils on footslopes and north- and east-facing slopes (5 percent)
- Dragnot soils that are drier and are on south-facing slopes of 20 to 45 percent (5 percent)
- Ahsahka soils on south- and west-facing, convex slopes (3 percent)
- Rock outcrop on convex ridges and knobs (2 percent)

### *Major Uses*

Woodland, grazeable woodland, cropland, pastureland, hayland

### *Woodland*

*Natural potential plant community:* Douglas fir/common snowberry
*Estimated average annual production of timber on the Johnson soil (CMAI):* Ponderosa pine—114 cubic feet per acre at 40 years of age; Douglas fir—56 cubic feet per acre at 105 years of age
*Estimated average annual production of timber on the Labuck soil (CMAI):* Ponderosa pine—94 cubic feet per acre at 40 years of age; Douglas fir—52 cubic feet per acre at 102 years of age
*General management considerations:*
- The droughtiness of the Labuck soil limits productivity and the survival of seedlings.
- Because of the moderate rooting depth, trees on the Labuck soil are susceptible to windthrow.

### *Grazeable Woodland*

*Natural potential plant community:* Douglas fir/common snowberry
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### *Cropland*

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- The short growing season limits the production of some crops.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth of the Labuck soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

### *Pastureland and Hayland*

*General management considerations:*
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The moderate available water capacity of the Labuck soil limits the production of forage and the

choice of suitable plant species. Irrigation may be needed for maximum production of forage.
• The moderate rooting depth of the Labuck soil limits the production of forage and results in droughtiness in dry years.

### *Capability Classification*

Johnson soil—4e, nonirrigated; Labuck soil—6e, nonirrigated

## 56—Joseph-Tombeall complex, 0 to 2 percent slopes, occasionally flooded

### *Composition*

*Joseph soil and similar inclusions:* 50 percent
*Tombeall soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Flood plains
*Elevation:* 800 to 1,200 feet
*Average annual precipitation:* About 18 inches
*Frost-free season (32 degrees F):* About 165 days

### *Characteristics of the Joseph Soil*

*Slope range:* 0 to 2 percent
*Typical profile:*
0 to 10 inches—grayish brown extremely cobbly loamy coarse sand
10 to 26 inches—grayish brown extremely cobbly loamy coarse sand
26 to 36 inches—grayish brown extremely cobbly sand
36 to 60 inches—grayish brown extremely gravelly coarse sand
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Very rapid
*Available water capacity:* Very low
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Seasonal high water table at a depth of 36 to 60 inches
*Runoff:* Very slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (apparent):* 36 to 60 inches in December through June
*Frequency of flooding:* Occasional in December through June

### *Characteristics of the Tombeall Soil*

*Slope range:* 0 to 2 percent
*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—dark grayish brown silt loam
17 to 28 inches—dark grayish brown, mottled sandy loam
28 to 35 inches—brown, mottled very gravelly sandy loam
35 to 60 inches—grayish brown extremely gravelly sandy loam
*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Permeability:* Moderate
*Available water capacity:* Low
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Seasonal high water table at a depth of 12 to 30 inches
*Runoff:* Very slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (apparent):* 12 to 30 inches in February through April
*Frequency of flooding:* Occasional in December through June

### *Contrasting Inclusions*

• Bridgewater soils on higher terraces (5 percent)
• Lapwai soils on higher terraces (5 percent)
• Aquents on low flood plains (5 percent)

### *Major Uses*

Pastureland, hayland, rangeland

### *Pastureland and Hayland*

*General management considerations:*
• Periodic flooding and the seasonal high water table limit the choice of plants that are suitable for maximum production of forage.
• Because of wetness in spring, this unit is susceptible to soil compaction and plant damage as a result of livestock trampling.
• The high content of cobbles in the surface layer of the Joseph soil limits some tillage and seeding operations.

### *Rangeland*

*Natural potential plant community:* Joseph soil—black cottonwood/wildrye; Tombeall soil—tufted hairgrass-sedge
*General management considerations:*
• Because of the seasonal high water table, this unit is susceptible to soil compaction during wet periods.
• Flooding in spring may prevent access by livestock.

### *Capability Classification*

Joseph soil—6s, nonirrigated; Tombeall soil—3w, nonirrigated

## 57—Kettenbach-Gwin complex, 35 to 75 percent slopes

### *Composition*

*Kettenbach soil and similar inclusions:* 40 percent
*Kettenbach soil, moist, and similar inclusions:* 20 percent
*Gwin soil and similar inclusions:* 20 percent
*Contrasting inclusions:* 20 percent

### *Setting*

*Landform:* Canyons
*Elevation:* 1,200 to 4,000 feet
*Average annual precipitation:* About 18 inches
*Frost-free season (32 degrees F):* About 150 days

### *Characteristics of the Kettenbach Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 35 to 75 percent
*Typical profile:*
0 to 4 inches—brown stony silt loam
4 to 10 inches—dark brown gravelly silt loam
10 to 21 inches—brown very gravelly silt loam
21 to 25 inches—dark yellowish brown extremely gravelly silty clay loam
25 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Low
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Kettenbach Soil, Moist*

*Position on landform:* Dominantly west- and northwest-facing slopes and some southeast-facing slopes
*Slope range:* 35 to 75 percent
*Typical profile:*
0 to 5 inches—very dark grayish brown stony silt loam
5 to 15 inches—dark grayish brown very gravelly silty clay loam
15 to 30 inches—brown extremely gravelly silty clay loam
30 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Low
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Gwin Soil*

*Position on landform:* Ridges and convex slopes
*Slope range:* 35 to 75 percent
*Typical profile:*
0 to 6 inches—brown very stony silt loam
6 to 12 inches—brown extremely gravelly silty clay loam
12 inches—basalt
*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Very low
*Potential rooting depth:* 10 to 20 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Linville soils on north- and east-facing slopes and on footslopes (10 percent)
- Rock outcrop on ridges and convex slopes (5 percent)
- Flybow soils on ridges and convex slopes (3 percent)
- Waha soils on concave slopes of 20 to 45 percent (2 percent)

### *Major Use*

Rangeland

### *Rangeland*

*Natural potential plant community:* Kettenbach soil—bluebunch wheatgrass/arrowleaf balsamroot; Kettenbach soil, moist—Idaho fescue-bluebunch wheatgrass; Gwin soil—bluebunch wheatgrass-Sandberg bluegrass
*General management considerations:*
- The steepness of slope, shallow depth of the Gwin soil, and rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds. The steepness of slope and rock fragments may also restrict the movement of livestock.
- The very low available water capacity of the Gwin soil limits the production of forage.

### *Capability Classification*

7e, nonirrigated

## 58—Kettenbach-Keuterville association, 35 to 75 percent slopes

### *Composition*

*Kettenbach soil and similar inclusions:* 50 percent
*Keuterville soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 20 percent

### *Setting*

*Landform:* Canyons
*Elevation:* 1,200 to 3,000 feet
*Average annual precipitation:* About 22 inches
*Frost-free season (32 degrees F):* About 140 days

### *Characteristics of the Kettenbach Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 35 to 75 percent
*Typical profile:*
0 to 4 inches—brown stony silt loam
4 to 10 inches—dark brown gravelly silt loam
10 to 21 inches—brown very gravelly silt loam
21 to 25 inches—dark yellowish brown extremely gravelly silty clay loam
25 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Low
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Keuterville Soil*

*Position on landform:* North- and east-facing slopes
*Slope range:* 35 to 75 percent
*Typical profile:*
0 to 13 inches—dark brown gravelly silt loam
13 to 20 inches—brown very gravelly loam
20 to 49 inches—brown and strong brown very gravelly silty clay loam
49 to 61 inches—strong brown very cobbly silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Klickson soils on north-facing slopes (10 percent)
- Gwin soils on south-facing, convex slopes and on ridges (5 percent)
- Rock outcrop on shoulders and convex ridges (5 percent)

### *Major Uses*

Rangeland, woodland, grazeable woodland

### *Rangeland*

*Natural potential plant community:* Kettenbach soil—bluebunch wheatgrass/arrowleaf balsamroot
*General management considerations:*
- The steepness of slope and rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### *Woodland*

*Natural potential plant community:* Keuterville soil—ponderosa pine/common snowberry
*Estimated average annual production of timber (CMAI):* Ponderosa pine—90 cubic feet per acre at 40 years of age
*General management considerations:*
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- The high content of rock fragments in the Keuterville soil restricts the available water capacity and thus limits productivity.

### *Grazeable Woodland*

*Natural potential plant community:* Keuterville soil—ponderosa pine/common snowberry
*General management considerations:*
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### *Capability Classification*

7e, nonirrigated

## 59—Kettenbach-Rock outcrop complex, 45 to 90 percent slopes

### *Composition*

*Kettenbach soil and similar inclusions:* 45 percent

*Rock outcrop:* 35 percent
*Contrasting inclusions:* 20 percent

### Setting

*Landform:* Canyons
*Elevation:* 1,200 to 3,500 feet
*Average annual precipitation:* About 18 inches
*Frost-free season (32 degrees F):* About 150 days

### Characteristics of the Kettenbach Soil

*Position on landform:* Plane to concave, south- and west-facing slopes
*Slope range:* 45 to 90 percent
*Typical profile:*
0 to 4 inches—brown stony silt loam
4 to 10 inches—dark brown gravelly silt loam
10 to 21 inches—brown very gravelly silt loam
21 to 25 inches—dark yellowish brown extremely gravelly silty clay loam
25 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Low
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Rock Outcrop

*Position on landform:* South- and west-facing ridges and shoulders
*Slope range:* 45 to 90 percent
*Kind of rock:* Exposed basalt

### Contrasting Inclusions

- Gwin soils on convex slopes (10 percent)
- Linville soils on footslopes, commonly on north- and east-facing slopes (5 percent)
- Talus and rubble land near areas of Rock outcrop (5 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Kettenbach soil—bluebunch wheatgrass/arrowleaf balsamroot; Rock outcrop—little or no vegetation
*General management considerations:*
- The steepness of slope, the rock fragments in the surface layer of the Kettenbach soil, and the areas of Rock outcrop severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### Capability Classification

Kettenbach soil—7e, nonirrigated; Rock outcrop—not assigned

## 60—Keuterville gravelly silt loam, 10 to 25 percent slopes

### Composition

*Keuterville soil and similar inclusions:* 80 percent
*Contrasting inclusions:* 20 percent

### Setting

*Landform:* Canyons, canyon benches
*Slope range:* 10 to 25 percent
*Elevation:* 1,800 to 3,600 feet
*Average annual precipitation:* About 23 inches
*Frost-free season (32 degrees F):* About 130 days

### Characteristics of the Keuterville Soil

*Typical profile:*
0 to 13 inches—dark brown gravelly silt loam
13 to 20 inches—brown very gravelly loam
20 to 49 inches—brown and strong brown very gravelly silty clay loam
49 to 61 inches—strong brown very cobbly silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### Contrasting Inclusions

- Rock outcrop on steep, convex slopes (5 percent)
- Kettenbach soils on convex, south- and west-facing slopes (5 percent)
- Klickson soils on north-facing slopes (5 percent)
- Meland soils on south-facing canyon benches (5 percent)

### Major Uses

Cropland, woodland, grazeable woodland, pastureland, hayland

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

• The high content of rock fragments results in droughtiness in dry years.

### Woodland

*Natural potential plant community:* Ponderosa pine/ common snowberry
*Estimated average annual production of timber (CMAI):* Ponderosa pine—90 cubic feet per acre at 40 years of age
*General management considerations:*
• The high content of rock fragments restricts the available water capacity and thus limits productivity.

### Grazeable Woodland

*Natural potential plant community:* Ponderosa pine/ common snowberry
*General management considerations:*
• This unit has few limitations for use as grazeable woodland.

### Pastureland and Hayland

*General management considerations:*
• This unit has few limitations for use as pastureland and hayland.

### Capability Classification

4e, nonirrigated

## 61—Keuterville gravelly silt loam, 25 to 50 percent slopes

### Composition

*Keuterville soil and similar inclusions:* 80 percent
*Contrasting inclusions:* 20 percent

### Setting

*Landform:* Canyons
*Position on landform:* South- and west-facing slopes
*Slope range:* 25 to 50 percent
*Elevation:* 1,800 to 3,000 feet
*Average annual precipitation:* About 23 inches
*Frost-free season (32 degrees F):* About 130 days

### Characteristics of the Keuterville Soil

*Typical profile:*
0 to 13 inches—dark brown gravelly silt loam
13 to 20 inches—brown very gravelly loam
20 to 49 inches—brown and strong brown very gravelly silty clay loam
49 to 61 inches—strong brown very cobbly silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Severe

### Contrasting Inclusions

• Kettenbach soils on convex slopes (10 percent)
• Rock outcrop on convex slopes (5 percent)
• Jacket soils on gentle, south-facing slopes (5 percent)

### Major Uses

Woodland, grazeable woodland

### Woodland

*Natural potential plant community:* Ponderosa pine/ common snowberry
*Estimated average annual production of timber (CMAI):* Ponderosa pine—90 cubic feet per acre at 40 years of age
*General management considerations:*
• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
• The high content of rock fragments restricts the available water capacity and thus limits productivity.

### Grazeable Woodland

*Natural potential plant community:* Ponderosa pine/ common snowberry
*General management considerations:*
• The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### Capability Classification

7e, nonirrigated

## 62—Keuterville-Rock outcrop complex, 35 to 90 percent slopes

### Composition

*Keuterville soil and similar inclusions:* 65 percent
*Rock outcrop:* 20 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Canyons

*Elevation:* 1,200 to 3,600 feet
*Average annual precipitation:* About 23 inches
*Frost-free season (32 degrees F):* About 130 days

### Characteristics of the Keuterville Soil

*Position on landform:* South- and west-facing slopes
*Slope range:* 35 to 90 percent
*Typical profile:*
0 to 13 inches—dark brown gravelly silt loam
13 to 20 inches—brown very gravelly loam
20 to 49 inches—brown and strong brown very gravelly silty clay loam
49 to 61 inches—strong brown very cobbly silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Rock Outcrop

*Position on landform:* Convex, south- and west-facing slopes
*Slope range:* 35 to 90 percent
*Kind of rock:* Exposed basalt

### Contrasting Inclusions

- Kettenbach soils on dry, convex slopes (10 percent)
- Gwin soils on convex slopes near areas of Rock outcrop (5 percent)

### Major Uses

Woodland, grazeable woodland

### Woodland

*Natural potential plant community:* Keuterville soil—ponderosa pine/common snowberry; Rock outcrop—little or no vegetation
*Estimated average annual production of timber on the Keuterville soil (CMAI):* Ponderosa pine—90 cubic feet per acre at 40 years of age
*General management considerations:*
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- The high content of rock fragments in the Keuterville soil restricts the available water capacity and thus limits productivity.
- The areas of Rock outcrop may cause breakage of timber and hinder yarding.

### Grazeable Woodland

*Natural potential plant community:* Keuterville soil—ponderosa pine/common snowberry; Rock outcrop—little or no vegetation
*General management considerations:*
- The steepness of slope and the areas of Rock outcrop severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### Capability Classification

Keuterville soil—7e, nonirrigated; Rock outcrop—not assigned

## 63—Klickson silt loam, 15 to 35 percent slopes

### Composition

*Klickson soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Canyons
*Position on landform:* Canyon rims and footslopes
*Slope range:* 15 to 35 percent
*Elevation:* 1,500 to 4,000 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 90 days

### Characteristics of the Klickson Soil

*Typical profile:*
1 inch to 0—organic mat
0 to 7 inches—grayish brown silt loam
7 to 15 inches—brown gravelly silt loam
15 to 61 inches—brown very cobbly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### Contrasting Inclusions

- Agatha soils on northeast-facing slopes (10 percent)
- Larabee soils (5 percent)

### Major Uses

Woodland, grazeable woodland, pastureland, hayland

### *Woodland*

*Natural potential plant community:* Douglas fir/mallow ninebark
*Estimated average annual production of timber (CMAI):* Ponderosa pine—99 cubic feet per acre at 40 years of age; Douglas fir—67 cubic feet per acre at 101 years of age
*General management considerations:*
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### *Grazeable Woodland*

*Natural potential plant community:* Douglas fir/mallow ninebark
*General management considerations:*
• This unit has few limitations for use as grazeable woodland.

### *Pastureland and Hayland*

*General management considerations:*
• The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
• The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.

### *Capability Classification*

6e, nonirrigated

## 64—Klickson silt loam, 35 to 90 percent slopes

### *Composition*

*Klickson soil and similar inclusions:* 80 percent
*Contrasting inclusions:* 20 percent

### *Setting*

*Landform:* Canyons
*Position on landform:* North- and east-facing slopes
*Slope range:* 35 to 90 percent
*Elevation:* 1,500 to 3,800 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 90 days

### *Characteristics of the Klickson Soil*

*Typical profile:*
1 inch to 0—organic mat
0 to 7 inches—grayish brown silt loam
7 to 15 inches—brown gravelly silt loam
15 to 61 inches—brown very cobbly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

• Rock outcrop (5 percent)
• Rubble land on slopes of 50 to 100 percent (5 percent)
• Hooverton soils on convex, south- and west-facing slopes (5 percent)
• Larabee soils on convex backslopes (5 percent)

### *Major Uses*

Woodland, grazeable woodland

### *Woodland*

*Natural potential plant community:* Douglas fir/mallow ninebark
*Estimated average annual production of timber (CMAI):* Ponderosa pine—99 cubic feet per acre at 40 years of age; Douglas fir—67 cubic feet per acre at 101 years of age
*General management considerations:*
• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

### *Grazeable Woodland*

*Natural potential plant community:* Douglas fir/mallow ninebark
*General management considerations:*
• The steepness of slope severely limits construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### *Capability Classification*

7e, nonirrigated

## 65—Klickson-Agatha association, 35 to 75 percent slopes

### *Composition*

*Klickson soil and similar inclusions:* 45 percent
*Agatha soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 20 percent

### *Setting*

*Landform:* Canyons
*Elevation:* 1,500 to 4,500 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 90 days

### *Characteristics of the Klickson Soil*

*Position on landform:* Northwest- and southeast-facing slopes
*Slope range:* 35 to 75 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 7 inches—grayish brown silt loam
7 to 15 inches—brown gravelly silt loam
15 to 61 inches—brown very cobbly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Agatha Soil*

*Position on landform:* North- and east-facing slopes
*Slope range:* 35 to 75 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 15 inches—brown loam
15 to 23 inches—brown cobbly clay loam
23 to 47 inches—light brown very cobbly clay loam and extremely cobbly loam
47 inches—fractured basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Larabee soils on convex backslopes (10 percent)
- Keuterville soils on south- and west-facing, convex slopes (5 percent)
- Webbridge soils on footslopes and northeast-facing slopes (5 percent)

### *Major Uses*

Woodland, grazeable woodland

### *Woodland*

*Natural potential plant community:* Klickson soil—Douglas fir/mallow ninebark; Agatha soil—grand fir/mallow ninebark
*Estimated average annual production of timber on the Klickson soil (CMAI):* Ponderosa pine—99 cubic feet per acre at 40 years of age; Douglas fir—67 cubic feet per acre at 101 years of age
*Estimated average annual production of timber on the Agatha soil (CMAI):* Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—85 cubic feet per acre at 116 years of age; western larch—not measured
*General management considerations:*
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

### *Grazeable Woodland*

*Natural potential plant community:* Klickson soil—Douglas fir/mallow ninebark; Agatha soil—grand fir/mallow ninebark
*General management considerations:*
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.
- The characteristic understory plant community on the Agatha soil produces very little forage for livestock when the canopy is closed.

### *Capability Classification*

7e, nonirrigated

## 66—Klickson-Hooverton association, 35 to 90 percent slopes

### *Composition*

*Klickson soil and similar inclusions:* 50 percent

*Hooverton soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Canyons
*Elevation:* 2,800 to 5,300 feet
*Average annual precipitation:* About 26 inches
*Frost-free season (32 degrees F):* About 75 days

### Characteristics of the Klickson Soil

*Position on landform:* North- and east-facing slopes
*Slope range:* 35 to 90 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 7 inches—grayish brown silt loam
7 to 15 inches—brown gravelly silt loam
15 to 61 inches—brown very cobbly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Hooverton Soil

*Position on landform:* South- and west-facing slopes
*Slope range:* 35 to 75 percent
*Typical profile:*
0 to 11 inches—very dark grayish brown stony loam
11 to 17 inches—brown very cobbly loam
17 to 35 inches—dark yellowish brown very cobbly clay loam and extremely cobbly clay loam
35 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Low
*Potential rooting depth:* 24 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Flybow soils on convex ridges (5 percent)
- Larabee soils on northeast- and northwest-facing ridges (5 percent)
- Rock outcrop on south- and west-facing slopes (5 percent)

### Major Uses

Woodland, grazeable woodland, rangeland (fig. 8)

### Woodland

*Natural potential plant community:* Klickson soil—Douglas fir/mallow ninebark
*Estimated average annual production of timber (CMAI):* Ponderosa pine—99 cubic feet per acre at 40 years of age; Douglas fir—67 cubic feet per acre at 101 years of age
*General management considerations:*
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

### Grazeable Woodland

*Natural potential plant community:* Klickson soil—Douglas fir/mallow ninebark
*General management considerations:*
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The steepness of slope severely limits construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### Rangeland

*Natural potential plant community:* Hooverton soil—bluebunch wheatgrass-Idaho fescue
*General management considerations:*
- The steepness of slope and rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.
- The cold temperatures restrict plant growth in spring.
- The cold temperatures and the deep snowpack in most years limit the grazing season to summer and fall.

### Capability Classification

7e, nonirrigated

## 67—Klickson-Rock outcrop complex, 45 to 90 percent slopes

### Composition

*Klickson soil and similar inclusions:* 55 percent

**Figure 8.—An area of Klickson-Hooverton association, 35 to 90 percent slopes. The Klickson soil is in the forested areas, and the Hooverton soil is on the south-facing slopes, in the areas of rangeland.**

*Rock outcrop:* 25 percent
*Contrasting inclusions:* 20 percent

### Setting

*Landform:* Canyons
*Elevation:* 1,500 to 4,500 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 90 days

### Characteristics of the Klickson Soil

*Position on landform:* North- and east-facing, plane to concave backslopes
*Slope range:* 45 to 90 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 7 inches—grayish brown silt loam
7 to 15 inches—brown gravelly silt loam
15 to 61 inches—brown very cobbly silt loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Rock Outcrop

*Position on landform:* Convex slopes and areas near canyon rims
*Slope range:* 45 to 90 percent
*Kind of rock:* Exposed basalt

### Contrasting Inclusions

- Agatha soils on northeast-facing slopes (10 percent)
- Larabee soils (10 percent)

### *Major Uses*

Woodland, grazeable woodland

### *Woodland*

*Natural potential plant community:* Klickson soil—Douglas fir/mallow ninebark; Rock outcrop—little or no vegetation
*Estimated average annual production of timber on the Klickson soil (CMAI):* Ponderosa pine—99 cubic feet per acre at 40 years of age; Douglas fir—67 cubic feet per acre at 101 years of age
*General management considerations:*
• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
• Rock outcrop may cause breakage of timber and hinder yarding.
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

### *Grazeable Woodland*

*Natural potential plant community:* Klickson soil—Douglas fir/mallow ninebark; Rock outcrop—little or no vegetation
*General management considerations:*
• The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### *Capability Classification*

Klickson soil—7e, nonirrigated; Rock outcrop—not assigned

## 68—Klickson-Uptmor complex, 15 to 45 percent slopes

### *Composition*

*Klickson soil and similar inclusions:* 45 percent
*Uptmor soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 20 percent

### *Setting*

*Landform:* Canyons and canyon benches
*Elevation:* 2,700 to 4,100 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 90 days

### *Characteristics of the Klickson Soil*

*Position on landform:* Convex slopes
*Slope range:* 25 to 45 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 7 inches—grayish brown silt loam
7 to 15 inches—brown gravelly silt loam
15 to 61 inches—brown very cobbly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### *Characteristics of the Uptmor Soil*

*Position on landform:* Plane to concave slopes
*Slope range:* 15 to 30 percent
*Typical profile:*
0.5 inch to 0—organic mat
0 to 6 inches—brown silt loam
6 to 15 inches—brown clay loam
15 to 26 inches—brown clay
26 to 47 inches—brown gravelly clay and cobbly clay
47 inches—fractured basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* 40 to 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### *Contrasting Inclusions*

• Joel soils on concave slopes (10 percent)
• Larabee soils on convex slopes (10 percent)

### *Major Uses*

Woodland, grazeable woodland, pastureland, hayland

### *Woodland*

*Natural potential plant community:* Klickson soil—Douglas fir/mallow ninebark; Uptmor soil—Douglas fir/common snowberry
*Estimated average annual production of timber on the Klickson soil (CMAI):* Ponderosa pine—99 cubic feet per acre at 40 years of age; Douglas fir—67 cubic feet per acre at 101 years of age
*Estimated average annual production of timber on the Uptmor soil (CMAI):* Ponderosa pine—77 cubic

feet per acre at 40 years of age; Douglas fir—47 cubic feet per acre at 109 years of age

*General management considerations:*

• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees on the Klickson soil.

• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### Grazeable Woodland

*Natural potential plant community:* Klickson soil—Douglas fir/mallow ninebark; Uptmor soil—Douglas fir/common snowberry

*General management considerations:*

• This unit has few limitations for use as grazeable woodland.

### Pastureland and Hayland

*General management considerations:*

• The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.

### Capability Classification

6e, nonirrigated

## 69—Kruse loam, 20 to 35 percent slopes

### Composition

*Kruse soil and similar inclusions:* 85 percent

*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills

*Slope range:* 20 to 35 percent

*Elevation:* 3,200 to 3,440 feet

*Average annual precipitation:* About 25 inches

*Frost-free season (32 degrees F):* About 100 days

### Characteristics of the Kruse Soil

*Typical profile:*

1 inch to 0—organic mat

0 to 3 inches—brown loam

3 to 16 inches—light yellowish brown and pale brown loam

16 to 49 inches—yellowish brown, brown, and strong brown clay loam

49 to 65 inches—light brown coarse sandy loam

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* High

*Potential rooting depth:* More than 60 inches

*Runoff:* Rapid

*Hazard of water erosion:* Very severe

### Contrasting Inclusions

• Ahsahka soils on toeslopes (10 percent)

• Agatha soils on convex slopes (5 percent)

### Major Uses

Woodland, grazeable woodland, cropland, pastureland, hayland

### Woodland

*Natural potential plant community:* Grand fir/longtube twinflower

*Estimated average annual production of timber (CMAI):* Ponderosa pine—118 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age; grand fir—106 cubic feet per acre at 109 years of age; western larch—not measured

*General management considerations:*

• This unit has few limitations for use as woodland.

• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### Grazeable Woodland

*Natural potential plant community:* Grand fir/longtube twinflower

*General management considerations:*

• The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

### Cropland

*Commonly grown crops:* Wheat, barley

*General management considerations:*

• The short growing season limits the production of some crops.

• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### Pastureland and Hayland

*General management considerations:*

• The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.

• The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.

### Capability Classification

6e, nonirrigated

## 70—Lapwai-Bridgewater complex, 1 to 4 percent slopes

### *Composition*

*Lapwai soil and similar inclusions:* 60 percent
*Bridgewater soil and similar inclusions:* 25 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Stream terraces (fig. 9)
*Elevation:* 750 to 1,200 feet
*Average annual precipitation:* About 18 inches
*Frost-free season (32 degrees F):* About 165 days

### *Characteristics of the Lapwai Soil*

*Slope range:* 1 to 4 percent
*Typical profile:*
0 to 9 inches—dark grayish brown silt loam
9 to 28 inches—grayish brown and brown silt loam
28 to 35 inches—pale brown loam
35 to 60 inches—brown, calcareous very gravelly sandy loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight
*Frequency of flooding:* Rare

### *Characteristics of the Bridgewater Soil*

*Position on landform:* Commonly in slightly higher, convex areas
*Slope range:* 1 to 4 percent
*Typical profile:*
0 to 16 inches—dark brown extremely gravelly sandy loam
16 to 22 inches—brown extremely gravelly loam
22 to 34 inches—brown extremely cobbly sandy loam
34 to 60 inches—dark grayish brown extremely gravelly loamy coarse sand
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part, very rapid in the lower part
*Available water capacity:* Very low
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight
*Frequency of flooding:* Rare

### *Contrasting Inclusions*

- Tombeall soils on lower stream terraces and flood plains (5 percent)
- Wistona soils along the Clearwater River (5 percent)
- Aquents on flood plains and at the edge of stream channels (3 percent)
- Very deep, sandy soils along the Snake and Clearwater Rivers (2 percent)

### *Major Uses*

Cropland, pastureland, hayland, building site development

### *Cropland*

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- The coarse fragments in the surface layer of the Bridgewater soil interfere with some tillage operations.
- The high content of coarse fragments restricts the available water capacity of the Bridgewater soil.

### *Pastureland and Hayland*

*General management considerations:*
- The high content of gravel in the surface layer of the Bridgewater soil limits some tillage and seeding operations.
- The restricted available water capacity of the Bridgewater soil limits the production of forage and the choice of suitable plant species. Irrigation may be needed for maximum production of forage.

### *Building Site Development*

*General management considerations:*
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The sandy substratum of the Bridgewater soil may result in unstable cutbanks.
- Septic systems in the Bridgewater soil may function poorly because of the very rapid permeability of the substratum.

### *Capability Classification*

Lapwai soil—2w, nonirrigated; Bridgewater soil—6s, nonirrigated

## 71—Larabee loam, 4 to 20 percent slopes

### *Composition*

*Larabee soil and similar inclusions:* 85 percent

**Figure 9.—An area of Lapwai-Bridgewater complex, 1 to 4 percent slopes, on a terrace of Cottonwood Creek, in foreground. Kettenbach-Keuterville association, 35 to 75 percent slopes, in background.**

*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on high plateaus
*Slope range:* 4 to 20 percent
*Elevation:* 3,800 to 4,200 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 90 days

### *Characteristics of the Larabee Soil*

*Typical profile:*
0 to 4 inches—brown loam
4 to 10 inches—brown gravelly silt loam
10 to 20 inches—brown very gravelly silt loam
20 to 29 inches—brown extremely gravelly clay loam

29 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Low
*Potential rooting depth:* 20 to 36 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate

### Contrasting Inclusions

- Sweiting soils on mounds in areas of patterned ground and on summits (5 percent)
- Gwin soils on convex shoulders, dominantly on south- and west-facing slopes (5 percent)
- Zaza soils between mounds in areas of patterned ground (3 percent)
- Joel soils on concave slopes (2 percent)

### Major Uses

Woodland, grazeable woodland, pastureland, hayland

### Woodland

*Natural potential plant community:* Douglas fir/ common snowberry
*Estimated average annual production of timber (CMAI):* Ponderosa pine—72 cubic feet per acre at 40 years of age; Douglas fir—36 cubic feet per acre at 113 years of age
*General management considerations:*
- The restricted rooting depth and high content of coarse fragments limit the amount of water available for tree growth and thus limit productivity.
- Reforestation may be limited because of droughtiness.
- Because of the moderate rooting depth, trees on this unit are susceptible to windthrow.

### Grazeable Woodland

*Natural potential plant community:* Douglas fir/ common snowberry
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### Pastureland and Hayland

*General management considerations:*
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The moderate rooting depth limits the production of forage and results in droughtiness in dry years.

### Capability Classification

4e, nonirrigated

## 72—Larabee-Gwin association, 35 to 75 percent slopes

### Composition

*Larabee soil and similar inclusions:* 50 percent
*Gwin soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 20 percent

### Setting

*Landform:* Canyons
*Elevation:* 3,400 to 4,800 feet
*Average annual precipitation:* About 27 inches
*Frost-free season (32 degrees F):* About 90 days

### Characteristics of the Larabee Soil

*Position on landform:* Plane to concave, commonly northwest- and southeast-facing slopes
*Slope range:* 35 to 75 percent
*Typical profile:*
0 to 4 inches—brown loam
4 to 10 inches—brown gravelly silt loam
10 to 20 inches—brown very gravelly silt loam
20 to 29 inches—brown extremely gravelly clay loam
29 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Low
*Potential rooting depth:* 20 to 36 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Gwin Soil

*Position on landform:* Convex slopes and ridges, commonly on south- and southwest-facing slopes
*Slope range:* 35 to 75 percent
*Typical profile:*
0 to 6 inches—brown very stony silt loam
6 to 12 inches—brown extremely gravelly silty clay loam
12 inches—basalt
*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Very low
*Potential rooting depth:* 10 to 20 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Hooverton soils on south- and west-facing slopes (10 percent)

• Klickson soils on north- and east-facing slopes (5 percent)
• Mallory soils on south- and west-facing slopes (5 percent)

### *Major Uses*

Woodland, grazeable woodland, rangeland

### *Woodland*

*Natural potential plant community:* Larabee soil—Douglas fir/common snowberry
*Estimated average annual production of timber (CMAI):* Ponderosa pine—72 cubic feet per acre at 40 years of age; Douglas fir—36 cubic feet per acre at 113 years of age
*General management considerations:*
• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
• The restricted rooting depth and high content of coarse fragments in the Larabee soil limit the amount of water available for tree growth and thus limit productivity.
• Reforestation of the Larabee soil may be limited because of droughtiness.
• Because of the moderate rooting depth, trees on the Larabee soil are susceptible to windthrow.

### *Grazeable Woodland*

*Natural potential plant community:* Larabee soil—Douglas fir/common snowberry
*General management considerations:*
• The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.
• The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.

### *Rangeland*

*Natural potential plant community:* Gwin soil—bluebunch wheatgrass-Sandberg bluegrass
*General management considerations:*
• The steepness of slope, rock fragments in the surface layer, and shallow depth of the Gwin soil severely limit the construction of improvements such as fences, water pipelines, and stock water ponds. The steepness of slope and rock fragments may also restrict the movement of livestock.
• The very low available water capacity of the Gwin soil limits the production of forage.
• The cold temperatures limit plant growth in spring.
• The cold temperatures and the deep snowpack in most years limit the grazing season to summer and fall.

### *Capability Classification*

7e, nonirrigated

## 73—Larabee-Zaza-Seddow complex, 10 to 40 percent slopes

### *Composition*

*Larabee soil and similar inclusions:* 45 percent
*Zaza soil and similar inclusions:* 25 percent
*Seddow soil and similar inclusions:* 15 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on high plateaus
*Elevation:* 4,400 to 5,300 feet
*Average annual precipitation:* About 28 inches
*Frost-free season (32 degrees F):* About 65 days

### *Characteristics of the Larabee Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 10 to 40 percent
*Typical profile:*
0 to 4 inches—brown loam
4 to 10 inches—brown gravelly silt loam
10 to 20 inches—brown very gravelly silt loam
20 to 29 inches—brown extremely gravelly clay loam
29 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Low
*Potential rooting depth:* 20 to 36 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Moderate or severe

### *Characteristics of the Zaza Soil*

*Position on landform:* Shoulders on south- and west-facing slopes
*Slope range:* 10 to 30 percent
*Typical profile:*
0 to 4 inches—brown very stony loam
4 to 14 inches—brown very cobbly loam and extremely cobbly loam
14 inches—basalt
*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Very low

*Potential rooting depth:* 10 to 20 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Seddow Soil*

*Position on landform:* Broad mounds and footslopes on south- and west-facing slopes
*Slope range:* 10 to 40 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 4 inches—brown silt loam
4 to 13 inches—yellowish brown and light yellowish brown silt loam
13 to 21 inches—light yellowish brown silty clay loam
21 to 29 inches—dark yellowish brown gravelly clay loam
29 to 48 inches—dark yellowish brown extremely cobbly clay loam
48 inches—fractured basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 55 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Maloney soils on mounds in areas of patterned ground (10 percent)
- Shilla soils on hills and ridgetops (5 percent)

### *Major Uses*

Woodland, grazeable woodland, rangeland

### *Woodland*

*Natural potential plant community:* Larabee soil—Douglas fir/common snowberry; Seddow soil—grand fir/longtube twinflower
*Estimated average annual production of timber on the Larabee soil (CMAI):* Ponderosa pine—72 cubic feet per acre at 40 years of age; Douglas fir—36 cubic feet per acre at 113 years of age
*Estimated average annual production of timber on the Seddow soil (CMAI):* Ponderosa pine—77 cubic feet per acre at 40 years of age; Douglas fir—51 cubic feet per acre at 107 years of age; grand fir—83 cubic feet per acre at 117 years of age; western larch—not measured; lodgepole pine—not measured
*General management considerations:*
- The droughtiness of the Larabee soil limits productivity and the survival of seedlings.
- The restricted rooting depth and high content of coarse fragments in the Larabee soil limit the amount of water available for tree growth and thus limit productivity.
- Reforestation of the Larabee soil may be limited because of droughtiness.
- Because of the moderate rooting depth, trees on the Larabee soil are susceptible to windthrow.
- Erosion is a concern on the Seddow soil. Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### *Grazeable Woodland*

*Natural potential plant community:* Larabee soil—Douglas fir/common snowberry; Seddow soil—grand fir/longtube twinflower
*General management considerations:*
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community on the Seddow soil produces very little forage for livestock when the canopy is closed.

### *Rangeland*

*Natural potential plant community:* Zaza soil—Sandberg bluegrass/forbs
*General management considerations:*
- The shallow depth and content of rock fragments in the surface layer of the Zaza soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds.
- The very low available water capacity of the Zaza soil limits the production of forage.
- The cold temperatures of the Zaza soil limit plant growth in spring.
- The cold temperatures and the deep snowpack in most years limit the grazing season to summer and fall.

### *Capability Classification*

6e, nonirrigated

## 74—Larkin-Driscoll complex, 10 to 20 percent slopes

### *Composition*

*Larkin soil and similar inclusions:* 50 percent
*Driscoll soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,300 to 3,400 feet
*Average annual precipitation:* About 23 inches
*Frost-free season (32 degrees F):* About 115 days

### *Characteristics of the Larkin Soil*

*Position on landform:* Plane to concave slopes
*Slope range:* 10 to 20 percent
*Typical profile:*
0 to 15 inches—dark grayish brown silt loam
15 to 19 inches—yellowish brown silt loam
19 to 61 inches—brown and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### *Characteristics of the Driscoll Soil*

*Position on landform:* Convex shoulders and footslopes
*Slope range:* 10 to 16 percent
*Typical profile:*
0 to 13 inches—dark grayish brown silt loam
13 to 27 inches—brown silt loam
27 to 31 inches—light gray, mottled silt loam
31 to 46 inches—pale brown, light brown, and light yellowish brown silty clay
46 to 60 inches—light yellowish brown and brownish yellow silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 18 to 36 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe
*Depth to seasonal high water table (perched):* 15 to 30 inches in January through April

### *Contrasting Inclusions*

- Bluesprin soils on south- and west-facing slopes of 10 to 25 percent (10 percent)
- Southwick soils on plane to concave slopes (5 percent)

### *Major Uses*

Cropland, woodland, grazeable woodland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The abrupt silty clay subsoil of the Driscoll soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

### *Woodland*

*Natural potential plant community:* Ponderosa pine/common snowberry
*Estimated average annual production of timber on the Larkin soil (CMAI):* Ponderosa pine—85 cubic feet per acre at 40 years of age
*Estimated average annual production of timber on the Driscoll soil (CMAI):* Ponderosa pine—132 cubic feet per acre at 40 years of age
*General management considerations:*
- Because of the abrupt silty clay subsoil and the seasonal perched water table, trees on the Driscoll soil are susceptible to windthrow.

### *Grazeable Woodland*

*Natural potential plant community:* Ponderosa pine/common snowberry
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### *Capability Classification*

4e, nonirrigated

## 75—Latahco-Thatuna complex, 0 to 3 percent slopes

### *Composition*

*Latahco soil and similar inclusions:* 55 percent
*Thatuna soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Drainageways and toeslopes of hills on plateaus
*Elevation:* 2,200 to 3,200 feet
*Average annual precipitation:* About 22 inches
*Frost-free season (32 degrees F):* About 125 days

### *Characteristics of the Latahco Soil*

*Position on landform:* Drainageways
*Slope range:* 0 to 2 percent
*Typical profile:*
0 to 13 inches—very dark grayish brown silt loam
13 to 22 inches—very dark gray silt loam
22 to 35 inches—light brownish gray and white silt loam
35 to 43 inches—grayish brown, mottled silt loam
43 to 60 inches—pale brown, mottled silty clay loam
*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silt loam subsoil at a depth of 18 to 35 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (perched):* 18 to 34 inches in February through May
*Frequency of flooding:* Occasional in February through April

### *Characteristics of the Thatuna Soil*

*Position on landform:* Toeslopes above drainageways
*Slope range:* 1 to 3 percent
*Typical profile:*
0 to 16 inches—very dark grayish brown silt loam
16 to 31 inches—brown silt loam
31 to 37 inches—pale brown silt loam
37 to 61 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay loam subsoil at a depth of 29 to 40 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (perched):* 24 to 36 inches in February through April

### *Contrasting Inclusions*

- Westlake soils in wide drainageways (10 percent)
- Very deep, poorly drained soils on the bottom of drainageways (5 percent)

### *Major Uses*

Cropland, pastureland, hayland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Wetness limits the production of crops in some years.
- Because of wetness in spring, this unit is susceptible to compaction if farm equipment is used.

### *Pastureland and Hayland*

*General management considerations:*
- Periodic flooding and the seasonal high water table in the Latahco soil limit the choice of plants that are suitable for maximum production of forage.
- Because of wetness in spring, the Latahco soil is susceptible to compaction and plant damage as a result of livestock trampling.

### *Capability Classification*

3w, nonirrigated

## 76—Lauby-Southwick complex, 15 to 35 percent slopes

### *Composition*

*Lauby soil and similar inclusions:* 45 percent
*Southwick soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,700 to 3,400 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 120 days

### *Characteristics of the Lauby Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 15 to 35 percent
*Typical profile:*
0 to 17 inches—grayish brown silt loam
17 to 24 inches—brown silty clay loam
24 to 50 inches—light yellowish brown and light brown clay loam
50 to 60 inches—very pale brown loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### *Characteristics of the Southwick Soil*

*Position on landform:* North- and east-facing slopes

*Slope range:* 15 to 30 percent
*Typical profile:*
0 to 9 inches—dark grayish brown silt loam
9 to 26 inches—brown silt loam
26 to 32 inches—pale brown and light gray silt loam
32 to 46 inches—pale brown silty clay loam
46 to 64 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Moderate in the upper part, very slow in the lower part
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Dense silty clay loam subsoil at a depth of 29 to 36 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Moderate or severe
*Depth to seasonal high water table (perched):* 20 to 36 inches in February through April

### Contrasting Inclusions

- Ahsahka soils on summits and shoulders (5 percent)
- Dragnot soils on convex ridges and nose slopes (5 percent)
- Larkin soils on north- and east-facing slopes (5 percent)

### Major Uses

Cropland, woodland, grazeable woodland

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The dense silty clay loam subsoil of the Southwick soil restricts the growth of deep-rooted crops such as alfalfa.

### Woodland

*Natural potential plant community:* Ponderosa pine/common snowberry
*Estimated average annual production of timber on the Lauby soil (CMAI):* Ponderosa pine—94 cubic feet per acre at 40 years of age
*Estimated average annual production of timber on the Southwick soil (CMAI):* Ponderosa pine—102 cubic feet per acre at 40 years of age
*General management considerations:*
- Because of the dense subsoil and the seasonal perched water table, trees on the Southwick soil are susceptible to windthrow.

### Grazeable Woodland

*Natural potential plant community:* Ponderosa pine/common snowberry
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### Capability Classification

6e, nonirrigated

## 77—Lickskillet-Alpowa-Rock outcrop complex, 50 to 75 percent slopes

### Composition

*Lickskillet soil and similar inclusions:* 40 percent
*Alpowa soil and similar inclusions:* 30 percent
*Rock outcrop:* 15 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Canyons
*Elevation:* 800 to 2,400 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### Characteristics of the Lickskillet Soil

*Position on landform:* Convex, south- and west-facing slopes
*Slope range:* 50 to 75 percent
*Typical profile:*
0 to 5 inches—dark grayish brown stony silt loam
5 to 13 inches—brown very gravelly silty clay loam
13 to 16 inches—yellowish brown, calcareous extremely gravelly silty clay loam
16 inches—basalt
*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Very low
*Potential rooting depth:* 12 to 20 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Alpowa Soil

*Position on landform:* Concave, south- and west-facing slopes
*Slope range:* 50 to 75 percent
*Typical profile:*
0 to 8 inches—dark grayish brown cobbly silt loam
8 to 13 inches—brown very cobbly silt loam
13 to 30 inches—brown and pale brown, calcareous very cobbly silt loam

30 to 60 inches—very pale brown, calcareous very cobbly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Rock Outcrop

*Slope range:* 50 to 75 percent
*Kind of rock:* Exposed basalt

### Contrasting Inclusions

- Crowers soils on northeast- and northwest-facing slopes (10 percent)
- Kettenbach soils at elevations of more than 2,000 feet (5 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Lickskillet soil—bluebunch wheatgrass/plains pricklypear; Alpowa soil—bluebunch wheatgrass-Sandberg bluegrass; Rock outcrop—little or no vegetation
*General management considerations:*
- The steepness of slope, shallow depth of the Lickskillet soil, rock fragments in the surface layer of the soils, and areas of Rock outcrop severely limit the construction of improvements such as fences, water pipelines, and stock water ponds. The steepness of slope and rock fragments may also restrict the movement of livestock.
- Livestock distribution may be restricted by the areas of Rock outcrop.
- The very low available water capacity of the Lickskillet soil limits the production of forage.

### Capability Classification

Lickskillet and Alpowa soils—7e, nonirrigated; Rock outcrop—not assigned

## 78—Limekiln very stony silt loam, 40 to 60 percent slopes

### Composition

*Limekiln soil and similar inclusions:* 80 percent
*Contrasting inclusions:* 20 percent

### Setting

*Landform:* Canyons
*Position on landform:* South- and west-facing slopes
*Slope range:* 40 to 60 percent
*Elevation:* 750 to 2,600 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### Characteristics of the Limekiln Soil

*Typical profile:*
0 to 8 inches—brown very stony silt loam
8 to 13 inches—brown, calcareous very gravelly silt loam
13 to 16 inches—very pale brown, calcareous extremely gravelly silt loam
16 inches—basalt
*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Very low
*Potential rooting depth:* 12 to 20 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe
*Sodicity:* Slight

### Contrasting Inclusions

- Rock outcrop (10 percent)
- Alpowa soils on north- and east-facing, concave slopes (5 percent)
- Stember soils on slopes of 20 to 50 percent (5 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Bluebunch wheatgrass/plains pricklypear
*General management considerations:*
- The steepness of slope, shallow depth, and rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds. The steepness of slope and rock fragments may also restrict the movement of livestock.
- The very low available water capacity limits the production of forage.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

### Capability Classification

7e, nonirrigated

## 79—Limekiln-Crowers association, 45 to 80 percent slopes

### *Composition*

*Limekiln soil and similar inclusions:* 40 percent
*Crowers soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 20 percent

### *Setting*

*Landform:* Canyons
*Elevation:* 750 to 2,600 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### *Characteristics of the Limekiln Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 45 to 60 percent
*Typical profile:*
0 to 8 inches—brown very stony silt loam
8 to 13 inches—brown, calcareous very gravelly silt loam
13 to 16 inches—very pale brown, calcareous extremely gravelly silt loam
16 inches—basalt
*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Very low
*Potential rooting depth:* 12 to 20 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe
*Sodicity:* Slight

### *Characteristics of the Crowers Soil*

*Position on landform:* North- and east-facing slopes
*Slope range:* 45 to 80 percent
*Typical profile:*
0 to 10 inches—very dark grayish brown silt loam
10 to 31 inches—brown silt loam
31 to 41 inches—brown, calcareous very cobbly silt loam
41 to 62 inches—brown, calcareous cobbly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Rock outcrop (10 percent)
- Alpowa soils on concave, south- and west-facing slopes (5 percent)
- Stember soils on south- and west-facing slopes of 20 to 50 percent (5 percent)

### *Major Use*

Rangeland

### *Rangeland*

*Natural potential plant community:* Limekiln soil—bluebunch wheatgrass/plains pricklypear; Crowers soil—Idaho fescue-bluebunch wheatgrass
*General management considerations:*
- The steepness of slope, rock fragments in the surface layer of the Limekiln soil, and shallow depth of the Limekiln soil severely limit the construction of improvements such as fences, water pipelines, and stock water ponds. The steepness of slope and rock fragments may also restrict the movement of livestock.
- The very low available water capacity of the Limekiln soil limits the production of forage.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

### *Capability Classification*

7e, nonirrigated

## 80—Linville silt loam, 40 to 70 percent slopes

### *Composition*

*Linville soil and similar inclusions:* 80 percent
*Contrasting inclusions:* 20 percent

### *Setting*

*Landform:* Canyons
*Position on landform:* North- and east-facing slopes
*Slope range:* 40 to 70 percent
*Elevation:* 900 to 2,800 feet
*Average annual precipitation:* About 17 inches
*Frost-free season (32 degrees F):* About 150 days

### *Characteristics of the Linville Soil*

*Typical profile:*
0 to 19 inches—dark grayish brown silt loam
19 to 31 inches—dark grayish brown gravelly silt loam
31 to 67 inches—brown gravelly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High

*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Moist Kettenbach soils on convex, west-facing slopes (10 percent)
- Slickpoo soils on west-facing slopes (5 percent)
- Jacket soils on toeslopes (5 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Idaho fescue/forbs
*General management considerations:*
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### Capability Classification

7e, nonirrigated

## 81—Linville-Kettenbach association, 45 to 75 percent slopes

### Composition

*Linville soil and similar inclusions:* 50 percent
*Kettenbach soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Canyons
*Elevation:* 800 to 2,800 feet
*Average annual precipitation:* About 17 inches
*Frost-free season (32 degrees F):* About 140 days

### Characteristics of the Linville Soil

*Position on landform:* Plane to concave, north- and east-facing slopes
*Slope range:* 45 to 75 percent
*Typical profile:*
0 to 19 inches—dark grayish brown silt loam
19 to 31 inches—dark grayish brown gravelly silt loam
31 to 67 inches—brown gravelly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Kettenbach Soil

*Position on landform:* Convex, dominantly north- and east-facing slopes and some northwest- and southeast-facing slopes
*Slope range:* 45 to 75 percent
*Typical profile:*
0 to 4 inches—brown stony silt loam
4 to 10 inches—dark brown gravelly silt loam
10 to 21 inches—brown very gravelly silt loam
21 to 25 inches—dark yellowish brown extremely gravelly silty clay loam
25 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Low
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Rock outcrop (5 percent)
- Moist Kettenbach soils on northwest- and southeast-facing slopes (5 percent)
- Gwin soils on ridges and convex slopes of 20 to 80 percent (3 percent)
- Keuterville soils on north- and east-facing slopes (2 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Linville soil—Idaho fescue/forbs; Kettenbach soil—bluebunch wheatgrass/arrowleaf balsamroot
*General management considerations:*
- The steepness of slope and rock fragments in the surface layer of the Kettenbach soil severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### Capability Classification

7e, nonirrigated

## 82—Linville-Waha complex, 25 to 45 percent slopes

### Composition

*Linville soil and similar inclusions:* 50 percent

*Waha soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills and canyons
*Elevation:* 1,000 to 2,800 feet
*Average annual precipitation:* About 18 inches
*Frost-free season (32 degrees F):* About 160 days

### Characteristics of the Linville Soil

*Position on landform:* Plane to concave slopes
*Slope range:* 25 to 45 percent
*Typical profile:*
0 to 19 inches—dark grayish brown silt loam
19 to 31 inches—dark grayish brown gravelly silt loam
31 to 67 inches—brown gravelly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Waha Soil

*Position on landform:* South- and west-facing, commonly convex slopes
*Slope range:* 25 to 45 percent
*Typical profile:*
0 to 13 inches—dark grayish brown silt loam
13 to 29 inches—brown silty clay loam
29 to 34 inches—yellowish brown gravelly clay loam
34 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Slickpoo soils on south- and west-facing slopes (10 percent)
- Kettenbach soils on convex slopes of 25 to 50 percent (5 percent)

### Major Uses

Rangeland, cropland

### Rangeland

*Natural potential plant community:* Idaho fescue-bluebunch wheatgrass
*General management considerations:*
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- This unit is poorly suited to cultivated crops because of the steepness of slope and the hazard of erosion.

### Capability Classification

7e, nonirrigated

## 83—Mallory-Jacket complex, 10 to 40 percent slopes

### Composition

*Mallory soil and similar inclusions:* 55 percent
*Jacket soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills
*Elevation:* 3,000 to 4,300 feet
*Average annual precipitation:* About 23 inches
*Frost-free season (32 degrees F):* About 120 days

### Characteristics of the Mallory Soil

*Position on landform:* South- and west-facing slopes
*Slope range:* 20 to 40 percent
*Typical profile:*
0 to 7 inches—very dark grayish brown very stony loam
7 to 15 inches—dark brown very gravelly clay loam
15 to 25 inches—brown extremely gravelly clay
25 to 34 inches—brown extremely gravelly clay loam
34 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* Low
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Jacket Soil

*Position on landform:* Concave, north- and east-facing slopes

*Slope range:* 10 to 30 percent
*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 27 inches—dark grayish brown and brown silty clay loam
27 to 56 inches—brown and yellowish brown silty clay
56 to 63 inches—strong brown and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Gwin soils on south- and west-facing, convex slopes (10 percent)
- Linville soils on north- and east-facing slopes of 30 to 50 percent (5 percent)

### Major Uses

Rangeland, pastureland, hayland

### Rangeland

*Natural potential plant community:* Mallory soil—Idaho fescue/forbs; Jacket soil—common snowberry/Idaho fescue
*General management considerations:*
- The rock fragments in the surface layer of the Mallory soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### Pastureland and Hayland

*General management considerations:*
- The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.
- The moderate rooting depth of the Mallory soil limits the production of forage and results in droughtiness in dry years.

### Capability Classification

Mallory soil—6e, nonirrigated; Jacket soil—4e, nonirrigated

## 84—Maloney-Zaza complex, 5 to 20 percent slopes

### Composition

*Maloney soil and similar inclusions:* 50 percent
*Zaza soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on high plateaus (fig. 10)
*Elevation:* 4,400 to 5,350 feet
*Average annual precipitation:* About 28 inches
*Frost-free season (32 degrees F):* About 75 days

### Characteristics of the Maloney Soil

*Position on landform:* Mounds on south- and west-facing slopes in areas of patterned ground
*Slope range:* 5 to 20 percent
*Typical profile:*
0 to 5 inches—dark yellowish brown fine gravelly silt loam
5 to 25 inches—dark yellowish brown fine gravelly silt loam
25 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Low
*Potential rooting depth:* 22 to 36 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate or severe

### Characteristics of the Zaza Soil

*Position on landform:* Intermound areas on south- and west-facing slopes in areas of patterned ground
*Slope range:* 5 to 20 percent
*Typical profile:*
0 to 4 inches—brown very stony loam
4 to 14 inches—brown very cobbly loam and extremely cobbly loam
14 inches—basalt
*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Very low
*Potential rooting depth:* 10 to 20 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Larabee soils on slopes of 15 to 40 percent (5 percent)
- Cramont soils on broad summits of hills (5 percent)
- Shilla soils on broad summits of hills (5 percent)

### Major Uses

Rangeland, woodland, grazeable woodland

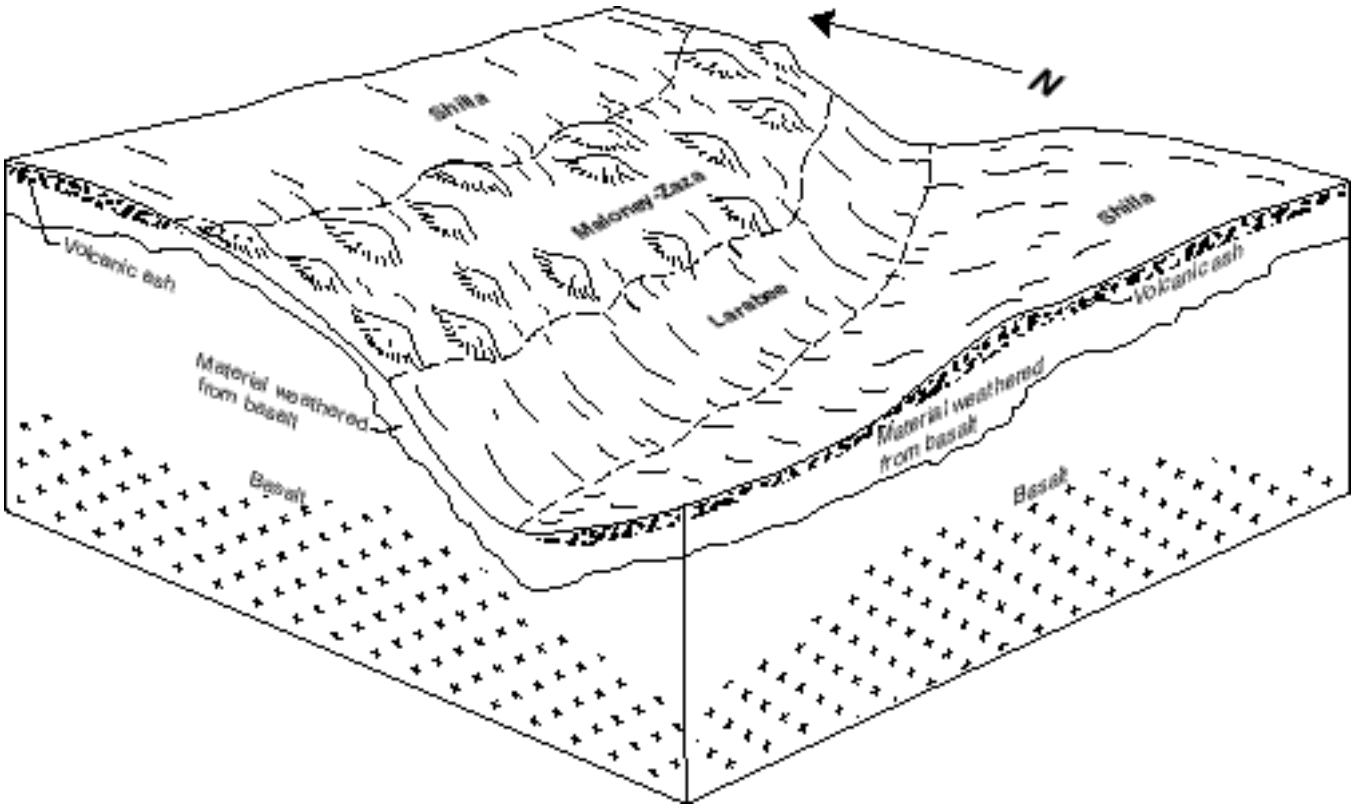


**Figure 10.—Landform relationship of Maloney-Zaza complex, 5 to 20 percent slopes, with common associated soils.**

### *Rangeland*

*Natural potential plant community:* Zaza soil—Sandberg bluegrass/forbs

*General management considerations:*

- The shallow depth and content of rock fragments in the surface layer of the Zaza soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds.
- The very low available water capacity of the Zaza soil limits the production of forage.
- The cold temperatures of the Zaza soil limit plant growth in spring.
- The cold temperatures and the deep snowpack in most years limit the grazing season to summer and fall.

### *Woodland*

*Natural potential plant community:* Maloney soil—ponderosa pine/Idaho fescue

*Estimated average annual production of timber (CMAI):* Ponderosa pine—44 cubic feet per acre at 55 years of age; lodgepole pine—not measured

*General management considerations:*

- Production of commercial timber is marginal on the Maloney soil.
- The droughtiness of the Maloney soil limits productivity and the survival of seedlings.

### *Grazeable Woodland*

*Natural potential plant community:* Maloney soil—ponderosa pine/Idaho fescue

*General management considerations:*

- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.

### *Capability Classification*

6e, nonirrigated

## 85—Meland-Jacket complex, 5 to 20 percent slopes

### *Composition*

*Meland soil and similar inclusions:* 50 percent

*Jacket soil and similar inclusions:* 35 percent

*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus and canyon benches

*Elevation:* 2,800 to 3,000 feet
*Average annual precipitation:* About 23 inches
*Frost-free season (32 degrees F):* About 120 days

### Characteristics of the Meland Soil

*Position on landform:* Convex slopes, knobs, and shoulders
*Slope range:* 5 to 20 percent
*Typical profile:*
0 to 10 inches—dark grayish brown silt loam
10 to 16 inches—brown silt loam
16 to 35 inches—pale brown gravelly silty clay loam
35 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Jacket Soil

*Position on landform:* Concave slopes
*Slope range:* 5 to 20 percent
*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 27 inches—dark grayish brown and brown silty clay loam
27 to 56 inches—brown and yellowish brown silty clay
56 to 63 inches—strong brown and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### Contrasting Inclusions

- Gwin soils on convex slopes (10 percent)
- Mallory soils on plane to convex slopes (5 percent)

### Major Uses

Cropland, pastureland, hayland, woodland, grazeable woodland, rangeland

### Cropland

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth of the Meland soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

### Pastureland and Hayland

*General management considerations:*
- The moderate rooting depth of the Meland soil limits the production of forage and results in droughtiness in dry years.

### Woodland

*Natural potential plant community:* Jacket soil—ponderosa pine/common snowberry
*Estimated average annual production of timber (CMAI):* Ponderosa pine—128 cubic feet per acre at 40 years of age
*General management considerations:*
- This unit has few limitations for use as woodland.

### Grazeable Woodland

*Natural potential plant community:* Jacket soil—ponderosa pine/common snowberry
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### Rangeland

*Natural potential plant community:* Meland soil—Idaho fescue-bluebunch wheatgrass
*General management considerations:*
- This unit has few limitations for use as rangeland.

### Capability Classification

Meland soil—4e, nonirrigated; Jacket soil—3e, nonirrigated

## 86—Meland-Keuterville complex, 10 to 35 percent slopes

### Composition

*Meland soil and similar inclusions:* 55 percent
*Keuterville soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus and canyon benches
*Elevation:* 1,500 to 3,700 feet
*Average annual precipitation:* About 22 inches
*Frost-free season (32 degrees F):* About 140 days

### *Characteristics of the Meland Soil*

*Position on landform:* Convex, south-, east-, and west-facing slopes
*Slope range:* 10 to 25 percent
*Typical profile:*
0 to 10 inches—dark grayish brown silt loam
10 to 16 inches—brown silt loam
16 to 35 inches—pale brown gravelly silty clay loam
35 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Keuterville Soil*

*Position on landform:* North-facing slopes and steeper slopes
*Slope range:* 15 to 35 percent
*Typical profile:*
0 to 13 inches—dark brown gravelly silt loam
13 to 20 inches—brown very gravelly loam
20 to 49 inches—brown and strong brown very gravelly silty clay loam
49 to 61 inches—strong brown very cobbly silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### *Contrasting Inclusions*

- Gwin soils on south- and west-facing slopes (5 percent)
- Kettenbach soils on south- and west-facing slopes of 20 to 45 percent (5 percent)
- Larkin soils on smooth, north-facing slopes (5 percent)

### *Major Uses*

Cropland, pastureland, hayland, rangeland, woodland, grazeable woodland

### *Cropland*

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth of the Meland soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

### *Pastureland and Hayland*

*General management considerations:*
- The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.
- The moderate rooting depth of the Meland soil reduces the production of forage and results in droughtiness in dry years.

### *Rangeland*

*Natural potential plant community:* Meland soil—Idaho fescue-bluebunch wheatgrass
*General management considerations:*
- This unit has few limitations for use as rangeland.

### *Woodland*

*Natural potential plant community:* Keuterville soil—ponderosa pine/common snowberry
*Estimated average annual production of timber (CMAI):* Ponderosa pine—90 cubic feet per acre at 40 years of age
*General management considerations:*
- The high content of rock fragments in the Keuterville soil limits the available water capacity and thus limits productivity.

### *Grazeable Woodland*

*Natural potential plant community:* Keuterville soil—ponderosa pine/common snowberry
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### *Capability Classification*

4e, nonirrigated

## 87—Mohler-Nez Perce-Uhlorn complex, 2 to 10 percent slopes

### *Composition*

*Mohler soil and similar inclusions:* 40 percent
*Nez Perce soil and similar inclusions:* 30 percent
*Uhlorn soil and similar inclusions:* 20 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 3,200 to 3,700 feet
*Average annual precipitation:* About 23 inches
*Frost-free season (32 degrees F):* About 115 days

### *Characteristics of the Mohler Soil*

*Position on landform:* Plane to concave, commonly north- and east-facing slopes
*Slope range:* 4 to 10 percent
*Typical profile:*
0 to 11 inches—dark grayish brown silty clay loam
11 to 23 inches—brown silt loam
23 to 29 inches—yellowish brown silt loam
29 to 68 inches—light yellowish brown and brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate

### *Characteristics of the Nez Perce Soil*

*Position on landform:* Summits, shoulders, and footslopes
*Slope range:* 2 to 8 percent
*Typical profile:*
0 to 11 inches—dark grayish brown silty clay loam
11 to 15 inches—brown silt loam
15 to 21 inches—light brownish gray silt loam
21 to 31 inches—brown silty clay
31 to 66 inches—brown and pale brown, calcareous silty clay
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 14 to 27 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate
*Depth to seasonal high water table (perched):* 12 to 20 inches in February through April

### *Characteristics of the Uhlorn Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 2 to 10 percent
*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—grayish brown and brown silt loam
17 to 23 inches—yellowish brown silt loam
23 to 55 inches—light yellowish brown and brown silty clay loam
55 to 69 inches—brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate

### *Contrasting Inclusions*

- Latahco soils in drainageways (5 percent)
- Vollmer soils on south- and west-facing slopes of 4 to 16 percent (5 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- The hazard of erosion is a concern.
- The abrupt silty clay subsoil of the Nez Perce soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

### *Capability Classification*

2e, nonirrigated

## 88—Naff silt loam, 20 to 30 percent slopes

### *Composition*

*Naff soil and similar inclusions:* 90 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Position on landform:* South- and west-facing slopes
*Slope range:* 20 to 30 percent
*Elevation:* 1,800 to 2,400 feet
*Average annual precipitation:* About 20 inches
*Frost-free season (32 degrees F):* About 130 days

### *Characteristics of the Naff Soil*

*Typical profile:*
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Waha soils on convex slopes of 25 to 35 percent (10 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### Capability Classification

6e, nonirrigated

## 89—Naff-Palouse complex, 2 to 8 percent slopes

### Composition

*Naff soil and similar inclusions:* 55 percent
*Palouse soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 5 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 1,800 to 2,800 feet
*Average annual precipitation:* About 20 inches
*Frost-free season (32 degrees F):* About 145 days

### Characteristics of the Naff Soil

*Position on landform:* Convex, south- and west-facing slopes
*Slope range:* 2 to 8 percent
*Typical profile:*
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate

### Characteristics of the Palouse Soil

*Position on landform:* Concave, north- and east-facing slopes
*Slope range:* 2 to 8 percent
*Typical profile:*
0 to 15 inches—dark grayish brown and dark brown silt loam
15 to 27 inches—brown silt loam
27 to 50 inches—yellowish brown silt loam
50 to 63 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate

### Contrasting Inclusions

- Waha soils near canyon rims (5 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- The hazard of erosion is a concern.

### Capability Classification

2e, nonirrigated

## 90—Naff-Palouse complex, 8 to 20 percent slopes

### Composition

*Naff soil and similar inclusions:* 50 percent
*Palouse soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Hills on plateaus (fig. 11)
*Elevation:* 1,800 to 2,800 feet
*Average annual precipitation:* About 20 inches
*Frost-free season (32 degrees F):* About 145 days

### *Characteristics of the Naff Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### *Characteristics of the Palouse Soil*

*Position on landform:* Concave, north- and east-facing slopes
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 15 inches—dark grayish brown and dark brown silt loam
15 to 27 inches—brown silt loam
27 to 50 inches—yellowish brown silt loam
50 to 63 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### *Contrasting Inclusions*

- Latahco soils near drainageways (5 percent)
- Waha soils on south- and west-facing slopes of 10 to 30 percent (5 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils

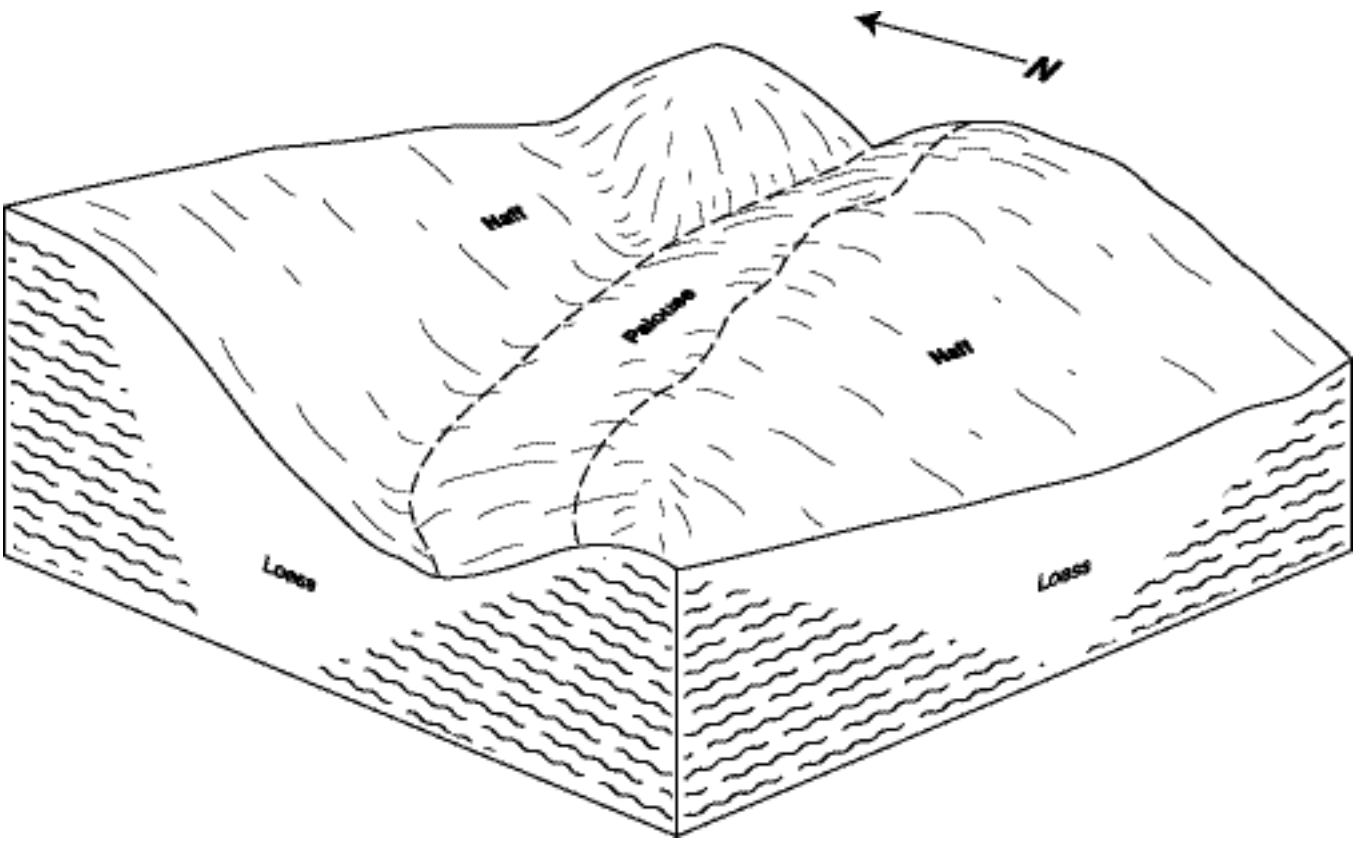


**Figure 11.—Typical pattern of the soils in Naff-Palouse complex, 8 to 20 percent slopes.**

*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### *Capability Classification*

3e, nonirrigated

## 91—Naff, eroded-Palouse complex, 8 to 20 percent slopes

### *Composition*

*Naff soil, eroded, and similar inclusions:* 50 percent
*Palouse soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,500 to 2,800 feet
*Average annual precipitation:* About 21 inches
*Frost-free season (32 degrees F):* About 135 days

### *Characteristics of the Naff Soil, Eroded*

*Position on landform:* Convex slopes
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 12 inches—brown silt loam
12 to 20 inches—yellowish brown silty clay loam
20 to 60 inches—light yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### *Characteristics of the Palouse Soil*

*Position on landform:* Plane to concave slopes
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 15 inches—dark grayish brown and dark brown silt loam
15 to 27 inches—brown silt loam
27 to 50 inches—yellowish brown silt loam
50 to 63 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### *Contrasting Inclusions*

- Garfield soils on lower, convex slopes and knobs (5 percent)
- Latahco soils near drainageways (5 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- Past erosion has resulted in partial or complete loss of the surface layer of the Naff soil and thus has reduced the fertility and tilth of the soil.

### *Capability Classification*

3e, nonirrigated

## 92—Naff-Palouse-Garfield complex, 8 to 20 percent slopes

### *Composition*

*Naff soil, eroded, and similar inclusions:* 45 percent
*Palouse soil and similar inclusions:* 25 percent
*Garfield soil and similar inclusions:* 15 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,500 to 2,800 feet
*Average annual precipitation:* About 20 inches
*Frost-free season (32 degrees F):* About 145 days

### *Characteristics of the Naff Soil, Eroded*

*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 12 inches—brown silt loam
12 to 20 inches—yellowish brown silty clay loam
20 to 60 inches—light yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches

*Runoff:* Rapid
*Hazard of water erosion:* Severe

### *Characteristics of the Palouse Soil*

*Position on landform:* Plane to concave, commonly north- and east-facing slopes
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 15 inches—dark grayish brown and dark brown silt loam
15 to 27 inches—brown silt loam
27 to 50 inches—yellowish brown silt loam
50 to 63 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### *Characteristics of the Garfield Soil*

*Position on landform:* Knobs and lower, convex slopes
*Slope range:* 8 to 12 percent
*Typical profile:*
0 to 4 inches—dark grayish brown silty clay loam
4 to 23 inches—brown and yellowish brown silty clay
23 to 29 inches—yellowish brown silty clay loam
29 to 61 inches—brownish yellow silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### *Contrasting Inclusions*

- Tilma soils on ridges with slopes of 4 to 15 percent (10 percent)
- Latahco soils near drainageways (5 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- Past erosion has resulted in partial or complete loss of the surface layer of the Naff soil and thus has reduced the fertility and tilth of the soil.

### *Capability Classification*

3e, nonirrigated

## 93—Naff-Thatuna complex, 2 to 10 percent slopes

### *Composition*

*Naff soil and similar inclusions:* 55 percent
*Thatuna soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,300 to 2,700 feet
*Average annual precipitation:* About 21 inches
*Frost-free season (32 degrees F):* About 145 days

### *Characteristics of the Naff Soil*

*Slope range:* 4 to 10 percent
*Typical profile:*
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate

### *Characteristics of the Thatuna Soil*

*Position on landform:* North- and east-facing slopes
*Slope range:* 2 to 6 percent
*Typical profile:*
0 to 16 inches—very dark grayish brown silt loam
16 to 31 inches—brown silt loam
31 to 37 inches—pale brown silt loam
37 to 61 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay loam subsoil at a depth of 29 to 40 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate

*Depth to seasonal high water table (perched):* 24 to 36 inches in February through April

### Contrasting Inclusions

- Nez Perce soils on north-facing slopes (5 percent)
- Waha soils on convex, south- and west-facing slopes (5 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- The hazard of erosion is a concern.

### Capability Classification

2e, nonirrigated

## 94—Naff-Waha complex, 3 to 12 percent slopes

### Composition

*Naff soil and similar inclusions:* 45 percent
*Waha soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 1,800 to 2,600 feet
*Average annual precipitation:* About 20 inches
*Frost-free season (32 degrees F):* About 145 days

### Characteristics of the Naff Soil

*Position on landform:* North- and east-facing slopes
*Slope range:* 3 to 12 percent
*Typical profile:*
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate

### Characteristics of the Waha Soil

*Position on landform:* South- and west-facing slopes
*Slope range:* 3 to 12 percent
*Typical profile:*
0 to 13 inches—dark grayish brown silt loam
13 to 29 inches—brown silty clay loam
29 to 34 inches—yellowish brown gravelly clay loam
34 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Medium
*Hazard of water erosion:* Severe

### Contrasting Inclusions

- Kettenbach soils on convex slopes of 10 to 20 percent (5 percent)
- Slickpoo soils on south- and west-facing slopes (5 percent)
- Thatuna soils on north- and east-facing slopes (5 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- The hazard of erosion is a concern.
- The moderate rooting depth of the Waha soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

### Capability Classification

Naff soil—2e, nonirrigated; Waha soil—4e, nonirrigated

## 95—Naff-Waha complex, 12 to 25 percent slopes

### Composition

*Naff soil and similar inclusions:* 60 percent
*Waha soil and similar inclusions:* 25 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 2,200 to 2,600 feet
*Average annual precipitation:* About 20 inches
*Frost-free season (32 degrees F):* About 145 days

### *Characteristics of the Naff Soil*

*Position on landform:* North-, west-, and east-facing slopes
*Slope range:* 12 to 20 percent
*Typical profile:*
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Waha Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 12 to 25 percent
*Typical profile:*
0 to 13 inches—dark grayish brown silt loam
13 to 29 inches—brown silty clay loam
29 to 34 inches—yellowish brown gravelly clay loam
34 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Gwin soils on ridges and convex, south- and west-facing slopes (5 percent)
- Kettenbach soils on south- and west-facing slopes of 20 to 30 percent (5 percent)
- Thatuna soils on concave, east-facing slopes of 10 to 15 percent (5 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth of the Waha soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

### *Capability Classification*

4e, nonirrigated

## 96—Naff-Waha complex, 25 to 40 percent slopes

### *Composition*

*Naff soil and similar inclusions:* 50 percent
*Waha soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 1,800 to 2,200 feet
*Average annual precipitation:* About 19 inches
*Frost-free season (32 degrees F):* About 150 days

### *Characteristics of the Naff Soil*

*Slope range:* 25 to 40 percent
*Typical profile:*
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Waha Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 25 to 40 percent
*Typical profile:*
0 to 13 inches—dark grayish brown silt loam
13 to 29 inches—brown silty clay loam
29 to 34 inches—yellowish brown gravelly clay loam
34 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Very rapid

*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Kettenbach soils on south- and west-facing slopes of 35 to 45 percent (5 percent)
- Palouse soils on concave slopes (5 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth of the Waha soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

### Capability Classification

6e, nonirrigated

## 97—Nez Perce silty clay loam, 2 to 10 percent slopes

### Composition

*Nez Perce soil and similar inclusions:* 90 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Hills on plateaus
*Position on landform:* Broad summits and shoulders
*Slope range:* 2 to 10 percent
*Elevation:* 2,600 to 4,100 feet
*Average annual precipitation:* About 22 inches
*Frost-free season (32 degrees F):* About 125 days

### Characteristics of the Nez Perce Soil

*Typical profile:*
0 to 11 inches—dark grayish brown silty clay loam
11 to 15 inches—brown silt loam
15 to 21 inches—light brownish gray silt loam
21 to 31 inches—brown silty clay
31 to 66 inches—brown and pale brown, calcareous silty clay
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 14 to 27 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate
*Depth to seasonal high water table (perched):* 12 to 20 inches in February through April
*Sodicity:* Slight

### Contrasting Inclusions

- Mohler soils on concave slopes (5 percent)
- Latahco soils in drainageways (5 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- The hazard of erosion is a concern.
- The abrupt silty clay subsoil restricts the growth of deep-rooted crops and results in droughtiness in dry years.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

### Capability Classification

2e, nonirrigated

## 98—Nez Perce silty clay loam, dry, 1 to 4 percent slopes

### Composition

*Nez Perce soil, dry, and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Position on landform:* Broad ridges
*Slope range:* 1 to 4 percent
*Elevation:* 2,800 to 3,040 feet
*Average annual precipitation:* About 20 inches
*Frost-free season (32 degrees F):* About 120 days

### Characteristics of the Nez Perce Soil, Dry

*Typical profile:*
0 to 9 inches—dark grayish brown silty clay loam
9 to 15 inches—brown silt loam
15 to 19 inches—light brownish gray silt loam
19 to 31 inches—brown and yellowish brown silty clay
31 to 41 inches—yellowish brown, calcareous silty clay
41 to 57 inches—light yellowish brown and very pale brown, calcareous silty clay loam
57 to 67 inches—pale brown, calcareous silty clay

*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 14 to 27 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (perched):* 12 to 20 inches in February through April
*Sodicity:* Slight

### Contrasting Inclusions

- Broadax soils on north- and east-facing slopes of 4 to 8 percent (10 percent)
- Slickpoo soils on south- and west-facing slopes of 4 to 8 percent (5 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
- The abrupt silty clay subsoil restricts the growth of deep-rooted crops and results in droughtiness in dry years.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

### Capability Classification

2s, nonirrigated

## 99—Nez Perce-Uhlorn complex, 8 to 15 percent slopes

### Composition

*Nez Perce soil and similar inclusions:* 60 percent
*Uhlorn soil and similar inclusions:* 25 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 2,800 to 3,850 feet
*Average annual precipitation:* About 21 inches
*Frost-free season (32 degrees F):* About 125 days

### Characteristics of the Nez Perce Soil

*Position on landform:* Convex shoulders and nose slopes
*Slope range:* 8 to 15 percent
*Typical profile:*
0 to 11 inches—dark grayish brown silty clay loam
11 to 15 inches—brown silt loam
15 to 21 inches—light brownish gray silt loam
21 to 31 inches—brown silty clay
31 to 66 inches—brown and pale brown, calcareous silty clay
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 14 to 27 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe
*Depth to seasonal high water table (perched):* 12 to 20 inches in February through April
*Sodicity:* Slight

### Characteristics of the Uhlorn Soil

*Position on landform:* Plane to concave slopes
*Slope range:* 8 to 15 percent
*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—grayish brown and brown silt loam
17 to 23 inches—yellowish brown silt loam
23 to 55 inches—light yellowish brown and brown silty clay loam
55 to 69 inches—brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Severe

### Contrasting Inclusions

- Vollmer soils on shoulders (10 percent)
- Deep or very deep soils that have a very cobbly silty clay subsoil and are on south- and west-facing, convex slopes (5 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The abrupt silty clay subsoil of the Nez Perce soil

restricts the growth of deep-rooted crops and results in droughtiness in dry years.
• The sodicity of the subsoil of the Nez Perce soil causes some nutrients to become unavailable to plants.

### Capability Classification

3e, nonirrigated

## 100—Oliphant silt loam, 1 to 4 percent slopes

### Composition

*Oliphant soil and similar inclusions:* 90 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Hills on plateaus
*Position on landform:* Broad ridges
*Slope range:* 1 to 4 percent
*Elevation:* 1,350 to 1,700 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### Characteristics of the Oliphant Soil

*Typical profile:*
0 to 16 inches—dark grayish brown and brown silt loam
16 to 29 inches—brown silt loam
29 to 62 inches—pale brown and very pale brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight

### Contrasting Inclusions

• Endicott soils on south- and west-facing slopes of 3 to 8 percent (5 percent)
• Hatwai soils that occur as small, circular slick spots (5 percent)

### Major Uses

Cropland, building site development (fig. 12)

### Cropland

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
• In most years, annual cropping is not practical because of the low precipitation.

### Building Site Development

*General management considerations:*
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.

### Capability Classification

3c, nonirrigated

## 101—Oliphant silt loam, 8 to 20 percent slopes

### Composition

*Oliphant soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Position on landform:* Commonly on north- and east-facing slopes
*Slope range:* 8 to 20 percent
*Elevation:* 1,200 to 2,100 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### Characteristics of the Oliphant Soil

*Typical profile:*
0 to 16 inches—dark grayish brown and brown silt loam
16 to 29 inches—brown silt loam
29 to 62 inches—pale brown and very pale brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### Contrasting Inclusions

• Hatwai soils that occur as circular slick spots (5 percent)
• Oliphant soils that have a gravelly substratum and are on convex slopes of 15 to 25 percent (5 percent)
• Stember soils on convex slopes of 4 to 15 percent (5 percent)

### Major Uses

Cropland, rangeland, building site development

### Cropland

*Commonly grown crops:* Wheat, barley, peas

**Figure 12.—An excavated area of Oliphant silt loam, 1 to 4 percent slopes. The topsoil is dark colored, and the alkaline subsoil material is light colored. The subsoil material is poorly suited to landscaping plants.**

*General management considerations:*
- In most years, annual cropping is not practical because of the low precipitation.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### *Rangeland*

*Natural potential plant community:* Idaho fescue-bluebunch wheatgrass
*General management considerations:*
- This unit has few limitations for use as rangeland.

### *Building Site Development*

*General management considerations:*
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The steepness of slope limits the use of construction equipment.

### *Capability Classification*

3e, nonirrigated

## 102—Oliphant silt loam, gravelly substratum, 2 to 6 percent slopes

### *Composition*

*Oliphant soil, gravelly substratum, and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Position on landform:* Footslopes
*Slope range:* 2 to 6 percent
*Elevation:* 1,300 to 1,600 feet
*Average annual precipitation:* About 15 inches
*Frost-free season (32 degrees F):* About 165 days

### *Characteristics of the Oliphant Soil, Gravelly Substratum*

*Typical profile:*
0 to 8 inches—dark grayish brown silt loam
8 to 26 inches—brown silt loam

26 to 36 inches—yellowish brown silt loam
36 to 41 inches—pale brown, calcareous gravelly silt loam
41 to 62 inches—very pale brown, calcareous very gravelly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate

### Contrasting Inclusions

- Hatwai soils that occur as small, circular slick spots (5 percent)
- Alpowa soils (5 percent)
- Soils that are moderately deep to a duripan underlain by sand and gravel (3 percent)
- Tammany soils (2 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
- In most years, annual cropping is not practical because of the low precipitation.
- The hazard of erosion is a concern.

### Capability Classification

3e, nonirrigated

## 103—Oliphant-Alpowa complex, 20 to 40 percent slopes

### Composition

*Oliphant soil and similar inclusions:* 65 percent
*Alpowa soil and similar inclusions:* 20 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 1,400 to 1,900 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### Characteristics of the Oliphant Soil

*Position on landform:* North- and east-facing slopes
*Slope range:* 20 to 40 percent
*Typical profile:*
0 to 16 inches—dark grayish brown and brown silt loam
16 to 29 inches—brown silt loam
29 to 62 inches—pale brown and very pale brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Alpowa Soil

*Position on landform:* South- and west-facing slopes
*Slope range:* 20 to 40 percent
*Typical profile:*
0 to 12 inches—grayish brown cobbly silt loam
12 to 35 inches—pale brown, calcareous very cobbly silt loam
35 to 60 inches—white, calcareous very cobbly loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Stember soils on south- and west-facing, convex slopes (10 percent)
- Soils that have a light-colored, eroded surface layer and are on convex slopes (3 percent)
- Endicott soils on summits and shoulders (2 percent)

### Major Uses

Cropland, rangeland

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- In most years, annual cropping is not practical because of the low precipitation.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### Rangeland

*Natural potential plant community:* Oliphant soil—Idaho fescue-bluebunch wheatgrass;

Alpowa soil—bluebunch wheatgrass-Sandberg bluegrass
*General management considerations:*
- This unit has few limitations for use as rangeland.

### *Capability Classification*

6e, nonirrigated

## 104—Oliphant-Hatwai complex, 1 to 8 percent slopes

### *Composition*

*Oliphant soil and similar inclusions:* 65 percent
*Hatwai soil and similar inclusions:* 25 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 1,700 to 1,760 feet
*Average annual precipitation:* About 15 inches
*Frost-free season (32 degrees F):* About 165 days

### *Characteristics of the Oliphant Soil*

*Slope range:* 1 to 8 percent
*Typical profile:*
0 to 16 inches—dark grayish brown and brown silt loam
16 to 29 inches—brown silt loam
29 to 62 inches—pale brown and very pale brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate

### *Characteristics of the Hatwai Soil*

*Description of areas:* Small, circular slick spots
*Slope range:* 1 to 8 percent
*Typical profile:*
0 to 13 inches—dark grayish brown silt loam
13 to 21 inches—brown silt loam
21 to 26 inches—brown silt loam
26 to 36 inches—brown, calcareous silt loam
36 to 66 inches—brown and yellowish brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Dense subsoil at a depth of 15 to 21 inches
*Runoff:* Slow
*Hazard of water erosion:* Severe
*Sodicity:* Moderate or strong

### *Contrasting Inclusions*

- Tammany soils on hills on plateaus (10 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
- In most years, annual cropping is not practical because of the low precipitation.
- The hazard of erosion is a concern.
- The sodicity of the Hatwai soil creates special management concerns such as limited availability of nutrients, restricted infiltration rate, and poor structure of the surface layer.
- The sodicity of the subsoil of the Hatwai soil causes some nutrients to become unavailable to plants.

### *Capability Classification*

Oliphant soil—3e, nonirrigated; Hatwai soil—4e, nonirrigated

## 105—Oliphant-Stember complex, 8 to 20 percent slopes

### *Composition*

*Oliphant soil and similar inclusions:* 50 percent
*Stember soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 1,400 to 2,600 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 170 days

### *Characteristics of the Oliphant Soil*

*Position on landform:* Backslopes and toeslopes
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 8 inches—dark grayish brown silt loam
8 to 26 inches—brown silt loam
26 to 36 inches—yellowish brown silt loam

36 to 41 inches—pale brown, calcareous gravelly silt loam
41 to 62 inches—very pale brown, calcareous very gravelly silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Medium
*Hazard of water erosion:* Severe

### Characteristics of the Stember Soil

*Position on landform:* Upper backslopes and shoulders
*Slope range:* 8 to 15 percent
*Typical profile:*
0 to 9 inches—dark grayish brown silt loam
9 to 13 inches—brown, calcareous very gravelly silt loam
13 to 18 inches—pale brown, calcareous very gravelly loam
18 to 30 inches—white, calcareous extremely cobbly loam
30 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Low
*Potential rooting depth:* 20 to 35 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Endicott soils near the summits of hills (5 percent)
- Limekiln soils on south- and west-facing slopes (5 percent)
- Alpowa soils on hills (5 percent)

### Major Uses

Cropland, rangeland, building site development

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- In most years, annual cropping is not practical because of the low precipitation.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth and the high content of rock fragments in the subsoil of the Stember soil restrict the growth of deep-rooted crops and result in droughtiness in dry years.

### Rangeland

*Natural potential plant community:* Bluebunch wheatgrass-Sandberg bluegrass
*General management considerations:*
- This unit has few limitations for use as rangeland.

### Building Site Development

*General management considerations:*
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.

### Capability Classification

4e, nonirrigated

## 106—Palouse-Athena complex, 2 to 8 percent slopes

### Composition

*Palouse soil and similar inclusions:* 60 percent
*Athena soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 2,400 to 2,900 feet
*Average annual precipitation:* About 19 inches
*Frost-free season (32 degrees F):* About 145 days

### Characteristics of the Palouse Soil

*Position on landform:* Plane to concave slopes of broad ridges
*Slope range:* 2 to 8 percent
*Typical profile:*
0 to 15 inches—dark grayish brown and dark brown silt loam
15 to 27 inches—brown silt loam
27 to 50 inches—yellowish brown silt loam
50 to 63 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate

### Characteristics of the Athena Soil

*Position on landform:* Convex, south- and west-facing slopes of broad ridges

*Slope range:* 2 to 8 percent
*Typical profile:*
0 to 14 inches—dark grayish brown silt loam
14 to 21 inches—brown silt loam
21 to 44 inches—yellowish brown and light yellowish brown silt loam
44 to 64 inches—very pale brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate

### Contrasting Inclusions

- Naff soils (10 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- The hazard of erosion is a concern.

### Capability Classification

2e, nonirrigated

## 107—Palouse-Athena complex, 8 to 20 percent slopes

### Composition

*Palouse soil and similar inclusions:* 60 percent
*Athena soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 2,400 to 2,800 feet
*Average annual precipitation:* About 19 inches
*Frost-free season (32 degrees F):* About 145 days

### Characteristics of the Palouse Soil

*Position on landform:* Concave slopes
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 15 inches—dark grayish brown and dark brown silt loam
15 to 27 inches—brown silt loam
27 to 50 inches—yellowish brown silt loam
50 to 63 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### Characteristics of the Athena Soil

*Position on landform:* Plane to concave slopes
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 14 inches—dark grayish brown silt loam
14 to 21 inches—brown silt loam
21 to 44 inches—yellowish brown and light yellowish brown silt loam
44 to 64 inches—very pale brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### Contrasting Inclusions

- Naff soils on convex slopes (5 percent)
- Thatuna soils on footslopes (3 percent)
- Latahco soils near drainageways (2 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### Capability Classification

3e, nonirrigated

## 108—Pits, gravel

*Landform:* Alluvial terraces
*Description of areas:* Open excavations from which sand and gravel are removed
*Capability classification:* Not assigned

## 109—Redmore silt loam, 1 to 6 percent slopes

### *Composition*

*Redmore soil and similar inclusions:* 90 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Position on landform:* Broad summits
*Slope range:* 1 to 6 percent
*Elevation:* 2,450 to 2,800 feet
*Average annual precipitation:* About 17 inches
*Frost-free season (32 degrees F):* About 135 days

### *Characteristics of the Redmore Soil*

*Typical profile:*
0 to 12 inches—dark grayish brown silt loam
12 to 16 inches—very dark grayish brown silty clay
16 to 19 inches—brown silty clay loam
19 to 35 inches—yellowish brown, calcareous silty clay loam
35 to 42 inches—white, calcareous silt loam
42 to 46 inches—white, calcareous very gravelly loam
46 to 60 inches—white, indurated duripan
*Depth class:* Deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 55 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 8 to 16 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate
*Sodicity:* Moderate

### *Contrasting Inclusions*

- Broadax soils (5 percent)
- Slickpoo soils on south- and west-facing slopes of 4 to 8 percent (5 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
- The hazard of erosion is a concern.
- The sodicity of the subsoil restricts the infiltration rate and degrades the structure of the surface layer.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.
- The abrupt silty clay subsoil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

### *Capability Classification*

4e, nonirrigated

## 110—Riverwash-Aquents complex, nearly level

### *Composition*

*Riverwash:* 50 percent
*Aquents and similar inclusions:* 40 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Flood plains
*Elevation:* 740 to 1,200 feet
*Average annual precipitation:* About 16 inches
*Frost-free season (32 degrees F):* About 165 days

### *Characteristics of the Riverwash*

*Position on landform:* Gravel bars, riverbanks, and islands
*Slope range:* 0 to 4 percent
*Kind of material:* Loose sand, gravel, and cobbles

### *Characteristics of the Aquents*

*Slope range:* 0 to 3 percent
*Representative profile:*
0 to 2 inches—brown very cobbly very fine sandy loam
2 to 8 inches—light brownish gray extremely cobbly loamy sand
8 to 25 inches—brown, mottled extremely cobbly sand
25 to 60 inches—yellowish brown, mottled extremely cobbly loamy sand
*Depth class:* Very deep
*Drainage class:* Poorly drained
*Permeability:* Rapid or very rapid
*Available water capacity:* Very low
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Seasonal high water table at a depth of 6 to 24 inches
*Runoff:* Very slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (apparent):* 6 to 24 inches in November through July

*Frequency of flooding:* Frequent in December through June

### Contrasting Inclusions

- Wistona soils on higher terraces and islands (5 percent)
- Bridgewater soils on terraces (5 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Riverwash—little or no vegetation; Aquents—mixed bottomland trees and shrubs

*General management considerations:*

- Because of the seasonal high water table, this unit is susceptible to soil compaction during wet periods.
- Flooding of the Aquents in spring may prevent access by livestock.

### Capability Classification

Riverwash—not assigned; Aquents—7w, nonirrigated

## 111—Rock outcrop-Flybow complex, very steep

### Composition

*Rock outcrop:* 45 percent
*Flybow soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 20 percent

### Setting

*Landform:* Canyons
*Elevation:* 1,000 to 2,000 feet
*Average annual precipitation:* About 16 inches
*Frost-free season (32 degrees F):* About 170 days

### Characteristics of the Rock Outcrop

*Slope range:* 80 to 120 percent
*Kind of rock:* Exposed basalt, commonly occurring as cliffs

### Characteristics of the Flybow Soil

*Position on landform:* Gorges
*Slope range:* 80 to 100 percent
*Typical profile:*

0 to 2 inches—dark brown very gravelly silt loam
2 to 4 inches—brown very gravelly silt loam
4 inches—basalt

*Depth class:* Very shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Very low
*Potential rooting depth:* 4 to 10 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Chard soils on benches and terraces with slopes of 4 to 25 percent (10 percent)
- Aquents along riverbanks (5 percent)
- Kettenbach soils on concave slopes of 50 to 90 percent (5 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Rock outcrop—little or no vegetation; Flybow soil—Sandberg bluegrass/forbs

*General management considerations:*

- Because of the steepness of slope and the areas of Rock outcrop, this unit is very poorly suited to livestock grazing.

### Capability Classification

Rock outcrop—not assigned; Flybow soil—8s, nonirrigated

## 112—Seddow silt loam, 10 to 40 percent slopes

### Composition

*Seddow soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on high plateaus
*Position on landform:* South- and west-facing slopes
*Slope range:* 10 to 40 percent
*Elevation:* 4,200 to 4,800 feet
*Average annual precipitation:* About 28 inches
*Frost-free season (32 degrees F):* About 65 days

### Characteristics of the Seddow Soil

*Typical profile:*

1 inch to 0—organic mat
0 to 4 inches—brown silt loam
4 to 13 inches—yellowish brown and light yellowish brown silt loam
13 to 21 inches—light yellowish brown silty clay loam

21 to 29 inches—dark yellowish brown gravelly clay loam
29 to 48 inches—dark yellowish brown extremely cobbly clay loam
48 inches—fractured basalt

*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 55 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Cramont soils on shoulders and ridges with slopes of 5 to 15 percent (5 percent)
- Shilla soils on concave slopes (5 percent)
- Larabee soils on convex slopes (5 percent)

### Major Uses

Woodland, grazeable woodland

### Woodland

*Natural potential plant community:* Grand fir/longtube twinflower
*Estimated average annual production of timber (CMAI):* Ponderosa pine—77 cubic feet per acre at 40 years of age; Douglas fir—51 cubic feet per acre at 107 years of age; grand fir—83 cubic feet per acre at 117 years of age; western larch—not measured; lodgepole pine—not measured
*General management considerations:*

- The restricted rooting depth and high content of coarse fragments limit the amount of water available for tree growth and thus limit productivity.
- Reforestation may be limited because of droughtiness.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### Grazeable Woodland

*Natural potential plant community:* Grand fir/longtube twinflower
*General management considerations:*

- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

### Capability Classification

6e, nonirrigated

## 113—Setters silt loam, 2 to 8 percent slopes

### Composition

*Setters soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Slope range:* 2 to 8 percent
*Elevation:* 3,400 to 4,300 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 110 days

### Characteristics of the Setters Soil

*Typical profile:*
0 to 12 inches—grayish brown and brown silt loam
12 to 17 inches—pale brown silt loam
17 to 19 inches—light brownish gray, mottled silt loam
19 to 49 inches—brown and pale brown silty clay
49 to 61 inches—pale brown silty clay loam

*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Silty clay subsoil at a depth of 18 to 24 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate
*Depth to seasonal high water table (perched):* 14 to 22 inches in February through April

### Contrasting Inclusions

- Taney soils on slopes of 4 to 12 percent (10 percent)
- Larabee soils commonly near rims of canyons (5 percent)

### Major Uses

Cropland, woodland, grazeable woodland, pastureland, hayland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*

- The short growing season limits the production of some crops.
- The hazard of erosion is a concern.
- The silty clay subsoil restricts the growth of deep-rooted crops.

• Wetness in spring increases the susceptibility of the soil to compaction if farm equipment is used.

### Woodland

*Natural potential plant community:* Douglas fir/common snowberry
*Estimated average annual production of timber (CMAI):* Ponderosa pine—100 cubic feet per acre at 40 years of age; Douglas fir—69 cubic feet per acre at 101 years of age
*General management considerations:*
• Because of the silty clay subsoil and the seasonal perched water table, trees on this unit are susceptible to windthrow.

### Grazeable Woodland

*Natural potential plant community:* Douglas fir/common snowberry
*General management considerations:*
• This unit has few limitations for use as grazeable woodland.

### Pastureland and Hayland

*General management considerations:*
• The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.

### Capability Classification

3e, nonirrigated

## 114—Shilla silt loam, 2 to 12 percent slopes

### Composition

*Shilla soil and similar inclusions:* 90 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Hills on high plateaus
*Position on landform:* Broad ridges
*Slope range:* 2 to 12 percent
*Elevation:* 4,400 to 5,300 feet
*Average annual precipitation:* About 28 inches
*Frost-free season (32 degrees F):* About 65 days

### Characteristics of the Shilla Soil

*Typical profile:*
1 inch to 0—organic mat
0 to 1 inch—dark grayish brown silt loam
1 inch to 16 inches—light yellowish brown silt loam
16 to 24 inches—yellowish brown loam
24 to 31 inches—light yellowish brown very gravelly clay loam
31 to 53 inches—yellowish brown extremely cobbly clay loam
53 inches—fractured basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight or moderate

### Contrasting Inclusions

• Larabee soils on south- and west-facing slopes of 8 to 20 percent on shoulders (5 percent)
• Seddow soils (5 percent)

### Major Uses

Woodland, grazeable woodland

### Woodland

*Natural potential plant community:* Grand fir/longtube twinflower
*Estimated average annual production of timber (CMAI):* Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—93 cubic feet per acre at 114 years of age; western larch—not measured; Engelmann spruce—98 cubic feet per acre at 90 years of age; lodgepole pine—not measured
*General management considerations:*
• Because the volcanic ash surface layer is fragile, excessive disturbance or compaction reduces productivity and seedling survival.

### Grazeable Woodland

*Natural potential plant community:* Grand fir/longtube twinflower
*General management considerations:*
• The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
• The characteristic understory plant community produces very little forage for livestock when the canopy is closed.
• The volcanic ash surface layer is susceptible to compaction during wet periods.

### Capability Classification

4e, nonirrigated

## 115—Shilla-Seddow complex, 5 to 30 percent slopes

### *Composition*

*Shilla soil and similar inclusions:* 60 percent
*Seddow soil and similar inclusions:* 20 percent
*Contrasting inclusions:* 20 percent

### *Setting*

*Landform:* Hills on high plateaus
*Elevation:* 4,400 to 5,300 feet
*Average annual precipitation:* About 28 inches
*Frost-free season (32 degrees F):* About 65 days

### *Characteristics of the Shilla Soil*

*Slope range:* 5 to 30 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 1 inch—dark grayish brown silt loam
1 inch to 16 inches—light yellowish brown silt loam
16 to 24 inches—yellowish brown loam
24 to 31 inches—light yellowish brown very gravelly clay loam
31 to 53 inches—yellowish brown extremely cobbly clay loam
53 inches—fractured basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### *Characteristics of the Seddow Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 5 to 30 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 4 inches—brown silt loam
4 to 13 inches—yellowish brown and light yellowish brown silt loam
13 to 21 inches—light yellowish brown silty clay loam
21 to 29 inches—dark yellowish brown gravelly clay loam
29 to 48 inches—dark yellowish brown extremely cobbly clay loam
48 inches—fractured basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 55 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### *Contrasting Inclusions*

- Culdesac soils on north- and east-facing slopes and on footslopes (10 percent)
- Larabee soils on convex, south- and west-facing slopes (5 percent)
- Maloney soils on mounds in areas of patterned ground (3 percent)
- Zaza soils in areas of patterned ground (2 percent)

### *Major Uses*

Woodland, grazeable woodland

### *Woodland*

*Natural potential plant community:* Grand fir/longtube twinflower
*Estimated average annual production of timber on the Shilla soil (CMAI):* Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—93 cubic feet per acre at 114 years of age; western larch—not measured; Engelmann spruce—98 cubic feet per acre at 90 years of age; lodgepole pine—not measured
*Estimated average annual production of timber on the Seddow soil (CMAI):* Ponderosa pine—77 cubic feet per acre at 40 years of age; Douglas fir—51 cubic feet per acre at 107 years of age; grand fir—83 cubic feet per acre at 117 years of age; western larch—not measured; lodgepole pine—not measured
*General management considerations:*
- Because the volcanic ash surface layer is fragile, excessive disturbance or compaction reduces productivity and seedling survival.
- Erosion is a concern on the Seddow soil. Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### *Grazeable Woodland*

*Natural potential plant community:* Grand fir/longtube twinflower
*General management considerations:*
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

• The volcanic ash surface layer of the Shilla soil is susceptible to compaction during wet periods.

### *Capability Classification*

4e, nonirrigated

## 116—Slickpoo silt loam, 5 to 15 percent slopes

### *Composition*

*Slickpoo soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Position on landform:* South- and west-facing slopes
*Slope range:* 5 to 15 percent
*Elevation:* 1,600 to 2,900 feet
*Average annual precipitation:* About 16 inches
*Frost-free season (32 degrees F):* About 160 days

### *Characteristics of the Slickpoo Soil*

*Typical profile:*
0 to 12 inches—dark grayish brown silt loam
12 to 17 inches—brown silt loam
17 to 22 inches—yellowish brown silty clay loam
22 to 37 inches—yellowish brown cobbly silty clay loam
37 to 45 inches—light gray, calcareous very cobbly silt loam
45 inches—basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 55 inches
*Runoff:* Medium
*Hazard of water erosion:* Severe

### *Contrasting Inclusions*

• Broadax soils on plane to concave, commonly northwest- and southeast-facing slopes (5 percent)
• Kettenbach soils on slopes of 10 to 25 percent (5 percent)
• Linville soils on north- and east-facing slopes (5 percent)

### *Major Uses*

Cropland, rangeland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### *Rangeland*

*Natural potential plant community:* Idaho fescue-bluebunch wheatgrass
*General management considerations:*
• This unit has few limitations for use as rangeland.

### *Capability Classification*

3e, nonirrigated

## 117—Slickpoo-Broadax complex, 15 to 25 percent slopes

### *Composition*

*Slickpoo soil and similar inclusions:* 45 percent
*Broadax soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 1,600 to 2,900 feet
*Average annual precipitation:* About 16 inches
*Frost-free season (32 degrees F):* About 160 days

### *Characteristics of the Slickpoo Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 15 to 25 percent
*Typical profile:*
0 to 12 inches—dark grayish brown silt loam
12 to 17 inches—brown silt loam
17 to 22 inches—yellowish brown silty clay loam
22 to 37 inches—yellowish brown cobbly silty clay loam
37 to 45 inches—light gray, calcareous very cobbly silt loam
45 inches—basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 55 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Broadax Soil*

*Position on landform:* North- and east-facing slopes
*Slope range:* 15 to 25 percent
*Typical profile:*
0 to 16 inches—dark grayish brown silt loam
16 to 33 inches—brown and light yellowish brown silt loam

33 to 37 inches—pale brown silt loam
37 to 65 inches—light yellowish brown, calcareous silt loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe
*Sodicity:* Slight

### Contrasting Inclusions

• Hatwai soils that occur as circular slick spots on south- and west-facing slopes of 10 to 25 percent (5 percent)
• Kettenbach soils on south- and west-facing slopes (5 percent)
• Linville soils on south- and west-facing slopes of 20 to 30 percent (5 percent)

### Major Uses

Cropland, rangeland

### Cropland

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• The sodicity of the subsoil of the Broadax soil causes some nutrients to become unavailable to plants.

### Rangeland

*Natural potential plant community:* Idaho fescue-bluebunch wheatgrass
*General management considerations:*
• This unit has few limitations for use as rangeland.

### Capability Classification

4e, nonirrigated

## 118—Southwick silt loam, 3 to 12 percent slopes

### Composition

*Southwick soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Position on landform:* Broad ridges
*Slope range:* 3 to 12 percent
*Elevation:* 2,400 to 3,200 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 125 days

### Characteristics of the Southwick Soil

*Typical profile:*
0 to 9 inches—dark grayish brown silt loam
9 to 26 inches—brown silt loam
26 to 32 inches—pale brown, mottled light gray silt loam
32 to 46 inches—pale brown silty clay loam
46 to 64 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Moderate in the upper part, very slow in the lower part
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Dense silty clay loam subsoil at a depth of 29 to 36 inches
*Runoff:* Medium
*Hazard of water erosion:* Slight or moderate
*Depth to seasonal high water table (perched):* 20 to 36 inches in February through April

### Contrasting Inclusions

• Driscoll soils on convex slopes (5 percent)
• Larkin soils on south- and west-facing slopes (5 percent)
• Bluesprin soils on convex, south- and west-facing slopes of 10 to 20 percent (3 percent)
• Latahco soils near drainageways (2 percent)

### Major Uses

Cropland, woodland, grazeable woodland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
• The hazard of erosion is a concern.
• The dense silty clay loam subsoil restricts growth of deep-rooted crops such as alfalfa.

### Woodland

*Natural potential plant community:* Ponderosa pine/common snowberry
*Estimated average annual production of timber (CMAI):* Ponderosa pine—112 cubic feet per acre at 40 years of age
*General management considerations:*
• Because of the dense subsoil and the seasonal perched water table, trees on this unit are susceptible to windthrow.

### *Grazeable Woodland*

*Natural potential plant community:* Ponderosa pine/common snowberry
*General management considerations:*
• This unit has few limitations for use as grazeable woodland.

### *Capability Classification*

4e, nonirrigated

## 119—Southwick-Bluesprin complex, 10 to 35 percent slopes

### *Composition*

*Southwick soil and similar inclusions:* 50 percent
*Bluesprin soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,300 to 3,400 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 125 days

### *Characteristics of the Southwick Soil*

*Position on landform:* Plane to concave slopes
*Slope range:* 10 to 25 percent
*Typical profile:*
0 to 9 inches—dark grayish brown silt loam
9 to 26 inches—brown silt loam
26 to 32 inches—pale brown and light gray silt loam
32 to 46 inches—pale brown silty clay loam
46 to 64 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Moderate in the upper part, very slow in the lower part
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Dense silty clay loam subsoil at a depth of 29 to 36 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe
*Depth to seasonal high water table (perched):* 20 to 36 inches in February through April

### *Characteristics of the Bluesprin Soil*

*Position on landform:* South-, west-, and east-facing, convex slopes
*Slope range:* 10 to 35 percent
*Typical profile:*
0 to 9 inches—dark grayish brown silt loam
9 to 14 inches—grayish brown silt loam
14 to 22 inches—brown and yellowish brown very gravelly silty clay loam
22 to 28 inches—yellowish brown extremely gravelly clay loam
28 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Low
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Moderate or severe

### *Contrasting Inclusions*

• Kettenbach soils on convex, south- and west-facing slopes (10 percent)
• Driscoll soils on north- and east-facing, convex slopes (5 percent)

### *Major Uses*

Cropland, woodland, grazeable woodland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• The dense silty clay loam subsoil of the Southwick soil restricts growth of deep-rooted crops such as alfalfa.
• The moderate rooting depth and high content of rock fragments in the subsoil of the Bluesprin soil restrict the growth of deep-rooted crops and result in droughtiness in dry years.

### *Woodland*

*Natural potential plant community:* Southwick soil—ponderosa pine/common snowberry
*Estimated average annual production of timber on the Southwick soil (CMAI):* Ponderosa pine—112 cubic feet per acre at 40 years of age
*General management considerations:*
• Because of the dense subsoil and the seasonal perched water table, trees on the Southwick soil are susceptible to windthrow.

### *Grazeable Woodland*

*Natural potential plant community:* Southwick soil—ponderosa pine/common snowberry
*General management considerations:*
• This unit has few limitations for use as grazeable woodland.

### *Capability Classification*

4e, nonirrigated

## 120—Southwick-Driscoll complex, 3 to 12 percent slopes

### *Composition*

*Southwick soil and similar inclusions:* 55 percent
*Driscoll soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,300 to 3,400 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 125 days

### *Characteristics of the Southwick Soil*

*Position on landform:* Plane to concave backslopes and footslopes
*Slope range:* 3 to 12 percent
*Typical profile:*
0 to 9 inches—dark grayish brown silt loam
9 to 26 inches—brown silt loam
26 to 32 inches—pale brown and mottled light gray silt loam
32 to 46 inches—pale brown silty clay loam
46 to 64 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Moderate in the upper part, very slow in the lower part
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Dense silty clay loam subsoil at a depth of 29 to 36 inches
*Runoff:* Medium
*Hazard of water erosion:* Slight or moderate
*Depth to seasonal high water table (perched):* 20 to 36 inches in February through April

### *Characteristics of the Driscoll Soil*

*Position on landform:* Summits, shoulders, and footslopes
*Slope range:* 3 to 12 percent
*Typical profile:*
0 to 13 inches—dark grayish brown silt loam
13 to 27 inches—brown silt loam
27 to 31 inches—light gray, mottled silt loam
31 to 46 inches—pale brown, light brown, and light yellowish brown silty clay
46 to 60 inches—light yellowish brown and brownish yellow silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 18 to 36 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate
*Depth to seasonal high water table (perched):* 15 to 30 inches in January through April

### *Contrasting Inclusions*

- Larkin soils on north- and east-facing, plane to concave slopes (5 percent)
- Bluesprin soils on slopes of 8 to 25 percent (5 percent)
- Keuterville soils on slopes of 12 to 30 percent (3 percent)
- Wilkins soils near drainageways (2 percent)

### *Major Uses*

Cropland (fig. 13), woodland, grazeable woodland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- The hazard of erosion is a concern.
- The dense silty clay loam subsoil of the Southwick soil restricts growth of deep-rooted crops such as alfalfa.
- The abrupt silty clay subsoil of the Driscoll soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

### *Woodland*

*Natural potential plant community:* Ponderosa pine/common snowberry
*Estimated average annual production of timber on the Southwick soil (CMAI):* Ponderosa pine—112 cubic feet per acre at 40 years of age
*Estimated average annual production of timber on the Driscoll soil (CMAI):* Ponderosa pine—132 cubic feet per acre at 40 years of age
*General management considerations:*
- Because of the dense silty clay loam subsoil of the Southwick soil and the abrupt silty clay subsoil of the Driscoll soil, trees on this unit are susceptible to windthrow.

### *Grazeable Woodland*

*Natural potential plant community:* Ponderosa pine/common snowberry

**Figure 13.—A rolling field in an area of Southwick-Driscoll complex, 3 to 12 percent slopes.**

*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### *Capability Classification*

4e, nonirrigated

## 121—Southwick-Driscoll complex, 12 to 25 percent slopes

### *Composition*

*Southwick soil and similar inclusions:* 50 percent
*Driscoll soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,300 to 3,400 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 125 days

### *Characteristics of the Southwick Soil*

*Position on landform:* Plane to concave slopes
*Slope range:* 12 to 25 percent
*Typical profile:*
- 0 to 9 inches—dark grayish brown silt loam
- 9 to 26 inches—brown silt loam
- 26 to 32 inches—pale brown and light gray silt loam
- 32 to 46 inches—pale brown silty clay loam
- 46 to 64 inches—yellowish brown silty clay loam

*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Moderate in the upper part, very slow in the lower part
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Dense silty clay loam subsoil at a depth of 29 to 36 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

*Depth to seasonal high water table (perched):* 20 to 36 inches in February through April

### Characteristics of the Driscoll Soil

*Position on landform:* Shoulders and footslopes
*Slope range:* 12 to 25 percent
*Typical profile:*
0 to 13 inches—dark grayish brown silt loam
13 to 27 inches—brown silt loam
27 to 31 inches—light gray, mottled silt loam
31 to 46 inches—pale brown, light brown, and light yellowish brown silty clay
46 to 60 inches—light yellowish brown and brownish yellow silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 18 to 36 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe
*Depth to seasonal high water table (perched):* 15 to 30 inches in January through April

### Contrasting Inclusions

- Larkin soils on north- and east-facing slopes of 20 to 25 percent (5 percent)
- Bluesprin soils on convex slopes of 12 to 30 percent (5 percent)
- Wilkins soils near drainageways (5 percent)

### Major Uses

Cropland, woodland, grazeable woodland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The dense silty clay loam subsoil of the Southwick soil restricts growth of deep-rooted crops such as alfalfa.
- The abrupt silty clay subsoil of the Driscoll soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

### Woodland

*Natural potential plant community:* Ponderosa pine/common snowberry
*Estimated average annual production of timber on the Southwick soil (CMAI):* Ponderosa pine—112 cubic feet per acre at 40 years of age
*Estimated average annual production of timber on the Driscoll soil (CMAI):* Ponderosa pine—132 cubic feet per acre at 40 years of age
*General management considerations:*
- Because of the dense silty clay loam subsoil of the Southwick soil and the abrupt silty clay subsoil of the Driscoll soil, trees on this unit are susceptible to windthrow.

### Grazeable Woodland

*Natural potential plant community:* Ponderosa pine/common snowberry
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### Capability Classification

4e, nonirrigated

## 122—Southwick-Larkin complex, 12 to 25 percent slopes

### Composition

*Southwick soil and similar inclusions:* 45 percent
*Larkin soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 2,400 to 3,400 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 125 days

### Characteristics of the Southwick Soil

*Position on landform:* North- and east-facing, commonly concave slopes
*Slope range:* 12 to 20 percent
*Typical profile:*
0 to 9 inches—dark grayish brown silt loam
9 to 26 inches—brown silt loam
26 to 32 inches—pale brown and light gray silt loam
32 to 46 inches—pale brown silty clay loam
46 to 64 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Moderate in the upper part, very slow in the lower part
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches

*Restriction to rooting depth:* Dense silty clay loam subsoil at a depth of 29 to 36 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe
*Depth to seasonal high water table (perched):* 20 to 36 inches in February through April

### Characteristics of the Larkin Soil

*Position on landform:* South- and west-facing, commonly convex slopes
*Slope range:* 12 to 25 percent
*Typical profile:*
0 to 15 inches—dark grayish brown silt loam
15 to 19 inches—yellowish brown silt loam
19 to 61 inches—brown and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Driscoll soils on convex slopes of 4 to 15 percent (10 percent)
- Latahco soils near drainageways (5 percent)

### Major Uses

Cropland, woodland, grazeable woodland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The dense silty clay loam subsoil of the Southwick soil restricts growth of deep-rooted crops such as alfalfa.

### Woodland

*Natural potential plant community:* Ponderosa pine/common snowberry
*Estimated average annual production of timber on the Southwick soil (CMAI):* Ponderosa pine—112 cubic feet per acre at 40 years of age
*Estimated average annual production of timber on the Larkin soil (CMAI):* Ponderosa pine—85 cubic feet per acre at 40 years of age
*General management considerations:*
- Because of the dense subsoil and the seasonal perched water table, trees on the Southwick soil are susceptible to windthrow.

### Grazeable Woodland

*Natural potential plant community:* Ponderosa pine/common snowberry
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### Capability Classification

4e, nonirrigated

## 123—Sweiting-Joel complex, 4 to 20 percent slopes

### Composition

*Sweiting soil and similar inclusions:* 65 percent
*Joel soil and similar inclusions:* 25 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 4,000 to 4,500 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 90 days

### Characteristics of the Sweiting Soil

*Position on landform:* South- and west-facing slopes
*Slope range:* 4 to 20 percent
*Typical profile:*
0 to 8 inches—dark grayish brown silt loam
8 to 12 inches—brown silt loam
12 to 23 inches—brown silty clay loam
23 to 31 inches—light yellowish brown very gravelly clay
31 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* Low
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### Characteristics of the Joel Soil

*Position on landform:* North- and east-facing slopes
*Slope range:* 4 to 20 percent
*Typical profile:*
0 to 5 inches—dark grayish brown silt loam
5 to 18 inches—brown and yellowish brown silt loam
18 to 24 inches—yellowish brown silt loam
24 to 60 inches—yellowish brown and light yellowish brown silty clay loam
*Depth class:* Very deep

*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### Contrasting Inclusions

- Boles soils on summits and toeslopes of 1 to 8 percent (5 percent)
- Larabee soils on south- and west-facing slopes of 15 to 30 percent (5 percent)

### Major Uses

Woodland, grazeable woodland, cropland, pastureland and hayland

### Woodland

*Natural potential plant community:* Sweiting soil—ponderosa pine/common snowberry; Joel soil—Douglas fir/mallow ninebark
*Estimated average annual production of timber on the Sweiting soil (CMAI):* Ponderosa pine—74 cubic feet per acre at 40 years of age
*Estimated average annual production of timber on the Joel soil (CMAI):* Ponderosa pine—122 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
*General management considerations:*
- The droughtiness of the Sweiting soil and the dry, south- and west-facing slopes limit productivity and the survival of seedlings.
- Because of the moderate rooting depth, trees on the Sweiting soil are susceptible to windthrow.

### Grazeable Woodland

*Natural potential plant community:* Sweiting soil—ponderosa pine/common snowberry; Joel soil—Douglas fir/mallow ninebark
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- The short growing season limits the production of some crops.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth of the Sweiting soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

### Pastureland and Hayland

*General management considerations:*
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The moderate rooting depth of the Sweiting soil limits the production of forage and results in droughtiness in dry years.

### Capability Classification

Sweiting soil—4e, nonirrigated; Joel soil—3e, nonirrigated

## 124—Talmaks silt loam, 2 to 8 percent slopes

### Composition

*Talmaks soil and similar inclusions:* 90 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Hills on plateaus
*Position on landform:* Broad ridgetops
*Slope range:* 2 to 8 percent
*Elevation:* 4,200 to 4,750 feet
*Average annual precipitation:* About 26 inches
*Frost-free season (32 degrees F):* About 70 days

### Characteristics of the Talmaks Soil

*Typical profile:*
0 to 3 inches—brown silt loam
3 to 16 inches—yellowish brown silt loam
16 to 47 inches—light yellowish brown silty clay loam and silt loam
47 to 70 inches—brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate

### Contrasting Inclusions

- Seddow soils on south- and west-facing slopes of 4 to 12 percent (5 percent)
- Carlinton soils that are on summits and have slopes of 1 to 4 percent (3 percent)
- Setters soils (2 percent)

### Major Uses

Woodland, grazeable woodland, pastureland and hayland, cropland

### Woodland

*Natural potential plant community:* Grand fir/longtube twinflower
*Estimated average annual production of timber (CMAI):* Ponderosa pine—106 cubic feet per acre at 40 years of age; Douglas fir—77 cubic feet per acre at 98 years of age; grand fir—122 cubic feet per acre at 103 years of age; western larch—not measured; lodgepole pine—not measured
*General management considerations:*
- This unit has few limitations for use as woodland.

### Grazeable Woodland

*Natural potential plant community:* Grand fir/longtube twinflower (fig. 14)
*General management considerations:*
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

### Pastureland and Hayland

*General management considerations:*
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- The short growing season limits the production of some crops.
- The hazard of erosion is a concern.

### Capability Classification

4e, nonirrigated

## 125—Talmaks silt loam, 8 to 20 percent slopes

### Composition

*Talmaks soil and similar inclusions:* 90 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Hills on plateaus
*Slope range:* 8 to 20 percent
*Elevation:* 4,200 to 4,750 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 70 days

### Characteristics of the Talmaks Soil

*Typical profile:*
0 to 3 inches—brown silt loam
3 to 16 inches—yellowish brown silt loam
16 to 47 inches—light yellowish brown silty clay loam and silt loam
47 to 70 inches—brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### Contrasting Inclusions

- Seddow soils on convex, west-facing slopes (10 percent)

### Major Uses

Woodland, grazeable woodland, cropland, pastureland and hayland

### Woodland

*Natural potential plant community:* Grand fir/longtube twinflower
*Estimated average annual production of timber (CMAI):* Ponderosa pine—106 cubic feet per acre at 40 years of age; Douglas fir—77 cubic feet per acre at 98 years of age; grand fir—122 cubic feet per acre at 103 years of age; western larch—not measured; lodgepole pine—not measured
*General management considerations:*
- This unit has few limitations for use as woodland.

### Grazeable Woodland

*Natural potential plant community:* Grand fir/longtube twinflower
*General management considerations:*
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- The short growing season limits the production of some crops.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

**Figure 14.—Characteristic native forest understory in an area of Talmaks silt loam, 2 to 8 percent slopes.**

### *Pastureland and Hayland*

*General management considerations:*

- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.

### *Capability Classification*

4e, nonirrigated

## 126—Talmaks-Seddow complex, 8 to 20 percent slopes

### *Composition*

*Talmaks soil and similar inclusions:* 45 percent
*Seddow soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 4,200 to 4,750 feet
*Average annual precipitation:* About 26 inches
*Frost-free season (32 degrees F):* About 70 days

### *Characteristics of the Talmaks Soil*

*Position on landform:* North- and east-facing slopes
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 3 inches—brown silt loam
3 to 16 inches—yellowish brown silt loam

16 to 47 inches—light yellowish brown silty clay loam and silt loam
47 to 70 inches—brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### Characteristics of the Seddow Soil

*Position on landform:* South- and west-facing slopes
*Slope range:* 8 to 20 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 4 inches—brown silt loam
4 to 13 inches—yellowish brown and light yellowish brown silt loam
13 to 21 inches—light yellowish brown silty clay loam
21 to 29 inches—dark yellowish brown gravelly clay loam
29 to 48 inches—dark yellowish brown extremely cobbly clay loam
48 inches—fractured basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 55 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### Contrasting Inclusions

- Larabee soils on convex, south- and west-facing slopes (10 percent)
- Culdesac soils on concave, north- and east-facing slopes (5 percent)

### Major Uses

Woodland, grazeable woodland

### Woodland

*Natural potential plant community:* Grand fir/longtube twinflower
*Estimated average annual production of timber on the Talmaks soil (CMAI):* Ponderosa pine—106 cubic feet per acre at 40 years of age; Douglas fir—77 cubic feet per acre at 98 years of age; grand fir—122 cubic feet per acre at 103 years of age; western larch—not measured; lodgepole pine—not measured
*Estimated average annual production of timber on the Seddow soil (CMAI):* Ponderosa pine—77 cubic feet per acre at 40 years of age; Douglas fir—51 cubic feet per acre at 107 years of age; grand fir—83 cubic feet per acre at 117 years of age; western larch—not measured; lodgepole pine—not measured
*General management considerations:*
- The restricted rooting depth and high content of coarse fragments in the Seddow soil limit the amount of water available for tree growth and thus limit productivity.
- Reforestation of the Seddow soil may be limited because of droughtiness.

### Grazeable Woodland

*Natural potential plant community:* Grand fir/longtube twinflower
*General management considerations:*
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

### Capability Classification

4e, nonirrigated

## 127—Tammany-Chard-Rock outcrop complex, 35 to 65 percent slopes

### Composition

*Tammany soil and similar inclusions:* 40 percent
*Chard soil and similar inclusions:* 30 percent
*Rock outcrop:* 15 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Dissected alluvial terraces
*Elevation:* 750 to 1,200 feet
*Average annual precipitation:* About 14 inches
*Frost-free season (32 degrees F):* About 180 days

### Characteristics of the Tammany Soil

*Slope range:* 35 to 65 percent
*Typical profile:*
0 to 4 inches—brown silt loam
4 to 17 inches—brown and yellowish brown very gravelly loam
17 to 29 inches—pale brown, calcareous extremely gravelly coarse sandy loam

29 to 60 inches—light gray, calcareous extremely gravelly coarse sand
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part, very rapid in the substratum
*Available water capacity:* Low
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Sand and gravel at a depth of 25 to 40 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Chard Soil

*Slope range:* 35 to 65 percent
*Typical profile:*
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part, rapid in the substratum
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe
*Sodicity:* Moderate

### Characteristics of the Rock Outcrop

*Position on landform:* Sharply convex slopes
*Slope range:* 35 to 65 percent
*Kind of rock:* Exposed basalt

### Contrasting Inclusions

- Moderately deep, loamy soils on convex slopes (10 percent)
- Limekiln soils near areas of Rock outcrop (5 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Tammany and Chard soils—bluebunch wheatgrass-Sandberg bluegrass; Rock outcrop—little or no vegetation
*General management considerations:*
- The steepness of slope and areas of Rock outcrop severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.
- Livestock distribution may be severely limited by the areas of Rock outcrop.
- The sodicity of the subsoil of the Chard soil causes some nutrients to become unavailable to plants.

### Capability Classification

Tammany and Chard soils—7e, nonirrigated; Rock outcrop—not assigned

## 128—Taney silt loam, 3 to 10 percent slopes

### Composition

*Taney soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus and canyon benches
*Position on landform:* Broad ridges
*Slope range:* 3 to 10 percent
*Elevation:* 2,600 to 3,500 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 110 days

### Characteristics of the Taney Soil

*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 14 inches—dark brown silt loam
14 to 23 inches—brown and pale brown silt loam
23 to 29 inches—very pale brown and white silt loam
29 to 36 inches—light yellowish brown silt loam fragipan
36 to 63 inches—light yellowish brown and yellowish brown silty clay loam
*Depth class:* Moderately deep to a fragipan
*Drainage class:* Moderately well drained
*Permeability:* Moderate above the fragipan, very slow through the fragipan
*Available water capacity:* Moderate
*Potential rooting depth:* 27 to 36 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate
*Depth to seasonal high water table (perched):* 23 to 30 inches in February through April

### Contrasting Inclusions

- Joel soils on convex, south-facing slopes (5 percent)

- Setters soils on summits and low-lying knobs (5 percent)
- Wilkins soils near drainageways (5 percent)

### Major Uses

Cropland, woodland, grazeable woodland, pastureland and hayland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- The hazard of erosion is a concern.
- The seasonal perched water table and the abundant precipitation in spring and fall limit the length of the field season.
- The fragipan restricts the growth of deep-rooted crops such as alfalfa.

### Woodland

*Natural potential plant community:* Douglas fir/common snowberry
*Estimated average annual production of timber (CMAI):* Ponderosa pine—104 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
*General management considerations:*
- Because of the fragipan and the seasonal perched water table, trees on this unit are susceptible to windthrow.

### Grazeable Woodland

*Natural potential plant community:* Douglas fir/common snowberry
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### Pastureland and Hayland

*General management considerations:*
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The fragipan restricts the growth of deep-rooted crops such as alfalfa.

### Capability Classification

4e, nonirrigated

## 129—Taney-Joel complex, 10 to 20 percent slopes

### Composition

*Taney soil and similar inclusions:* 50 percent
*Joel soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 2,600 to 3,500 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 110 days

### Characteristics of the Taney Soil

*Position on landform:* North- and east-facing, commonly concave slopes
*Slope range:* 10 to 20 percent
*Typical profile:*
- 0 to 7 inches—dark grayish brown silt loam
- 7 to 14 inches—dark brown silt loam
- 14 to 23 inches—brown and pale brown silt loam
- 23 to 29 inches—very pale brown and white silt loam
- 29 to 36 inches—light yellowish brown silt loam fragipan
- 36 to 63 inches—light yellowish brown and yellowish brown silty clay loam

*Depth class:* Moderately deep to a fragipan
*Drainage class:* Moderately well drained
*Permeability:* Moderate above the fragipan, very slow through the fragipan
*Available water capacity:* Moderate
*Potential rooting depth:* 27 to 36 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Depth to seasonal high water table (perched):* 23 to 30 inches in February through April

### Characteristics of the Joel Soil

*Position on landform:* South- and west-facing, commonly convex slopes
*Slope range:* 10 to 20 percent
*Typical profile:*
- 0 to 5 inches—dark grayish brown silt loam
- 5 to 18 inches—brown and yellowish brown silt loam
- 18 to 24 inches—yellowish brown silt loam
- 24 to 60 inches—yellowish brown and light yellowish brown silty clay loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Moderate or severe

### *Contrasting Inclusions*

- Setters soils that are on knobs and summits and have slopes of 5 to 15 percent (10 percent)
- Wilkins soils near drainageways (5 percent)

### *Major Uses*

Cropland, woodland, grazeable woodland, pastureland and hayland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils

*General management considerations:*

- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The seasonal perched water table in the Taney soil and the abundant precipitation in spring and fall limit the length of the field season.
- The fragipan restricts the growth of deep-rooted crops such as alfalfa.

### *Woodland*

*Natural potential plant community:* Taney soil—Douglas fir/common snowberry; Joel soil—Douglas fir/mallow ninebark

*Estimated average annual production of timber on the Taney soil (CMAI):* Ponderosa pine—104 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age

*Estimated average annual production of timber on the Joel soil (CMAI):* Ponderosa pine—110 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age

*General management considerations:*

- Because of the fragipan and the seasonal perched water table, trees on the Taney soil are susceptible to windthrow.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### *Grazeable Woodland*

*Natural potential plant community:* Taney soil—Douglas fir/common snowberry; Joel soil—Douglas fir/mallow ninebark

*General management considerations:*

- This unit has few limitations for use as grazeable woodland.

### *Pastureland and Hayland*

*General management considerations:*

- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The fragipan in the Taney soil restricts the growth of deep-rooted crops such as alfalfa.

### *Capability Classification*

4e, nonirrigated

## 130—Taney-Joel complex, 20 to 40 percent slopes

### *Composition*

*Taney soil and similar inclusions:* 50 percent
*Joel soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,300 to 3,800 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 110 days

### *Characteristics of the Taney Soil*

*Position on landform:* North- and east-facing slopes
*Slope range:* 20 to 30 percent
*Typical profile:*

0 to 7 inches—dark grayish brown silt loam
7 to 14 inches—dark brown silt loam
14 to 23 inches—brown and pale brown silt loam
23 to 29 inches—very pale brown and white silt loam
29 to 36 inches—light yellowish brown silt loam fragipan
36 to 63 inches—light yellowish brown and yellowish brown silty clay loam

*Depth class:* Moderately deep to a fragipan
*Drainage class:* Moderately well drained
*Permeability:* Moderate above the fragipan, very slow through the fragipan
*Available water capacity:* Moderate
*Potential rooting depth:* 27 to 36 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Depth to seasonal high water table (perched):* 23 to 30 inches in February through April

### *Characteristics of the Joel Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 20 to 40 percent
*Typical profile:*

0 to 5 inches—dark grayish brown silt loam
5 to 18 inches—brown and yellowish brown silt loam
18 to 24 inches—yellowish brown silt loam

24 to 60 inches—yellowish brown and light yellowish brown silty clay loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### Contrasting Inclusions

- Klickson soils on convex, commonly south- and west-facing slopes (5 percent)
- Setters soils on knobs and concave toeslopes (5 percent)

### Major Uses

Woodland, grazeable woodland, cropland, pastureland and hayland

### Woodland

*Natural potential plant community:* Taney soil—Douglas fir/common snowberry; Joel soil—Douglas fir/mallow ninebark
*Estimated average annual production of timber on the Taney soil (CMAI):* Ponderosa pine—104 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
*Estimated average annual production of timber on the Joel soil (CMAI):* Ponderosa pine—110 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age
*General management considerations:*
- Because of the fragipan and the seasonal perched water table, trees on the Taney soil are susceptible to windthrow.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### Grazeable Woodland

*Natural potential plant community:* Taney soil—Douglas fir/common snowberry; Joel soil—Douglas fir/mallow ninebark
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- Because of the erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The seasonal perched water table in the Taney soil and the abundant precipitation in spring and fall limit the length of the field season.
- The fragipan restricts the growth of deep-rooted crops such as alfalfa.

### Pastureland and Hayland

*General management considerations:*
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.
- The fragipan in the Taney soil restricts the growth of deep-rooted crops such as alfalfa.

### Capability Classification

6e, nonirrigated

## 131—Taney-Setters complex, 3 to 8 percent slopes

### Composition

*Taney soil and similar inclusions:* 50 percent
*Setters soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus, canyon benches (fig. 15)
*Elevation:* 2,600 to 4,000 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 110 days

### Characteristics of the Taney Soil

*Position on landform:* Plane to concave slopes
*Slope range:* 3 to 8 percent
*Typical profile:*

0 to 7 inches—dark grayish brown silt loam
7 to 14 inches—dark brown silt loam
14 to 23 inches—brown and pale brown silt loam
23 to 29 inches—very pale brown and white silt loam
29 to 36 inches—light yellowish brown silt loam fragipan
36 to 63 inches—light yellowish brown and yellowish brown silty clay loam

*Depth class:* Moderately deep to a fragipan
*Drainage class:* Moderately well drained
*Permeability:* Moderate above the fragipan, very slow through the fragipan
*Available water capacity:* Moderate
*Potential rooting depth:* 27 to 36 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate or severe

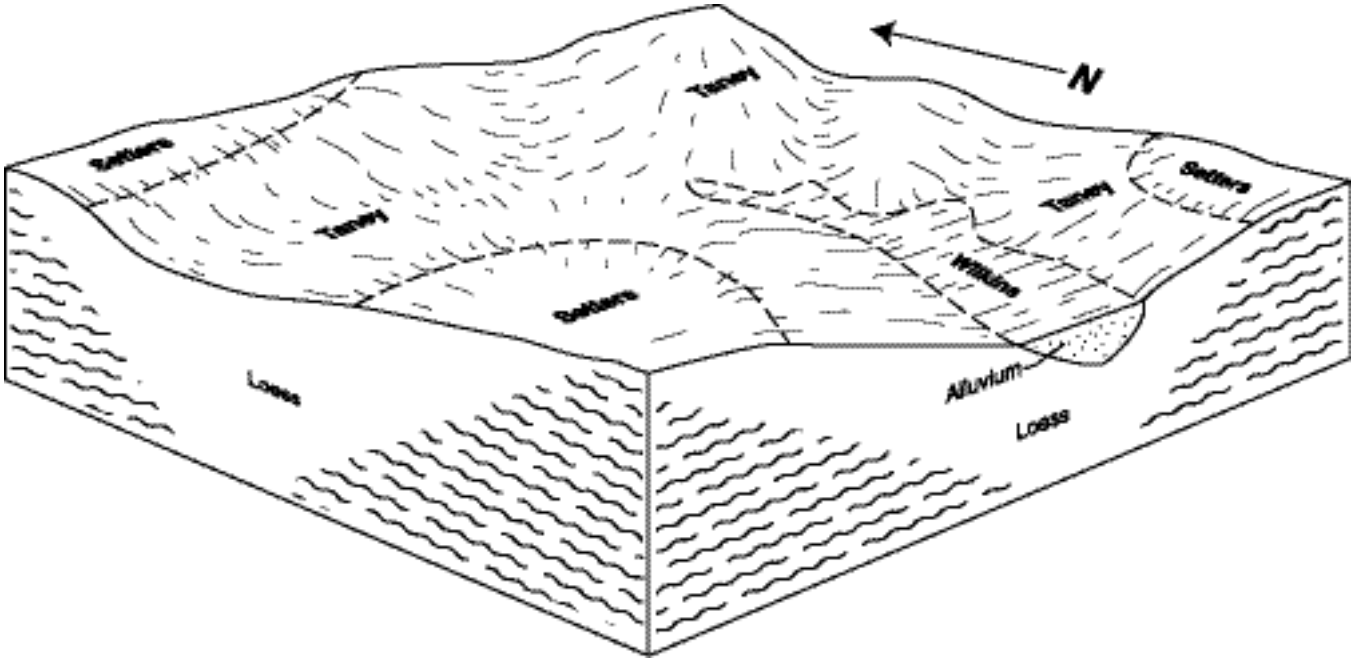


**Figure 15.—Landscape relationships among the Taney, Setters, and Wilkins soils in detailed soil map units 131, 132, and 152.**

*Depth to seasonal high water table (perched):* 23 to 30 inches in February through April

### Characteristics of the Setters Soil

*Position on landform:* Summits and convex slopes
*Slope range:* 3 to 8 percent
*Typical profile:*
0 to 12 inches—grayish brown and brown silt loam
12 to 17 inches—pale brown silt loam
17 to 19 inches—light brownish gray, mottled silt loam
19 to 49 inches—brown and pale brown silty clay
49 to 61 inches—pale brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Silty clay subsoil at a depth of 18 to 24 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate
*Depth to seasonal high water table (perched):* 14 to 22 inches in February through April

### Contrasting Inclusions

- Wilkins soils along drainageways (10 percent)
- Joel soils on north- and east-facing slopes of 4 to 15 percent (5 percent)

### Major Uses

Cropland (fig. 16), woodland, grazeable woodland, pastureland and hayland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- The hazard of erosion is a primary concern because of the moderate erodibility of the soil, limited depth of the Taney soil, and steepness of slope.
- The seasonal perched water table in the soils and the abundant precipitation in spring and fall limit the length of the field season.
- Wetness in spring increases the susceptibility of the soil to compaction if farm equipment is used.
- The fragipan in the Taney soil and the silty clay subsoil of the Setters soil restrict growth of deep-rooted crops such as alfalfa.

### Woodland

*Natural potential plant community:* Douglas fir/common snowberry
*Estimated average annual production of timber on the Taney soil (CMAI):* Ponderosa pine—104 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
*Estimated average annual production of timber on the Setters soil (CMAI):* Ponderosa pine—100 cubic feet per acre at 40 years of age;

Douglas fir—69 cubic feet per acre at 101 years of age

*General management considerations:*

• Because of the fragipan in the Taney soil and the silty clay subsoil of the Setters soil, trees on this unit are susceptible to windthrow.

### *Grazeable Woodland*

*Natural potential plant community:* Douglas fir/ common snowberry

*General management considerations:*

• This unit has few limitations for use as grazeable woodland.

### *Pastureland and Hayland*

*General management considerations:*

• The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.

• The fragipan in the Taney soil and the silty clay subsoil of the Setters soil restrict the growth of deep-rooted crops such as alfalfa.

### *Capability Classification*

4e, nonirrigated

## 132—Taney-Setters complex, 8 to 20 percent slopes

### *Composition*

*Taney soil and similar inclusions:* 55 percent
*Setters soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus (fig. 15)
*Elevation:* 2,600 to 4,000 feet
*Average annual precipitation:* About 25 inches
*Frost-free season (32 degrees F):* About 110 days

**Figure 16.—A grainfield in an area of Taney-Setters complex, 3 to 8 percent slopes, near Reubens. Grassed waterway in center is in an area of Wilkins soil.**

### *Characteristics of the Taney Soil*

*Position on landform:* Plane to concave slopes
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 14 inches—dark brown silt loam
14 to 23 inches—brown and pale brown silt loam
23 to 29 inches—very pale brown and white silt loam
29 to 36 inches—light yellowish brown silt loam fragipan
36 to 63 inches—light yellowish brown and yellowish brown silty clay loam
*Depth class:* Moderately deep to a fragipan
*Drainage class:* Moderately well drained
*Permeability:* Moderate above the fragipan, very slow through the fragipan
*Available water capacity:* Moderate
*Potential rooting depth:* 27 to 36 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe
*Depth to seasonal high water table (perched):* 23 to 30 inches in February through April

### *Characteristics of the Setters Soil*

*Position on landform:* Convex slopes and ridges
*Slope range:* 8 to 15 percent
*Typical profile:*
0 to 12 inches—grayish brown and brown silt loam
12 to 17 inches—pale brown silt loam
17 to 19 inches—light brownish gray, mottled silt loam
19 to 49 inches—brown and pale brown silty clay
49 to 61 inches—pale brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Silty clay subsoil at a depth of 18 to 24 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe
*Depth to seasonal high water table (perched):* 14 to 22 inches in February through April

### *Contrasting Inclusions*

- Joel soils on north- and east-facing slopes of 10 to 25 percent (5 percent)
- Cavendish soils on south- and west-facing slopes (5 percent)
- Wilkins soils near drainageways (5 percent)

### *Major Uses*

Cropland, woodland, grazeable woodland, pastureland and hayland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The seasonal perched water table in the soils and the abundant precipitation in spring and fall limit the length of the field season.
- Wetness in spring increases the susceptibility of the soil to compaction if farm equipment is used.
- The fragipan in the Taney soil and the silty clay subsoil of the Setters soil restrict growth of deep-rooted crops such as alfalfa.

### *Woodland*

*Natural potential plant community:* Douglas fir/common snowberry
*Estimated average annual production of timber on the Taney soil (CMAI):* Ponderosa pine—104 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
*Estimated average annual production of timber on the Setters soil (CMAI):* Ponderosa pine—100 cubic feet per acre at 40 years of age; Douglas fir—69 cubic feet per acre at 101 years of age
*General management considerations:*
- Because of the fragipan in the Taney soil and the silty clay subsoil of the Setters soil, trees on this unit are susceptible to windthrow.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

### *Grazeable Woodland*

*Natural potential plant community:* Douglas fir/common snowberry
*General management considerations:*
- This unit has few limitations for use as grazeable woodland.

### *Pastureland and Hayland*

*General management considerations:*
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The fragipan in the Taney soil and the silty clay subsoil of the Setters soil restrict the growth of deep-rooted crops such as alfalfa.

### *Capability Classification*

4e, nonirrigated

## 133—Thatuna-Naff complex, 10 to 25 percent slopes

### *Composition*

*Thatuna soil and similar inclusions:* 60 percent
*Naff soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,000 to 2,800 feet
*Average annual precipitation:* About 21 inches
*Frost-free season (32 degrees F):* About 130 days

### *Characteristics of the Thatuna Soil*

*Position on landform:* Plane to concave, commonly north-facing slopes
*Slope range:* 15 to 25 percent
*Typical profile:*
0 to 16 inches—very dark grayish brown silt loam
16 to 31 inches—brown silt loam
31 to 37 inches—pale brown silt loam
37 to 61 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay loam subsoil at a depth of 29 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Depth to seasonal high water table (perched):* 24 to 36 inches in February through April

### *Characteristics of the Naff Soil*

*Position on landform:* Convex slopes
*Slope range:* 10 to 20 percent
*Typical profile:*
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Latahco soils near drainageways (5 percent)
- Tilma soils on low-lying knobs (5 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- In many years, drifting snow collects on the concave slopes. Runoff from the melting snow can increase the risk of erosion in spring.

### *Capability Classification*

4e, nonirrigated

## 134—Thatuna-Naff, eroded complex, 10 to 25 percent slopes

### *Composition*

*Thatuna soil and similar inclusions:* 50 percent
*Naff soil, eroded, and similar inclusions:* 40 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,300 to 2,800 feet
*Average annual precipitation:* About 21 inches
*Frost-free season (32 degrees F):* About 130 days

### *Characteristics of the Thatuna Soil*

*Position on landform:* Plane to concave, north- and east-facing slopes
*Slope range:* 15 to 25 percent
*Typical profile:*
0 to 16 inches—very dark grayish brown silt loam
16 to 31 inches—brown silt loam
31 to 37 inches—pale brown silt loam
37 to 61 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay loam subsoil at a depth of 29 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Depth to seasonal high water table (perched):* 24 to 36 inches in February through April

### *Characteristics of the Naff Soil, Eroded*

*Position on landform:* Plane to convex, west-facing slopes
*Slope range:* 10 to 20 percent
*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 12 inches—brown silt loam
12 to 20 inches—yellowish brown silty clay loam
20 to 60 inches—light yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Latahco soils near drainageways (5 percent)
- Tilma soils on lower lying knobs (5 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- In many years, drifting snow collects on the concave slopes. Runoff from the melting snow can increase the risk of erosion in spring.
- As a result of past erosion, part or all of the surface layer of the Naff soil has reduced fertility and tilth.

### *Capability Classification*

4e, nonirrigated

## 135—Thatuna-Naff complex, 25 to 40 percent slopes

### *Composition*

*Thatuna soil and similar inclusions:* 60 percent
*Naff soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,300 to 2,800 feet
*Average annual precipitation:* About 21 inches
*Frost-free season (32 degrees F):* About 130 days

### *Characteristics of the Thatuna Soil*

*Position on landform:* Plane to concave, north- and east-facing slopes
*Slope range:* 25 to 40 percent
*Typical profile:*
0 to 16 inches—very dark grayish brown silt loam
16 to 31 inches—brown silt loam
31 to 37 inches—pale brown silt loam
37 to 61 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay loam subsoil at a depth of 29 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Depth to seasonal high water table (perched):* 24 to 36 inches in February through April

### *Characteristics of the Naff Soil*

*Position on landform:* Plane to convex, west-facing slopes
*Slope range:* 25 to 40 percent
*Typical profile:*
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Latahco soils near drainageways (5 percent)
- Tilma soils on low-lying knobs (5 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley
*General management considerations:*

- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- In many years, drifting snow collects on the concave slopes. Runoff from melting snow can increase the risk of erosion in spring.
- Because of the seasonal perched water table and the steepness of slope, the Thatuna soil is susceptible to slumping during wet periods.

### *Capability Classification*

6e, nonirrigated

## 136—Thatuna-Naff-Tilma complex, 10 to 25 percent slopes

### *Composition*

*Thatuna soil and similar inclusions:* 45 percent
*Naff soil and similar inclusions:* 25 percent
*Tilma soil and similar inclusions:* 20 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,300 to 2,800 feet
*Average annual precipitation:* About 21 inches
*Frost-free season (32 degrees F):* About 130 days

### *Characteristics of the Thatuna Soil*

*Position on landform:* Plane to concave, north- and east-facing slopes
*Slope range:* 15 to 25 percent
*Typical profile:*
0 to 16 inches—very dark grayish brown silt loam
16 to 31 inches—brown silt loam
31 to 37 inches—pale brown silt loam
37 to 61 inches—yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay loam subsoil at a depth of 29 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Depth to seasonal high water table (perched):* 24 to 36 inches in February through April

### *Characteristics of the Naff Soil*

*Position on landform:* Plane to convex slopes
*Slope range:* 10 to 20 percent
*Typical profile:*
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### *Characteristics of the Tilma Soil*

*Position on landform:* Lower-lying convex knobs
*Slope range:* 10 to 15 percent
*Typical profile:*
0 to 16 inches—brown and dark grayish brown silt loam
16 to 23 inches—brown silt loam
23 to 25 inches—light gray silt loam
25 to 42 inches—yellowish brown silty clay
42 to 60 inches—light yellowish brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 18 to 26 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe
*Depth to seasonal high water table (perched):* 16 to 28 inches in November through April

### *Contrasting Inclusions*

- Garfield soils on lower lying, convex knobs (5 percent)
- Latahco soils near drainageways (5 percent)

### *Major Use*

Cropland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils

*General management considerations:*
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• In many years, drifting snow collects on the concave slopes. Runoff from melting snow can increase the risk of erosion in spring.
• The abrupt silty clay subsoil of the Tilma soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

### Capability Classification

4e, nonirrigated

## 137—Tombeall silt loam, 0 to 4 percent slopes

### Composition

*Tombeall soil and similar inclusions:* 95 percent
*Contrasting inclusions:* 5 percent

### Setting

*Landform:* Low terraces and flood plains
*Slope range:* 0 to 4 percent
*Elevation:* 800 to 1,200 feet
*Average annual precipitation:* About 18 inches
*Frost-free season (32 degrees F):* About 170 days

### Characteristics of the Tombeall Soil

*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—dark grayish brown silt loam
17 to 28 inches—dark grayish brown, mottled sandy loam
28 to 35 inches—brown, mottled very gravelly sandy loam
35 to 60 inches—grayish brown extremely gravelly sandy loam
*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Permeability:* Moderate
*Available water capacity:* Low
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Seasonal high water table at a depth of 12 to 30 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (apparent):* 12 to 30 inches in February through April
*Frequency of flooding:* Rare

### Contrasting Inclusions

• Joseph soils on gravel bars and low rises (5 percent)

### Major Uses

Pastureland, hayland, cropland, rangeland

### Pastureland and Hayland

*General management considerations:*
• Periodic flooding and the seasonal high water table limit the choice of plants that are suitable for maximum production of forage.
• Because of wetness in spring, this unit is susceptible to soil compaction and plant damage caused by livestock trampling.

### Cropland

*Commonly grown crops:* Wheat, barley
*General management considerations:*
• Wetness limits the production of crops in some years.

### Rangeland

*Natural potential plant community:* Tufted hairgrass-sedge
*General management considerations:*
• Because of the seasonal high water table, this unit is susceptible to soil compaction during wet periods.

### Capability Classification

3w, nonirrigated

## 138—Uhlig silt loam, 2 to 8 percent slopes

### Composition

*Uhlig soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Dissected alluvial terraces
*Position on landform:* Broad ridges and low terraces
*Slope range:* 2 to 8 percent
*Elevation:* 800 to 1,300 feet
*Average annual precipitation:* About 18 inches
*Frost-free season (32 degrees F):* About 160 days

### Characteristics of the Uhlig Soil

*Typical profile:*
0 to 15 inches—dark grayish brown and grayish brown silt loam
15 to 25 inches—brown loam
25 to 39 inches—pale brown very fine sandy loam

39 to 68 inches—pale brown and light yellowish brown very fine sandy loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate

### Contrasting Inclusions

- Lapwai soils on low terraces and flood plains (10 percent)
- Bridgewater soils on flood plains (5 percent)

### Major Uses

Cropland, building site development

### Cropland

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
- Because of the moderate erodibility of the soil, the hazard of erosion is a primary concern.

### Building Site Development

*General management considerations:*
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.

### Capability Classification

2e, nonirrigated

## 139—Uhlig silt loam, 8 to 20 percent slopes

### Composition

*Uhlig soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Dissected alluvial terraces
*Slope range:* 8 to 20 percent
*Elevation:* 800 to 1,300 feet
*Average annual precipitation:* About 18 inches
*Frost-free season (32 degrees F):* About 160 days

### Characteristics of the Uhlig Soil

*Typical profile:*

0 to 15 inches—dark grayish brown and grayish brown silt loam

15 to 25 inches—brown loam

25 to 39 inches—pale brown very fine sandy loam

39 to 68 inches—pale brown and light yellowish brown very fine sandy loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### Contrasting Inclusions

- Bridgewater soils on flood plains (5 percent)
- Chard soils on convex, south- and west-facing slopes (5 percent)
- Waha soils on steep slopes of drainageways (5 percent)

### Major Uses

Cropland, rangeland

### Cropland

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### Rangeland

*Natural potential plant community:* Idaho fescue/forbs
*General management considerations:*
- This unit has few limitations for use as rangeland.

### Capability Classification

3e, nonirrigated

## 140—Uhlig silt loam, 20 to 35 percent slopes

### Composition

*Uhlig soil and similar inclusions:* 90 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Dissected alluvial terraces
*Slope range:* 20 to 35 percent
*Elevation:* 800 to 1,300 feet
*Average annual precipitation:* About 18 inches
*Frost-free season (32 degrees F):* About 160 days

### Characteristics of the Uhlig Soil

*Typical profile:*

0 to 15 inches—dark grayish brown and grayish brown silt loam

15 to 25 inches—brown loam
25 to 39 inches—pale brown very fine sandy loam
39 to 68 inches—pale brown and light yellowish brown very fine sandy loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Chard soils on south- and west-facing, convex slopes (5 percent)
- Waha soils on slopes of 20 to 45 percent (5 percent)

### Major Uses

Cropland, rangeland

### Cropland

*Commonly grown crops:* Wheat, barley, peas
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### Rangeland

*Natural potential plant community:* Idaho fescue/forbs
*General management considerations:*
- This unit has few limitations for use as rangeland.

### Capability Classification

6e, nonirrigated

## 141—Uhlorn silt loam, 8 to 20 percent slopes

### Composition

*Uhlorn soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Slope range:* 8 to 20 percent
*Elevation:* 2,900 to 4,100 feet
*Average annual precipitation:* About 22 inches
*Frost-free season (32 degrees F):* About 115 days

### Characteristics of the Uhlorn Soil

*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—grayish brown and brown silt loam
17 to 23 inches—yellowish brown silt loam
23 to 55 inches—light yellowish brown and brown silty clay loam
55 to 69 inches—brown silty clay loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### Contrasting Inclusions

- Nez Perce soils on shoulders and convex slopes of 2 to 12 percent (10 percent)
- Westlake and Wilkins soils in drainageways (5 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

### Capability Classification

3e, nonirrigated

## 142—Uhlorn-Nez Perce complex, 2 to 10 percent slopes

### Composition

*Uhlorn soil and similar inclusions:* 60 percent
*Nez Perce soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 10 percent

### Setting

*Landform:* Hills on plateaus (fig. 17)
*Elevation:* 2,600 to 4,100 feet
*Average annual precipitation:* About 22 inches
*Frost-free season (32 degrees F):* About 115 days

### Characteristics of the Uhlorn Soil

*Position on landform:* Plane to concave slopes
*Slope range:* 2 to 10 percent
*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—grayish brown and brown silt loam
17 to 23 inches—yellowish brown silt loam

23 to 55 inches—light yellowish brown and brown silty clay loam
55 to 69 inches—brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Moderate

### Characteristics of the Nez Perce Soil

*Position on landform:* Summits and convex slopes
*Slope range:* 2 to 10 percent
*Typical profile:*
0 to 11 inches—dark grayish brown silty clay loam
11 to 15 inches—brown silt loam
15 to 21 inches—light brownish gray silt loam
21 to 31 inches—brown silty clay
31 to 66 inches—brown and pale brown, calcareous silty clay
*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 14 to 27 inches
*Runoff:* Medium
*Hazard of water erosion:* Moderate
*Depth to seasonal high water table (perched):* 12 to 20 inches in February through April
*Sodicity:* Slight

### Contrasting Inclusions

- Vollmer soils on footslopes and ridges (5 percent)
- Latahco and Wilkins soils in drainageways (5 percent)

### Major Use

Cropland (fig. 18)

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- The hazard of erosion is a concern.
- The abrupt silty clay subsoil of the Nez Perce soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.
- The sodicity of the subsoil of the Nez Perce soil causes some nutrients to become unavailable to plants.

### Capability Classification

2e, nonirrigated

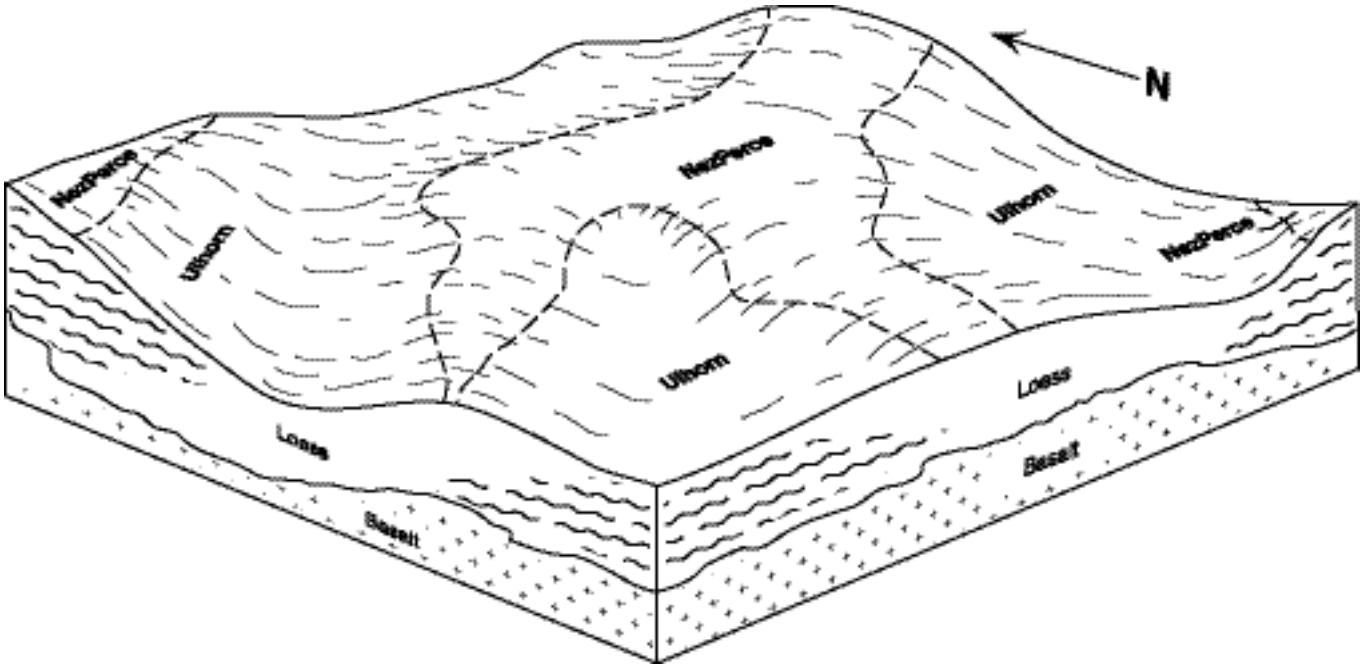


**Figure 17.—Typical pattern of the soils in Uhlorn-Nez Perce complex, 2 to 10 percent slopes.**

**Figure 18.—An area of Uhlorn-Nez Perce complex, 2 to 10 percent slopes, southeast of Craigmont, that is used as cropland. Mason Butte is in background.**

## 143—Uhlorn-Nez Perce complex, 10 to 20 percent slopes

### *Composition*

*Uhlorn soil and similar inclusions:* 55 percent
*Nez Perce soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus
*Elevation:* 2,600 to 4,100 feet
*Average annual precipitation:* About 22 inches
*Frost-free season (32 degrees F):* About 115 days

### *Characteristics of the Uhlorn Soil*

*Position on landform:* Plane to concave slopes
*Slope range:* 10 to 20 percent
*Typical profile:*
- 0 to 7 inches—dark grayish brown silt loam
- 7 to 17 inches—grayish brown and brown silt loam
- 17 to 23 inches—yellowish brown silt loam
- 23 to 55 inches—light yellowish brown and brown silty clay loam
- 55 to 69 inches—brown silty clay loam

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### *Characteristics of the Nez Perce Soil*

*Position on landform:* Shoulders and footslopes
*Slope range:* 10 to 20 percent
*Typical profile:*
- 0 to 11 inches—dark grayish brown silty clay loam
- 11 to 15 inches—brown silt loam
- 15 to 21 inches—light brownish gray silt loam
- 21 to 31 inches—brown silty clay
- 31 to 66 inches—brown and pale brown, calcareous silty clay

*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches

*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 14 to 27 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe
*Depth to seasonal high water table (perched):* 12 to 20 inches in February through April
*Sodicity:* Slight

### Contrasting Inclusions

• Keuterville soils on north-facing slopes on Webb Ridge (5 percent)
• Vollmer soils on convex, south- and west-facing slopes (5 percent)
• Wilkins and Latahco soils in drainageways (5 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• The abrupt silty clay subsoil of the Nez Perce soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.
• The sodicity of the subsoil of the Nez Perce soil causes some nutrients to become unavailable to plants.

### Capability Classification

Uhlorn soil—3e, nonirrigated; Nez Perce soil—4e, nonirrigated

## 144—Uhlorn-Vollmer complex, 8 to 20 percent slopes

### Composition

*Uhlorn soil and similar inclusions:* 50 percent
*Vollmer soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 2,600 to 4,100 feet
*Average annual precipitation:* About 22 inches
*Frost-free season (32 degrees F):* About 115 days

### Characteristics of the Uhlorn Soil

*Position on landform:* North-, east-, and west-facing slopes
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—grayish brown and brown silt loam
17 to 23 inches—yellowish brown silt loam
23 to 55 inches—light yellowish brown and brown silty clay loam
55 to 69 inches—brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### Characteristics of the Vollmer Soil

*Position on landform:* South- and west-facing, commonly convex slopes
*Slope range:* 8 to 20 percent
*Typical profile:*
0 to 12 inches—grayish brown and brown silt loam
12 to 28 inches—brown silt loam
28 to 36 inches—pale brown cobbly silt loam
36 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

• Nez Perce soils on shoulders and convex footslopes (10 percent)
• Bluesprin soils on convex, south- and west-facing slopes of 15 to 30 percent (3 percent)
• Westlake and Latahco soils in drainageways (2 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• The moderate rooting depth of the Vollmer soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

### *Capability Classification*

Uhlorn soil—3e, nonirrigated; Vollmer soil—4e, nonirrigated

## 145—Urban land-Wistona complex, nearly level

### *Composition*

*Urban land:* 70 percent
*Wistona soil and similar inclusions:* 20 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Low terraces and flood plains
*Elevation:* 730 to 800 feet
*Average annual precipitation:* About 13 inches
*Frost-free season (32 degrees F):* About 185 days

### *Characteristics of the Urban Land*

*Slope range:* 0 to 3 percent
*Description of areas:* Streets, buildings, parking lots, and other structures within the city of Lewiston

### *Characteristics of the Wistona Soil*

*Slope range:* 0 to 3 percent
*Typical profile:*
0 to 8 inches—brown very fine sandy loam
8 to 45 inches—brown and yellowish brown fine sandy loam
45 to 51 inches—brown, calcareous sandy loam
51 to 64 inches—brown, calcareous fine sandy loam and sandy loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight
*Frequency of flooding:* Rare
*Sodicity:* Slight

### *Contrasting Inclusions*

- Bridgewater soils (10 percent)

### *Major Use*

Building site development

### *Building Site Development*

*General management considerations:*
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The sodicity of the subsoil of the Wistona soil causes some nutrients to become unavailable to plants.
- This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.

### *Capability Classification*

Urban land—not assigned; Wistona soil—3w, nonirrigated

## 146—Uvi silt loam, 35 to 75 percent slopes

### *Composition*

*Uvi soil and similar inclusions:* 90 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Canyons
*Position on landform:* North-facing slopes
*Slope range:* 35 to 75 percent
*Elevation:* 1,400 to 3,400 feet
*Average annual precipitation:* About 26 inches
*Frost-free season (32 degrees F):* About 110 days

### *Characteristics of the Uvi Soil*

*Typical profile:*
0 to 4 inches—brown silt loam
4 to 35 inches—yellowish brown loam
35 to 55 inches—brownish yellow loam
55 to 65 inches—very pale brown very gravelly loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Moderate
*Potential rooting depth:* More than 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Carlinton soils on shoulders and footslopes of 15 to 40 percent (5 percent)
- Johnson soils on northwest-facing slopes (5 percent)

### *Major Uses*

Woodland, grazeable woodland

### *Woodland*

*Natural potential plant community:* Grand fir/mallow ninebark
*Estimated average annual production of timber (CMAI):* Grand fir—66 cubic feet per acre at 120

years of age; Douglas fir—81 cubic feet per acre at 97 years of age; ponderosa pine—not measured

*General management considerations:*

• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.

• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

### *Grazeable Woodland*

*Natural potential plant community:* Grand fir/mallow ninebark

*General management considerations:*

• The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

• The steepness of slope severely limits construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

### *Capability Classification*

7e, nonirrigated

## 147—Vollmer silt loam, 3 to 10 percent slopes

### *Composition*

*Vollmer soil and similar inclusions:* 85 percent

*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus

*Position on landform:* Broad summits

*Slope range:* 3 to 10 percent

*Elevation:* 2,600 to 3,300 feet

*Average annual precipitation:* About 22 inches

*Frost-free season (32 degrees F):* About 140 days

### *Characteristics of the Vollmer Soil*

*Typical profile:*

0 to 12 inches—grayish brown and brown silt loam

12 to 28 inches—brown silt loam

28 to 36 inches—pale brown cobbly silt loam

36 inches—basalt

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Available water capacity:* Moderate

*Potential rooting depth:* 20 to 40 inches

*Runoff:* Medium

*Hazard of water erosion:* Severe

### *Contrasting Inclusions*

• Uhlorn soils on concave slopes of 3 to 20 percent (10 percent)

• Kettenbach soils on south- and west-facing, convex slopes of 8 to 15 percent (3 percent)

• Gwin soils that are on convex knobs and have slopes of 3 to 15 percent (2 percent)

### *Major Uses*

Cropland, pastureland and hayland

### *Cropland*

*Commonly grown crops:* Wheat, barley, peas, lentils

*General management considerations:*

• Because of the moderate erodibility of the soil, limited soil depth, and steepness of slope, the hazard of erosion is a primary concern.

• The moderate rooting depth restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

### *Pastureland and Hayland*

*General management considerations:*

• The moderate rooting depth limits the production of forage and results in droughtiness in dry years.

### *Capability Classification*

4e, nonirrigated

## 148—Vollmer silt loam, 10 to 20 percent slopes

### *Composition*

*Vollmer soil and similar inclusions:* 85 percent

*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Hills on plateaus

*Position on landform:* South- and west-facing, commonly convex slopes

*Slope range:* 10 to 20 percent

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

*Average annual precipitation:* About 22 inches

*Frost-free season (32 degrees F):* About 115 days

### *Characteristics of the Vollmer Soil*

*Typical profile:*

0 to 12 inches—grayish brown and brown silt loam

12 to 28 inches—brown silt loam

28 to 36 inches—pale brown cobbly silt loam
36 inches—basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Severe

### Contrasting Inclusions

- Uhlorn soils on plane to concave slopes (5 percent)
- Nez Perce soils on summits (5 percent)
- Gwin soils on convex slopes (5 percent)

### Major Use

Cropland

### Cropland

*Commonly grown crops:* Wheat, barley, peas, lentils
*General management considerations:*
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

### Capability Classification

4e, nonirrigated

## 149—Watama-Flybow complex, 10 to 35 percent slopes

### Composition

*Watama soil and similar inclusions:* 45 percent
*Flybow soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 2,900 to 3,500 feet
*Average annual precipitation:* About 21 inches
*Frost-free season (32 degrees F):* About 120 days

### Characteristics of the Watama Soil

*Position on landform:* Mounds in areas of patterned ground
*Slope range:* 10 to 35 percent
*Typical profile:*
0 to 11 inches—dark grayish brown silt loam
11 to 34 inches—grayish brown and brown silt loam
34 to 38 inches—yellowish brown gravelly silt loam
38 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Moderate
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Flybow Soil

*Position on landform:* Intermound areas of patterned ground
*Slope range:* 10 to 35 percent
*Typical profile:*
0 to 2 inches—dark brown very gravelly silt loam
2 to 4 inches—brown very gravelly silt loam
4 inches—basalt
*Depth class:* Very shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Very low
*Potential rooting depth:* 4 to 10 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Gwin soils between mounds (10 percent)
- Rock outcrop between mounds (5 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Watama soil—Idaho fescue-bluebunch wheatgrass; Flybow soil—Sandberg bluegrass/forbs
*General management considerations:*
- The very shallow depth and content of rock fragments in the surface layer of the Flybow soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds. Because of these limitations, the Flybow soil also is very poorly suited to range seeding.
- The very low available water capacity of the Flybow soil limits the production of forage.

### Capability Classification

Watama soil—4e, nonirrigated; Flybow soil—7s, nonirrigated

## 150—Webbridge-Agatha association, 35 to 75 percent slopes

### *Composition*

*Webbridge soil and similar inclusions:* 50 percent
*Agatha soil and similar inclusions:* 30 percent
*Contrasting inclusions:* 20 percent

### *Setting*

*Landform:* Canyons
*Elevation:* 3,900 to 5,000 feet
*Average annual precipitation:* About 28 inches
*Frost-free season (32 degrees F):* About 65 days

### *Characteristics of the Webbridge Soil*

*Position on landform:* North- and east-facing slopes
*Slope range:* 35 to 75 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 3 inches—light yellowish brown silt loam
3 to 17 inches—light yellowish brown silt loam
17 to 24 inches—yellowish brown cobbly clay loam
24 to 34 inches—yellowish brown very cobbly clay loam
34 to 53 inches—yellowish brown extremely cobbly loam
53 inches—fractured basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Moderate or severe

### *Characteristics of the Agatha Soil*

*Position on landform:* South- and west-facing slopes
*Slope range:* 35 to 75 percent
*Typical profile:*
1 inch to 0—organic mat
0 to 15 inches—brown loam
15 to 23 inches—brown cobbly clay loam
23 to 47 inches—light brown very cobbly clay loam and extremely cobbly loam
47 inches—fractured basalt
*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Available water capacity:* Moderate
*Potential rooting depth:* 40 to 60 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### *Contrasting Inclusions*

- Aquolls in drainageways (5 percent)
- Culdesac soils on gentle, concave slopes (5 percent)
- Klickson soils on south- and west-facing slopes (5 percent)
- Larabee soils on ridges and convex slopes (5 percent)

### *Major Uses*

Woodland, grazeable woodland

### *Woodland*

*Natural potential plant community:* Webbridge soil—grand fir/queencup beadlily; Agatha soil—grand fir/mallow ninebark
*Estimated average annual production of timber on the Webbridge soil (CMAI):* Douglas fir—36 cubic feet per acre at 113 years of age; grand fir—59 cubic feet per acre at 121 years of age; Engelmann spruce—89 cubic feet per acre at 90 years of age
*Estimated average annual production of timber on the Agatha soil (CMAI):* Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—85 cubic feet per acre at 116 years of age; western larch—not measured
*General management considerations:*
- Because the volcanic ash surface layer of the Webbridge soil is fragile, excessive disturbance or compaction will reduce productivity and seedling survival.
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- When openings are made in the canopy, the invasion of brushy plants can hinder natural regeneration of trees on the Agatha soil.

### *Grazeable Woodland*

*Natural potential plant community:* Webbridge soil—grand fir/queencup beadlily; Agatha soil—grand fir/mallow ninebark
*General management considerations:*
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.
- The steepness of slope severely limits construction of improvements such as fences, water pipelines, and

stock water ponds and may restrict the movement of livestock.
• The volcanic ash surface layer of the Webbridge soil is easily compacted during wet periods.

### *Capability Classification*

7e, nonirrigated

## 151—Westlake-Latahco complex, 0 to 3 percent slopes

### *Composition*

*Westlake soil and similar inclusions:* 50 percent
*Latahco soil and similar inclusions:* 40 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Drainageways on plateaus
*Elevation:* 2,500 to 4,200 feet
*Average annual precipitation:* About 22 inches
*Frost-free season (32 degrees F):* About 110 days

### *Characteristics of the Westlake Soil*

*Position on landform:* Narrow, low-lying areas near drainageway channels
*Slope range:* 0 to 3 percent
*Typical profile:*
0 to 10 inches—dark gray silt loam
10 to 21 inches—dark gray silt loam
21 to 49 inches—gray and light gray, mottled silt loam
49 to 64 inches—light gray, mottled silt loam
*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Seasonal high water table at a depth of 18 to 30 inches
*Runoff:* Very slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (apparent):* 18 to 30 inches in February through May
*Frequency of flooding:* Occasional in February through April

### *Characteristics of the Latahco Soil*

*Position on landform:* Higher areas and toeslopes above drainageway channels
*Slope range:* 0 to 3 percent
*Typical profile:*
0 to 13 inches—very dark grayish brown silt loam
13 to 22 inches—very dark gray silt loam
22 to 35 inches—light brownish gray and white silt loam
35 to 43 inches—grayish brown, mottled silt loam
43 to 60 inches—pale brown silty clay loam
*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Permeability:* Moderately slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silt loam subsoil at a depth of 18 to 35 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (perched):* 18 to 34 inches in February through May
*Frequency of flooding:* Occasional in February through April

### *Contrasting Inclusions*

• Poorly drained soils that have stratified textures and are in depressions and near stream channels (10 percent)

### *Major Uses*

Pastureland, hayland, cropland, rangeland

### *Pastureland and Hayland*

*General management considerations:*
• Periodic flooding and the seasonal high water table limit the choice of plants that are suitable for maximum production of forage.
• Because of wetness in spring, this unit is susceptible to soil compaction and plant damage as a result of livestock trampling.

### *Cropland*

*Commonly grown crops:* Wheat, barley
*General management considerations:*
• Wetness limits the production of crops in some years.
• Because of wetness in spring, this unit is susceptible to compaction if farm equipment is used.

### *Rangeland*

*Natural potential plant community:* Tufted hairgrass-sedge
*General management considerations:*
• The cold temperatures reduce plant growth in spring. The grazing season is limited to summer and fall.
• Because of the seasonal high water table, this unit is susceptible to soil compaction during wet periods.

### *Capability Classification*

3w, nonirrigated

## 152—Wilkins silt loam, 0 to 5 percent slopes

### *Composition*

*Wilkins soil and similar inclusions:* 85 percent
*Contrasting inclusions:* 15 percent

### *Setting*

*Landform:* Drainageways on plateaus (fig. 15)
*Slope range:* 0 to 5 percent
*Elevation:* 2,800 to 4,500 feet
*Average annual precipitation:* About 24 inches
*Frost-free season (32 degrees F):* About 100 days

### *Characteristics of the Wilkins Soil*

*Typical profile:*
0 to 15 inches—dark grayish brown silt loam
15 to 20 inches—light gray silt loam
20 to 26 inches—pale brown and grayish brown silty clay
26 to 52 inches—light gray and light brownish gray, mottled silty clay
52 to 64 inches—light olive gray, mottled clay loam
*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Permeability:* Very slow
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Restriction to rooting depth:* Abrupt silty clay subsoil at a depth of 18 to 30 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight
*Depth to seasonal high water table (perched):* 15 to 20 inches in February through May
*Frequency of flooding:* Occasional in March through May

### *Contrasting Inclusions*

- Setters soils on toeslopes of adjacent hills (5 percent)
- Westlake soils on flood plains (5 percent)
- Taney soils on toeslopes and footslopes of adjacent hills (3 percent)
- Poorly drained soils in drainageways (2 percent)

### *Major Uses*

Pastureland, hayland, cropland, rangeland

### *Pastureland and Hayland*

*General management considerations:*
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- Periodic flooding and the seasonal high water table limit the choice of plants that are suitable for maximum production of forage.
- Because of wetness in spring, this unit is susceptible to soil compaction and plant damage caused by livestock trampling.

### *Cropland*

*Commonly grown crops:* Wheat, barley
*General management considerations:*
- The short growing season limits the production of some crops.
- Wetness limits the production of crops in some years.
- The abrupt silty clay subsoil restricts the growth of deep-rooted crops.

### *Rangeland*

*Natural potential plant community:* Tufted hairgrass-sedge
*General management considerations:*
- The cold temperatures limit plant growth in spring. The grazing season is limited to summer and fall.
- Because of the seasonal high water table, this unit is susceptible to soil compaction during wet periods.

### *Capability Classification*

4w, nonirrigated

## 153—Wistona very fine sandy loam, 0 to 3 percent slopes

### *Composition*

*Wistona soil and similar inclusions:* 90 percent
*Contrasting inclusions:* 10 percent

### *Setting*

*Landform:* Low terraces and flood plains
*Slope range:* 0 to 3 percent
*Elevation:* 720 to 1,240 feet
*Average annual precipitation:* About 13 inches
*Frost-free season (32 degrees F):* About 185 days

### *Characteristics of the Wistona Soil*

*Typical profile:*
0 to 8 inches—brown very fine sandy loam
8 to 45 inches—brown and yellowish brown fine sandy loam
45 to 51 inches—brown, calcareous sandy loam

51 to 64 inches—brown, calcareous fine sandy loam and sandy loam
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* High
*Potential rooting depth:* More than 60 inches
*Runoff:* Slow
*Hazard of water erosion:* Slight
*Frequency of flooding:* Rare
*Sodicity:* Slight

### Contrasting Inclusions

- Bridgewater soils (5 percent)
- Lapwai soils (3 percent)
- Aquents near river channels (2 percent)

### Major Uses

Building site development, rangeland

### Building Site Development

*General management considerations:*
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.
- This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.

### Rangeland

*Natural potential plant community:* Bluebunch wheatgrass-Sandberg bluegrass
*General management considerations:*
- This unit has few limitations for use as rangeland.

### Capability Classification

3w, nonirrigated

## 154—Zaza-Sweiting complex, 4 to 20 percent slopes

### Composition

*Zaza soil and similar inclusions:* 50 percent
*Sweiting soil and similar inclusions:* 35 percent
*Contrasting inclusions:* 15 percent

### Setting

*Landform:* Hills on plateaus
*Elevation:* 4,200 to 4,400 feet
*Average annual precipitation:* About 26 inches
*Frost-free season (32 degrees F):* About 80 days

### Characteristics of the Zaza Soil

*Position on landform:* Intermound areas in areas of patterned ground
*Slope range:* 4 to 20 percent
*Typical profile:*
0 to 4 inches—brown very stony loam
4 to 14 inches—brown very cobbly loam and extremely cobbly loam
14 inches—basalt
*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Available water capacity:* Very low
*Potential rooting depth:* 10 to 20 inches
*Runoff:* Very rapid
*Hazard of water erosion:* Very severe

### Characteristics of the Sweiting Soil

*Position on landform:* Mounds in areas of patterned ground
*Slope range:* 4 to 20 percent
*Typical profile:*
0 to 8 inches—dark grayish brown silt loam
8 to 12 inches—brown silt loam
12 to 23 inches—brown silty clay loam
23 to 31 inches—light yellowish brown very gravelly clay
31 inches—fractured basalt
*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Slow
*Available water capacity:* Low
*Potential rooting depth:* 20 to 40 inches
*Runoff:* Rapid
*Hazard of water erosion:* Very severe

### Contrasting Inclusions

- Moderately deep, clayey soils on shoulders of ridges (10 percent)
- Flybow soils between mounds (5 percent)

### Major Use

Rangeland

### Rangeland

*Natural potential plant community:* Zaza soil—Sandberg bluegrass/forbs; Sweiting soil—Idaho fescue-bluebunch wheatgrass
*General management considerations:*
- The cold temperatures limit plant growth in

spring. The grazing season is limited to summer and fall.

- The shallow depth and the content of rock fragments in the surface layer of the Zaza soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds.
- The very low available water capacity of the Zaza soil limits the production of forage.

### *Capability Classification*

Zaza soil—6e, nonirrigated; Sweiting soil—4e, nonirrigated

# Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

## Crops and Pasture

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, the system of land capability classification used by the Natural Resources Conservation Service is explained, and prime farmland is described.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

### Crops

Prepared by Glenn Shea, area agronomist, and Robert Fredericksen and Frank Gariglio III, district conservationists, Natural Resources Conservation Service.

The cropland in the survey area is highly variable. Elevation ranges from 900 feet near Lewiston to more than 4,500 feet near Westlake and Mason Butte. Precipitation ranges from about 12 inches at the low elevations to 26 inches at the high elevations. The low elevations have the highest temperatures and longest growing seasons, and the high elevations have colder temperatures and shorter growing seasons.

The soils are also highly variable. Some areas have relatively flat slopes, and other areas have very steep slopes. The soils in the low precipitation zones are generally neutral or alkaline in the surface layer, while the soils in the high precipitation zones tend to be acidic. Erosion is a concern on all of the soils; however, those with steeper slopes and higher precipitation are subject to the greatest risk of erosion.

Loss of topsoil through erosion is a very serious concern on the majority of the cropland in the survey area. The resulting sedimentation fills watercourses, decreases the potential for fisheries, and reduces the quality of water for recreation and drinking. Soil productivity is reduced as the surface layer is lost. It is estimated that 4 to 6 inches of topsoil has already been eroded from many areas in the past 80 years *(21)*.

Extensive management is needed to reduce soil erosion. Managing crop residue, farming across the slope or on the contour, stripcropping with alternating strips of high-residue and low-residue crops across the slope, and using grasses and legumes in rotation with annual crops help to control erosion. Structural

practices, such as construction of water- and sediment-control basins and terraces, can also be used in some areas to reduce the rate of runoff and to minimize erosion.

The survey area has about 376,000 acres of nonirrigated cropland. Of this, about 170,000 acres are in Lewis County and 206,000 acres are in Nez Perce County. The acreage of irrigated cropland is very minor. The main crop grown is soft white winter wheat. It is grown in rotation with spring peas, lentils, spring grain, canola, and other annually tilled crops. Some rotations also include long-term stands of grass seed. Pasture and hay crops include alfalfa, clover, and grass. The relative amount of pastureland and hayland increases as elevation and rainfall increase.

At the lower elevations, winter wheat is produced in a wheat-summer fallow rotation because the amount of precipitation received is so low. The areas that receive higher amounts of precipitation are suitable for annual cropping. In these areas, winter wheat commonly is grown in rotation with spring peas or lentils. A 3-year rotation that commonly includes wheat, barley, and peas or lentils is used on smaller acreages. Some producers use longer term rotations that include grass for seed and alfalfa with the annually grown crops.

A balanced fertility management program that is based on soil tests is needed for the production of all crops. Winter wheat is the most commonly fertilized crop. Carryover nitrogen levels generally are insufficient to produce an adequate crop. As precipitation increases, the hazard of leaching in winter of nitrogen applied in fall increases. Applying nitrogen fertilizer in fall and again in spring and applying slow-release nitrogen help to reduce the risk of leaching. Smaller amounts of sulfur, potassium, and phosphorous are also needed.

The Tammany area (general soil map units 1 and 2) is at the lowest elevations and is the warmest and driest region in the survey area. Typical soils in this area are those of the Broadax, Oliphant, and Endicott series. These soils are either moderately deep to a calcium- and silica-cemented hardpan or are very deep. In some areas these soils are interspersed with soils that are affected by high levels of sodium, such as those of the Hatwai, Bryden, and Redmore series. The surface layer of these soils characteristically has degraded structure and consequently has a limited water infiltration rate, which can restrict the available water capacity and limit crop yields. The available water capacity of the moderately deep soils, such as the Endicott soils, is also limited by the effective rooting depth. The annual rainfall in the Tammany area is about 12 to 16 inches, the majority of which falls in winter and spring.

Spring crops in the Tammany area are commonly limited by the early onset of hot, dry weather. In addition, weed control is needed earlier in areas of summer fallow in this area than in other areas of cropland throughout the survey area. The longer period of weed control can increase the risk of erosion, especially if a traditional method of mechanical control is used.

The main conservation practices used in the Tammany area include conservation cropping systems, crop residue management, cross-slope farming, field stripcropping, seeding of pastureland and hayland, and construction of gradient terraces. Practices needed on sodium-affected soils include conservation cropping systems, crop residue management, and nutrient management. These practices increase organic matter content and improve moisture intake.

The Palouse and Camas Prairie areas (general soil map units 3 and 4) are at intermediate elevations and receive 20 to 24 inches of precipitation. Typical soils are those of the Palouse, Naff, and Thatuna series, which are at the higher elevations north of the Clearwater and Potlatch Rivers, and those of the Uhlorn and Nez Perce series, which are on the plateau south of the Clearwater River. The soils in these areas are very deep and are well drained or moderately well drained. Because of the topography, soil erosion is the main limitation, especially in the steep, concave areas on north-facing slopes where drifted snow collects.

Typical crops grown in these areas are winter wheat, spring and fall barley, spring peas, and lentils. Specialty crops include bluegrass for seed, spring canola, winter rapeseed, Austrian winter peas, and buckwheat.

Use of practices such as crop rotation with annual cropping sequences, crop residue management, no-till farming, stripcropping, divided slope farming, and grassed waterways are needed to control erosion. In addition, sediment basins can be installed to improve water quality by collecting sediment from runoff. Lime can be applied to increase the reaction (pH) of the soil and thus increase the production of field crops, especially forage legume and pulse crops.

The Gifford, Reubens, and North Winchester areas (general soil map units 5 and 6) are at higher elevations and receive about 22 to 26 inches of precipitation. Typical soils are those of the Taney, Setters, Carlinton, Southwick, Driscoll, and Larkin series. These soils support forests. The soils commonly are deficient in sulfur and have low reaction

(pH) in the surface layer. They are moderately deep to a fragipan or are very deep. The fragipan restricts rooting depth and results in a seasonal perched water table in spring, which affects the timing of cultivation and seeding. Because of the seasonal perched water table, the soils are susceptible to compaction if tilled early in spring.

These areas are suitable for annual cropping. Typical crops grown include winter wheat, spring barley, dry peas, and lentils. Smaller acreages of rapeseed, winter peas, bluegrass, alfalfa, and spring canola are grown in rotation.

The main conservation practices used in these areas to control soil erosion include conservation cropping systems, crop residue management, conservation tillage, no-till farming, cross-slope farming, and grassed waterways. In addition, sediment basins can be installed to improve water quality by collecting sediment from runoff. Lime can be applied to increase the reaction (pH) of the soil and thus increase the production of field crops, especially forage legume and pulse crops.

The Westlake and Mason Butte areas (general soil map unit 7) generally have a colder, wetter climate than the other areas of cropland in the survey area. Typical soils in these areas are those of the Boles and Joel series. The cold soil temperatures restrict the kinds of crops that can be grown. Spring barley, hay, and pasture are the most commonly grown crops. Cold temperatures in winter restrict most cropping in fall. The soils have a moderate or high organic matter content and are very deep. In some bottomland areas, a seasonal perched water table affects the timing of cultivation and seeding in spring.

Conservation practices such as conservation cropping systems, crop residue management, construction of grassed waterways, seeding of pastureland and hayland, proper grazing use, and cross-slope farming commonly are used in these areas.

### Pastureland and Hayland

Prepared by R. Susan Burnworth, area range conservationist, Natural Resources Conservation Service.

About 52,000 acres of the survey area are used for the production of nonirrigated hay and pasture. Of this, about 30,000 acres are in Lewis County and 22,000 acres are in Nez Perce County. The soils used primarily for pasture are on bottomlands and flood plains, are commonly extremely gravelly, and are generally too wet or too gravelly to be used for crop production. Some upland soils have been cleared of timber and seeded to grasses and legumes for pasture and hay. Hay is also grown in rotation on cropland soils at middle to high elevations in the survey area.

Suitable grasses grown as pasture and hay include orchardgrass, smooth brome, tall fescue, and timothy. Alfalfa hay is suited to the drier soils on uplands. Legumes grown include alsike clover and red clover. Individual fields of pasture and hay typically are less than 100 acres in size and are commonly used for livestock operations. One or two cuttings of hay are harvested early in summer, and then livestock are allowed to graze the fields throughout the rest of the summer and in fall.

The main limitations for the production of hay and pasture include occasional or frequent flooding and soil wetness. Livestock grazing should be controlled to prevent compaction of the soil and trampling of plants when the soil is wet. Other limitations include gravelly surface layer textures and low available water capacity. Use of high-yielding plants that are adapted to the individual soils is essential for maximum production.

More information that can be used in planning pasture management is given in the section “Detailed Soil Map Units.” More detailed information can be obtained from the local office of the Natural Resources Conservation Service.

Pastureland and hayland management practices are needed to maintain a high production of forage. Livestock grazing should be controlled to prevent excessive grazing that results in damage to the plants and soils. Excessive grazing can alter the plant community so that it has a higher content of less desirable plants, and it can leave the soil bare and subject to erosion. The invasion of undesirable and noxious weeds, such as yellow starthistle, oxeye daisy, and Canada thistle, is a serious threat to the production of pasture in the survey area. Overgrazing of fields adjacent to streams can result in damage to riparian vegetation and can reduce the stability of the streambanks and the quality of watercourses downstream.

Proper grazing use is needed to maintain the content of desirable forage plants. Grazing should be deferred in spring until the plants reach a height of 8 inches. Planned grazing systems that include rotation of pastures allow adequate rest for regrowth of plants. For most pasture species, leaving the stubble at a height of 4 inches at the end of the grazing period allows for rapid recovery.

Pastureland management practices that facilitate controlled grazing systems include construction of fences and livestock water developments. Fertilizer and herbicides are needed for high yields. A fertilization program should include proper applications

of nitrogen, phosphorous, and sulfur based on soil tests.

Hayland management practices included additions of appropriate fertilizers and soil amendments, harvesting at the proper growth stage, and leaving adequate stubble to protect the plants in winter.

### Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

### Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops *(18)*. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

*Capability classes*, the broadest groups, are designated by numerals 1 through 8. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation.

Class 7 soils have very severe limitations that make them unsuitable for cultivation.

Class 8 soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

*Capability subclasses* are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is shown in table 4. The capability classification of map units in this survey area is given in the section “Detailed Soil Map Units.”

### Prime Farmland

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

Prime farmland, as defined by the U.S. Department of Agriculture, is 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, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, 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. It 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.

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

The map units in the survey area that are considered prime farmland are listed in this section. This list does not constitute a recommendation for a particular land use. On some soils included in the list, 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. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading “Detailed Soil Map Units.”

The map units that meet the requirements for prime farmland are:

12 Boles-Joel complex, 1 to 8 percent slopes
70 Lapwai-Bridgewater complex, 1 to 4 percent slopes
87 Mohler-Nez Perce-Uhlorn complex, 2 to 10 percent slopes
89 Naff-Palouse complex, 2 to 8 percent slopes
93 Naff-Thatuna complex, 2 to 10 percent slopes
97 Nez Perce silty clay loam, 2 to 10 percent slopes
98 Nez Perce silty clay loam, dry, 1 to 4 percent slopes
100 Oliphant silt loam, 1 to 4 percent slopes
102 Oliphant silt loam, gravelly substratum, 2 to 6 percent slopes
106 Palouse-Athena complex, 2 to 8 percent slopes
113 Setters silt loam, 2 to 8 percent slopes
138 Uhlig silt loam, 2 to 8 percent slopes
142 Uhlorn-Nez Perce complex, 2 to 10 percent slopes
153 Wistona very fine sandy loam, 0 to 3 percent slopes

## Native Grazing Land

Prepared by R. Susan Burnworth, area range conservationist, Natural Resources Conservation Service.

The survey area has about 380,000 acres of native grazing land, of which 197,000 acres are rangeland and 183,000 acres are grazeable woodland (fig. 19). About 162,000 acres of the rangeland are in Nez Perce County, and about 35,000 acres are in Lewis County (fig. 20). About 110,000 acres of the grazeable woodland are in Nez Perce County, and about 73,000 acres are in Lewis County.

The rangeland is primarily in canyons adjacent to the Clearwater, Snake, and Salmon Rivers and their tributaries (general soil map units 10, 11, 12, and 13). Some rangeland is also in gently sloping areas adjacent to the canyon rims; however, most of the native grassland above the steep canyonsides is now cultivated because the soils in these areas are relatively deep and are free of rock fragments.

The dominant climax vegetation of the areas of rangeland consists of bluebunch wheatgrass and Sandberg bluegrass at the lower elevations and bluebunch wheatgrass and Idaho fescue at the higher

**Figure 19.—Native grazing land in canyons. Linville and Kettenbach soils are on the lower slopes, and Klickson soils, which support timber, are on the upper slopes. Elevation and aspect control the distribution of the soils and plant communities in the canyons.**

elevations. The rangeland plant communities are 70 to 80 percent grasses, 10 to 15 percent forbs, and 5 to 15 percent shrubs.

Several plants of special interest are within the survey area. Eight federally recognized or proposed endangered species are in general soil map unit 11. Because much of the area in this unit is unexplored, knowledge of the vascular plant populations is sketchy. The plants of special interest include *Calamagrostis tweedyi, Cyripedium calceolus parviflorum, Halimolobos perplexa perplexa, Haplopappus liatriformis, Lomatium rollonsii, Mirabilis macfarlan, Penstemon elegantulus,* and *Silene spaldingii*. Eleven plant species on the Federal watch list are presumed to grow in areas of this same unit.

Rangeland in the survey area has undergone intense pressure from livestock grazing since the late 1800's, and the plant communities have been altered substantially. The invasion of weeds into the areas of rangeland in canyons has drastically reduced the production of forage. In the early 1900's, annual grasses, such as soft chess, medusahead wildrye, and ventenatagrass, invaded the areas of rangeland and replaced the perennial native grasses. Later in the 1900's, broadleaf weeds, such as goatweed and yellow starthistle, competed with the annual grasses and they now are dominant in the plant communities on several thousand acres. The native grasses commonly are unable to regenerate naturally because the seedlings cannot compete with the weedy annual species.

Grazeable woodland is intermixed with the rangeland at the higher elevations in canyons (general soil map units 12 and 13). Woodland is dominant on the northerly aspects, and rangeland is dominant on the more southerly exposures. The open, forested areas generally have a good stand of native vegetation, and they produce abundant forage for

**Figure 20.—An area of rangeland on Mallory soil that is in excellent condition. Idaho fescue/forbs is the plant community.**

livestock and wildlife. The range condition of these areas typically is better than other areas of grazing land in the survey area. These areas receive more precipitation for plant growth and they traditionally are grazed later in the season, which encourages growth of the native perennial grasses.

Grazeable woodland also is on the upper plateaus adjacent to the canyons (general soil map units 6, 7, 8, and 9). These forested areas vary from open stands of ponderosa pine and Douglas-fir, which have excellent natural potential for forage production, to dense stands of grand fir, which produce forage for only a short time following the opening of the canopy by timber harvesting or fire.

The primary livestock enterprises in the survey area are cow-calf and ewe-lamb operations. Smaller acreages of grazing land are used for horses and mules.

As spring growth begins, the livestock are turned onto the rangeland and are moved to the higher elevations as the season and forage conditions allow. Normally, livestock are turned onto the rangeland in mid-April. Most livestock spend the summer and the early part of fall in the forested areas. In the early part of October to mid-October, the livestock are rounded up, calves are weaned, and the brood cow herd is moved to the home range and to wintering areas. Typically, livestock are kept in a feedlot for some

period during winter. Feed for this period is either produced locally or imported into the area. Calving generally occurs during January through March.

The rangeland and grazeable woodland in the survey area provide valuable habitat for several species of wildlife. In particular, the riparian areas adjacent to perennial streams and intermittent draws produce diverse native shrubs and forage plants that provide critical habitat for wildlife.

## Rangeland

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

Table 6 shows, for each soil that supports rangeland vegetation suitable for grazing, the range site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. An explanation of the column headings in the table follows.

A *range site* is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from natural plant communities on other range sites in kind, amount, and proportion of range plants. The relationship between soils and vegetation was ascertained during this survey; thus, range sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table are also important.

Each range site is identified by a name that includes soil or topographic characteristics, the precipitation zone, and the key indicator species in the plant community. For some range sites, no single species is dominant in the forbs layer so “forbs” is given instead of a particular species. Names of the plant species are abbreviated. The abbreviations are defined in the National List of Scientific Plant Names *(22)*.

*Total production* is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year’s growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

*Dry weight* is the total annual yield per acre of air-dry vegetation. Yields are adjusted to a common percent of air-dry moisture content. The relationship of green weight to air-dry weight varies according to such factors as exposure, amount of shade, recent rains, and unseasonable dry periods.

*Characteristic vegetation*—the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil—is listed by common name. Under *composition*, the expected percentage of the total annual production is given for each species making up the characteristic vegetation.
The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only.

The primary objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Proper range management should protect the soil, result in optimum production of forage for livestock and wildlife, control undesirable weeds, and maintain or improve the associated scenic, watershed, and esthetic value.

The primary management practice needed on rangeland in this survey area is use of planned grazing systems. These systems allow plants to achieve sufficient growth in spring to withstand grazing pressure, allow for periodic rest or deferment of grazing, and allow for removal of livestock when the optimum amount of forage has been grazed. The characteristics of the soils and the slope severely limit

use of range improvement practices, such as range seeding, cross fencing, and installing livestock water developments. These practices are difficult to implement and are costly. Range improvement practices commonly are limited to use of planned grazing systems and proper grazing use.

If planned grazing systems are used, two or more grazing units are alternately rested and grazed in a planned sequence for a period of years. Rest periods for plant recovery are established during the growing season for key plants or throughout the year.

Proper grazing use can be achieved by grazing at an intensity that maintains or improves the quantity and quality of desirable vegetation and maintains enough plant cover to protect the soil. Proper use is determined by monitoring the grazing use of key forage species. In general, proper use is achieved when no more than 50 percent of the current year's growth of key species is grazed.

Range seeding is used to produce more desirable forage for grazing animals and to provide more plant cover for erosion control. Because the steepness of slope and stoniness of the soils severely restrict use of conventional machinery, range seeding in this survey area is limited mainly to aerial or hand broadcast applications. Thousands of acres in the survey area support sparse native plants and abundant noxious and undesirable weeds. Seeding helps to establish desirable vegetation in these areas. Noxious weeds should be controlled in areas where range seeding is used.

### Woodland Understory Vegetation

By R. Susan Burnworth, area range conservationist, Natural Resources Conservation Service.

Woodland understory vegetation consists of grasses, forbs, and shrubs that grow beneath the forest canopy. Some woodland, if well managed, can produce enough understory vegetation to support grazing of livestock and wildlife without damage to the timber resources. The composition of the understory vegetation within a forested area is determined by the type of soil, the age and type of trees, the density of the forest canopy, and the depth and condition of the forest litter.

The amount of forage produced in an area of woodland depends mainly on the amount of light that reaches the forest floor. Many forage plants require large amounts of sunlight; thus, production decreases over time as the forest canopy closes, regardless of the degree of grazing. After the forest canopy is opened by timber harvesting or fire, there generally is an increase in the production of understory plants for a number of years. As the canopy closes, production decreases. In many kinds of woodland, the density of the tree canopy that provides maximum wood production allows for production of only sparse understory vegetation.

Three climax dominant tree species are in the survey area—ponderosa pine, Douglas fir, and grand fir. These species have been classified into distinct forest habitat types. A habitat type is a collective term for an environment that has the potential to support similar plant associations prior to disturbances such as fire, flooding, grazing, logging, or epidemics. The habitat types represented in this survey area are ponderosa pine/Idaho fescue, ponderosa pine/common snowberry, Douglas fir/common snowberry, Douglas fir/mallow ninebark, grand fir/longtube twinflower, grand fir/mallow ninebark, and grand fir/queencup beadlily. These habitat types have been correlated with those identified in "Forest Habitat Types of Northern Idaho: A Second Approximation" *(8)*.

The ponderosa pine habitat types represent the driest forest types in the survey area, and they commonly have an open parkland appearance. These habitat types generally produce abundant forage that includes Idaho fescue, bluebunch wheatgrass, and numerous forbs. The ponderosa pine/common snowberry habitat type is dominantly low shrubs, including common snowberry, Saskatoon serviceberry, low Oregongrape, and Woods rose.

Douglas fir habitat types are on many soils in the survey area. These habitat types typically have a moderately dense to dense tree canopy, and the understory is dominantly low to medium shrubs such as mallow ninebark, creambush oceanspray, common snowberry, and white spirea. Forage commonly is sparse in these areas because the understory consists of less than 25 percent herbaceous plants such as pine reedgrass, Columbia brome, elk sedge, and associated forbs.

The grand fir habitat types are on the more moist soils in the survey area. These habitat types typically do not produce grazeable woodland unless the tree canopy is opened by disturbance. The understory vegetation is comprised mostly of low herbaceous plants such as longtube twinflower, goldthread, and spreading sweetroot. The dominant shrubs are big huckleberry, common snowberry, and baldhip rose.

Table 7 shows, for each soil suitable for woodland, the potential for producing understory vegetation. The total production of understory vegetation includes the herbaceous plants and the leaves, twigs, and fruit of woody plants up to a height of 4.5 feet. It is expressed in pounds per acre of air-dry vegetation in favorable,

normal, and unfavorable years. In a favorable year, soil moisture is above average during the optimum part of the growing season; in a normal year, soil moisture is average; and in an unfavorable year, it is below average.

The table also lists the common names of the characteristic vegetation on each soil and the *composition*, by percentage of air-dry weight, of each kind of plant. The table shows the kind and percentage of understory plants expected under a canopy density that is most nearly typical of woodland in which the production of wood crops is highest.

Management objectives on grazeable woodland should include grazing at an intensity that will maintain the quality of forage without damaging the timber resources. Maintaining grazeable woodland requires both woodland and grazing management. Woodland conservation practices, such as thinning, open the forest canopy and increase the production of forage.

In areas of grazeable woodland, livestock commonly concentrate in riparian areas along streams and in areas where the canopy is open and forage is abundant. To avoid damaging the understory vegetation, improved grazing management practices are needed to encourage even distribution of livestock.

The season of use and the length of grazing periods should be based on the key forage species. In general, no more than 50 percent of the growth, by weight, should be grazed during the growing season. Conservation practices, such as use of fences and livestock water developments, can be used in some areas to promote more uniform distribution of livestock.

## Woodland Management and Productivity

By Donald Larson, area forester, and Gary Kuhn, State forester, Natural Resources Conservation Service.

In 1895, the Nez Perce Indian Reservation was opened for settlement and the demand for lumber increased dramatically. Several towns in what are now Lewis and Nez Perce Counties were platted, and the settlers that arrived needed lumber. Among the first enterprises to be established were sawmills. Several towns, including Westlake, Forest, Morrowtown, Kippen, Reubens, Chesley, Lookout, Melrose, and Winchester, had sawmills. The lumber at these mills was produced primarily for use in these towns and on the surrounding farms.

On July 4, 1910, Craig Mountain Lumber Company sawed its first log. The lumber produced was shipped to outside markets. This was essentially the beginning of the lumber industry in the survey area.

In the early days, logging was done with horses. Horsedrawn wagons were used to haul the logs if they were cut more than skidding distance from a mill. Ponderosa pine was the major timber species, but large old-growth western larch (tamarack) and Douglas fir were cut in the Forest, Soldiers Meadow, and Mason Butte areas. When the Craig Mountain Lumber Company began operation, logging methods also began to change. The company built railroads into the Soldiers Meadow, Mason Butte, and Craig Junction areas. Logs were brought to the mill pond (Lapwai Lake) on trains. Horses continued to be used to skid logs until the late 1930's, but gradually the horses were replaced by tractors and logging arches.

In 1927, the Clearwater Timber Company completed a mill at Lewiston. In 1931, three timber companies merged and the mill at Lewiston became part of Potlatch Forests Incorporated, now Potlatch Corporation. Timber from the Craig Mountain and Camas Prairie areas was sent to this mill at Lewiston.

The Potlatch Corporation mill is still in operation, and it now includes a plywood plant, kraft pulp mill, paperboard mill, and tissue and toweling mill. The Craig Mountain Lumber Company was sold to Hallack and Howard in 1950 and then to the Boise Cascade Company in 1960. In 1964, the old Craig Mountain Lumber Company mill was closed.

Lumbering is still very important to the economy of the Camas Prairie area. Channel Lumber Company built a mill at Craigmont in 1958. It is still in operation today.

Timber species in the survey area include ponderosa pine, western larch, Douglas fir, grand fir, lodgepole pine, Engelmann spruce, and subalpine fir. Engelmann spruce and subalpine fir are only in the cold draws and on north-facing slopes at elevations above 4,000 feet. Ponderosa pine is the dominant species on Camas Prairie, east of Mason Butte. Pine, larch, and fir are common in areas west and south of Mason Butte and on the higher elevations of Craig Mountain. Douglas fir grows on the northwest aspects and grand fir on the north and east aspects in draws. Western larch is mainly in the Forest and Soldiers Meadow areas. Lodgepole pine is in areas where wildfires or logging followed by burning has occurred.

The major forest plant communities in the survey area are ponderosa pine/common snowberry, Douglas fir/common snowberry, Douglas fir/mallow ninebark (fig. 21), and grand fir/longtube twinflower. Brush competition is an important concern in these plant communities. Common snowberry, mallow ninebark, creambush oceanspray, and Rocky Mountain maple thrive after the forest canopy is removed, severely delaying the natural regeneration of ponderosa pine

and Douglas fir seedlings. In areas of grand fir, Rocky Mountain maple increases significantly after harvesting and competes with the natural regeneration of the plant community. Piling and burning the logging slash limits sprouting of these shrubs and allows for natural regeneration of the plant community.

The topography of the survey area is very diverse. Many of the forested soils are in nearly level areas ranging to areas on gently rolling hills; however, the upper breaks of the canyons of the Salmon and Clearwater Rivers also support timber. The steepness of slope affects logging practices. Tractor and wheeled skidding equipment can cause soil damage, including compaction, displacement, and erosion, in areas that have slopes of more than 35 percent. Skyline and cable yarding equipment should be used in these areas. Construction and location of roads and skid trails is also more difficult in the steeper areas.

**Figure 21.—A mature stand of ponderosa pine in an area of Joel silt loam, 8 to 16 percent slopes. Douglas fir/mallow ninebark is the plant community.**

The habitat classification system used for this survey is given in “Forest Habitat Types of Northern Idaho: A Second Approximation” *(8)*. Each named component in the detailed soil map units that supports forest land has been correlated to a specific habitat type.

Table 8 can help woodland owners or forest managers plan the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, which the indicator species can produce in a pure stand under natural conditions. The number 1 indicates low potential productivity; 2 or 3, moderate; 4 or 5, moderately high; 6 to 8, high; 9 to 11, very high; and 12 to 39, extremely high. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *R* indicates steep slopes; *X*, stoniness or rockiness; *W*, excess water in or on the soil; *T*, toxic substances in the soil; *D*, restricted rooting depth; *C*, clay in the upper part of the soil; *S*, sandy texture; *F*, a high content of rock fragments in the soil; *L*, low strength; and *N*, snowpack. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, F, L, and N.

In the table, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management. Guidelines for determining the limitations are available at the local office of the Natural Resources Conservation Service.

*Erosion hazard* is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed also are subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

*Equipment limitation* reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

*Seedling mortality* refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

*Windthrow hazard* is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of *moderate* indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

*Plant competition* ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from

undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* and as a *productivity class*. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. For ponderosa pine, a 100-year site index curve was used *(11)*. For Engelmann spruce, grand fir, Douglas fir, and western larch, a 50-year site index curve was used *(1, 7, 14)*. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *productivity class*, a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic meters per hectare per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand. It is calculated at the culmination of the mean annual increment.

The first species listed under *common trees* for a soil is the indicator species for that soil. It generally is the most common species on the soil and is the one that determines the ordination class.

*Trees to plant* are those that are suitable for commercial wood production.

## Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Table 9 shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in the table are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or of the Cooperative Extension Service or from a commercial nursery.

## Recreation

The survey area provides many opportunities for outdoor recreation. The most popular activities for both local residents and tourists are centered on the rivers that surround the area.

The annual fall and winter run of steelhead up the Snake, Salmon, and Clearwater Rivers draws anglers from throughout the region. Fishing for smallmouth bass, catfish, and sturgeon in the Snake River is also popular. Rainbow trout are in the small lakes in the area.

Scenic boat tours up the Snake River are becoming an increasingly popular attraction for tourists. A favorite destination is the Hells Canyon National Recreation Area, located along the Snake River, about 35 miles upstream from Lewiston. This stretch of the Snake River has been designated as a Federal wild and scenic area. This remote area features whitewater rapids, rocky gorges, and spectacular rugged canyons. Lewiston and nearby Clarkston, Washington, are the most common points of departure for the river trips.

River rafting is a popular activity along the upper Snake River and the Salmon River, where whitewater rapids are numerous. The less turbulent parts of the rivers are also popular with boaters. Construction of the Lower Granite Dam in 1975 impounded water upstream on the Snake and Clearwater Rivers to points just above Lewiston. The slackwater is a favorite spot for swimming, boating, and water-skiing.

There are a variety of hunting opportunities throughout the area. The grasslands of the rocky canyons provide excellent opportunities for hunting of chukar and Hungarian partridge. Pheasant hunting is popular on the farmland and in canyons at the lower

elevations. Hunting of big game, such as deer and elk, is popular in the canyons and forested areas.

The headquarters of the Nez Perce National Historical Park is at Spalding. It features exhibits and programs that describe the history and culture of the Nez Perce Indians.

Two State parks are in the survey area. Hellsgate Park is along the Snake River, just outside of Lewiston. It features camping, picnicking, and water sports. Winchester Lake State Park is near Winchester, in Lewis County. In addition to camping and picnicking, it offers opportunities for fishing, hiking, and winter sports in a forested setting.

Snowmobiling is a common winter sport at the higher elevations, generally in areas from Waha across Craig Mountain and eastward into Lewis County.

The soils of the survey area are rated in table 10 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these.

The information in table 10 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

*Camp areas* require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

*Picnic areas* are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

*Playgrounds* require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

*Paths and trails* for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

*Golf fairways* are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

## Wildlife Habitat

By Frank J. Fink, Jr., biologist, Natural Resources Conservation Service.

This section relates the general soil map units in this survey to the expected occurrence of certain wildlife species. Wildlife in an area typically is related to the vegetation that is present. The vegetation is closely related to the soil and its capability to produce herbaceous and woody vegetation.

The survey area supports a variety of game and nongame wildlife species. The varied topography, soils, and rainfall coupled with the many different land uses produce a wide variety of habitats for the numerous wildlife species in the area.

Big game in the survey area include elk, white-tailed deer, mule deer, mountain lion, bear, and bighorn sheep. Approximately 825 elk inhabit the area. Summer range for the elk is in the south and south-central parts of the survey area, in general soil map units 6, 7, 8, 9, 11, 12, and 13. Most of the winter range for elk is along the breaks of the Snake and Salmon Rivers, in general soil map units 10 and 11.

White-tailed deer occupy the areas along the valleys and river systems that support dense vegetation. White-tailed deer comprise approximately half of the total deer population, which is estimated at 7,300 head. White-tailed deer are throughout the area, with the highest concentrations in general soil map units 10, 11, and 12.

Mule deer occupy the river breaks and areas of agricultural land and commercial timber land. Logged or burned areas of forest land, which support willows, ceanothus, syringa, and ninebark, provide good habitat for mule deer. Competition with white-tailed deer may limit the population of mule deer.

Mule deer share with elk the summer range in general soil map units 6, 7, 8, 9, 11, 12, and 13. Winter range for mule deer and white-tailed deer typically is in river breaks and canyons along the Snake, Salmon, and Clearwater Rivers and is associated with general soil map units 10 and 11. The 24,000-acre Craig Mountain Wildlife Management Area, which is in the western part of the survey area, was acquired as habitat for mule deer to improve their winter range and increase populations.

Bighorn sheep are along the Snake River Canyon, in the vicinity of Captain John Creek, in general soil map units 10 and 11.

Upland birds associated with the agricultural areas include pheasants, gray partridge, and California quail. These areas are associated with general soil map units 1, 2, 3, 4, 5, 6, and 7. Pheasant populations are low because of a lack of adequate undisturbed nesting cover, winter cover, and food in winter.

Ruffed grouse, blue grouse, and turkey are associated with areas of timber land. These areas are in general soil map units 6, 8, 9, 12, and 13. Blue grouse move to higher elevations in winter, but their nesting habitat is usually at lower elevations on more open, grassy or brush-covered slopes and ridges. Ruffed grouse spend the summer in open clearings in wooded areas and then winter in areas that support conifers. Turkey generally are associated with open ponderosa pine/Douglas fir habitat along major drainageways. Chukar and sharp-tailed grouse are in river breaks and prairies. These areas typically are associated with general soil map units 10 and 11. Native populations of sharp-tailed grouse formerly occupied areas in the northwestern part of the survey area, but the range was eliminated as a result of grazing practices and a change in land use to agricultural production. Sharp-tailed grouse recently were reintroduced to the area.

Furbearers, such as otter, beaver, mink, raccoon, and muskrat, live in and around the creeks and streams in the survey area. The major riparian areas are in general soil map units 1, 10, 11, and 12. Small creeks throughout the survey area extend up into the foothills and mountains and provide additional riparian habitat for these furbearers. Coyote and red fox, which are rare, occur throughout the area and are assumed to occupy areas in all of the general soil map units. Bobcat occupy areas of timber land associated with general soil map units 6, 8, 9, 12, and 13.

Waterfowl concentrate along the streams and rivers in the area. The Lewiston Wildlife Sanctuary on the Clearwater River is managed for geese and as a wintering area for waterfowl. Approximately 500 geese winter in the sanctuary. Small farm ponds can provide isolated habitat for waterfowl if livestock are excluded. Typical waterfowl in the area include geese, teal, and wood duck. The streams, rivers, and larger riparian areas that provide habitat for waterfowl are associated with general soil map units 1, 10, and 11. Smaller riparian zones in all of the general soil map units also provide limited habitat for waterfowl.

Raptors occur throughout the area. Osprey, bald eagle, and peregrine falcon occupy the lower Clearwater and Snake River areas. Osprey nest in these areas, and bald eagle winter along these rivers.

Golden eagle, prairie falcon, red-tailed hawk, Swainson's hawk, Cooper's hawk, sharp-shinned hawk, and American kestrel occur throughout the area in all of the general soil map units.

Both anadromous and resident salmon and trout use the rivers, streams, and creeks in the survey area. Steelhead use Lawyers, Big Canyon, Cottonwood, Jacks, and Captain John Creeks for spawning. Both steelhead and salmon use the Clearwater, Snake, and Salmon Rivers for passage or, in some cases, for spawning and rearing. Resident populations of rainbow trout, brook trout, and brown trout live in small perennial streams and creeks throughout the area. The major tributaries and fisheries in the survey area are associated with general soil map units 1, 10, 11, and 12.

Wildlife populations are largely determined by the suitability of the habitat, which includes the supply of food, the amount of cover, and the availability of water. Habitats differ in their capacity to provide these

essential needs. Some of the deficiencies are a result of the characteristics of the soils, and others are a result of management. To improve the habitat for wildlife, good management practices are needed. Wildlife habitat should be considered when managing the soils for other uses.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

## Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

*Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.*

*The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.*

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

### Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

*Shallow excavations* are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, or other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm

dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

*Dwellings* and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

*Local roads and streets* have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

*Lawns and landscaping* require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

### Sanitary Facilities

Table 12 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

*Septic tank absorption fields* are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

*Sewage lagoons* are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

The table gives ratings for the natural soil that makes up the lagoon floor. The surface layer and,

generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

*Sanitary landfills* are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

*Daily cover for landfill* is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

### Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

*Roadfill* is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of

15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

*Sand* and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

*Topsoil* is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

### Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

*Pond reservoir areas* hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

*Embankments, dikes, and levees* are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment

can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

*Aquifer-fed excavated ponds* are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

*Drainage* is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

*Irrigation* is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

*Terraces and diversions* are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

*Grassed waterways* are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

# Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

## Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

*Depth* to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

*Texture* is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

*Classification* of the soils is determined according to the Unified soil classification system *(4, 13)* and the system adopted by the American Association of State Highway and Transportation Officials *(3, 13)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

*Rock fragments* larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

*Percentage (of soil particles) passing designated sieves* is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

*Liquid limit* and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

## Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

*Depth* to the upper and lower boundaries of each layer is indicated.

*Clay* as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

*Moist bulk density* is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$-bar moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

*Permeability* refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

*Available water capacity* refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect retention of water and depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, content of rock fragments, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

*Soil reaction* is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

*Salinity* is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

*Shrink-swell potential* is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on the basis of measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, more than 6 percent; and *very high*, greater than 9 percent.

*Erosion factor K* indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

*Erosion factor T* is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

*Wind erodibility groups* are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

*Organic matter* is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

## Soil and Water Features

Tables 17 and 18 give estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

In table 17, *hydrologic soil groups* are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

*Flooding*, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered

flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

*High water table* (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in the table are depth to the seasonal high water table, the kind of water table, and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. “More than 6.0” indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

In table 18, *depth to bedrock* is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

A *cemented pan* is a cemented or indurated subsurface layer within a depth of 5 feet. Such a pan causes difficulty in excavation. Pans are classified as thin or thick. A thin pan is less than 3 inches thick if continuously indurated or less than 18 inches thick if discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A thick pan is more than 3 inches thick if continuously indurated or more than 18 inches thick if discontinuous or fractured. Such a pan is so thick or massive that blasting or special equipment is needed in excavation.

*Potential frost action* is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

*Risk of corrosion* pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more

susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

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# Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(19)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 19 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Mollisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Xeroll (*Xer*, meaning dry, plus *oll*, from Mollisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Argixerolls (*Argi*, meaning a zone of clay accumulation, plus *xeroll*, the suborder of the Mollisols that has a xeric moisture regime).

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

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-silty, mixed, mesic Typic Argixerolls.

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

## Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” *(17)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(19)* and in “Keys to Soil Taxonomy” *(23)*. Unless otherwise indicated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section “Detailed Soil Map Units.”

### Agatha Series

*Taxonomic class:* Loamy-skeletal, mixed, frigid Vitrandic Haploxeralfs

*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills, canyonsides

*Parent material:* Basalt colluvium mixed with loess in the upper part
*Slope range:* 15 to 75 percent
*Elevation:* 1,200 to 5,000 feet
*Climatic data (average annual):*
Precipitation—24 to 28 inches
Air temperature—42 to 45 degrees F
Frost-free season (32 degrees F)—65 to 110 days

### Typical Pedon Description

Oi—1 inch to 0; needles, twigs, and moss.
A—0 to 5 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots and common medium roots; many very fine and fine irregular pores; 5 percent gravel and cobbles; slightly acid (pH 6.2); clear wavy boundary.
AB—5 to 15 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots and common medium roots; many very fine and fine irregular pores; 8 percent cobbles and 2 percent gravel; moderately acid (pH 5.8); clear irregular boundary.
Bt1—15 to 23 inches; brown (7.5YR 5/4) cobbly clay loam, brown (7.5YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots and few coarse roots; common very fine tubular pores; 15 percent cobbles and 10 percent gravel; common faint patchy clay films on faces of peds and lining pores; moderately acid (pH 5.6); gradual irregular boundary.
Bt2—23 to 33 inches; light brown (7.5YR 6/4) very cobbly clay loam, brown (7.5YR 4/4) moist; dominantly moderate fine and medium subangular blocky structure, but moderate very fine angular blocky structure in some areas; slightly hard, friable, slightly sticky and plastic; common very fine and fine roots and few medium roots; few very fine tubular pores; 35 percent cobbles and 20 percent gravel; common faint patchy clay films on faces of peds and lining pores; moderately acid (pH 6.0); gradual irregular boundary.
Bt3—33 to 47 inches; light brown (7.5YR 6/4) extremely cobbly loam, brown (7.5YR 5/4) moist; moderate very fine angular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine tubular pores; 50 percent cobbles and 30 percent gravel; few faint patchy clay films lining pores; slightly acid (pH 6.2); clear irregular boundary.
R—47 inches; fractured basalt.

### Typical Pedon Location

*Map unit in which located:* Agatha loam, 40 to 75 percent slopes
*Location in survey area:* About 4 miles southwest of Winchester, in Lewis County; about 1,100 feet south and 1,000 feet west of the northeast corner of sec. 9, T. 33 N., R. 3 W.

### Range in Characteristics

*Profile:*
Depth to bedrock—40 to 60 inches
Average annual soil temperature—43 to 45 degrees F

*Upper 7 to 14 inches:*
Volcanic glass content—5 to 10 percent
Acid-oxalate extractable Al plus $^1/_2$ Fe—0.4 to 1.0 percent

*Particle-size control section (weighted average):*
Clay content—24 to 32 percent
Coarse fragment content—35 to 70 percent

*A horizon:*
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid to neutral

*Bt1 horizon:*
Hue—7.5YR or 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—cobbly clay loam, gravelly silt loam, gravelly loam, very cobbly clay loam, or very gravelly silt loam
Rock fragment content—25 to 60 percent
Clay content—18 to 30 percent
Base saturation—60 to 75 percent
Reaction—moderately acid or slightly acid

*Bt2 and Bt3 horizons:*
Hue—7.5YR or 10YR
Value—4 or 5 moist
Texture—very cobbly clay loam, extremely cobbly clay loam, or extremely cobbly loam
Rock fragment content—45 to 85 percent
Clay content—24 to 35 percent
Reaction—moderately acid or slightly acid

## Ahsahka Series

*Taxonomic class:* Fine-loamy, mixed, mesic Typic Argixerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Landform:* Hills
*Parent material:* Material weathered from granite
*Slope range:* 15 to 40 percent
*Elevation:* 1,300 to 1,850 feet
*Climatic data (average annual):*
Precipitation—24 to 26 inches
Air temperature—48 to 50 degrees F
Frost-free period—120 to 160 days

### *Typical Pedon Description*

Oi—0.5 inch to 0; undecomposed needles, leaves, and twigs.

A1—0 to 4 inches; dark brown (10YR 3/3) loam, very dark brown (10YR 2/2) moist; weak fine subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine irregular and tubular pores; slightly acid (pH 6.4); clear wavy boundary.

A2—4 to 11 inches; dark brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and common coarse roots; many very fine irregular pores and common very fine and fine tubular pores; neutral (pH 6.8); clear smooth boundary.

Bt1—11 to 17 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine irregular and tubular pores; many faint clay films on faces of peds and lining pores and common distinct clay films lining pores; neutral (pH 6.9); abrupt wavy boundary.

Bt2—17 to 32 inches; yellowish brown (10YR 5/4) loam, dark brown (7.5YR 3/2) moist; moderate fine prismatic structure parting to strong fine and medium angular blocky; hard, firm, sticky and plastic; common very fine and fine roots; many very fine irregular and tubular pores; many distinct clay films on faces of peds and lining pores; 10 percent gravel; many faint coatings of silt on faces of peds; neutral (pH 6.9); abrupt smooth boundary.

2Bt3—32 to 52 inches; brown (7.5YR 4/4) clay, dark brown (7.5YR 3/4) moist; strong coarse prismatic structure; very hard, very firm, very sticky and very plastic; many very fine and fine roots; common very fine irregular and tubular pores; 10 percent gravel; common distinct capping of silt on top of peds; cracks 1/4 to 1/2 inch wide between prisms; few slickensides on faces of prisms; neutral (pH 6.9); clear wavy boundary.

2Bt4—52 to 60 inches; brown (7.5YR 5/4) silty clay loam, dark brown (7.5YR 4/4) moist; moderate coarse and medium prismatic structure; hard, firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores and few very fine irregular pores; few slickensides on faces of peds; 10 percent gravel; neutral (pH 7.1).

### *Typical Pedon Location*

*Location in adjacent survey area:* About 0.5 mile north of Orofino, in Clearwater County; about 800 feet north and 1,825 feet east of the southwest corner of sec. 6, T. 36 N., R. 2 E.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 20 inches (less than 1 percent organic matter below a depth of 20 inches)
Average annual soil temperature—50 to 52 degrees F

*A horizon:*
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—slightly acid or neutral

*Bt horizon:*
Hue—10YR or 7.5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—loam, silt loam, silty clay loam, or clay loam
Clay content—18 to 30 percent
Coarse fragment content—2 to 15 percent
Reaction—moderately acid to neutral

*2Bt horizon:*
Hue—7.5YR or 10YR
Value—3 to 5 dry
Chroma—2 to 6 dry or moist
Texture—clay, silty clay loam, or clay loam
Clay content—32 to 50 percent

Coarse fragment content—2 to 15 percent
Reaction—slightly acid or neutral

## Almota Series

*Taxonomic class:* Fine-loamy, mixed, mesic Calcic Haploxerolls

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Hills on plateaus, canyonsides
*Parent material:* Loess, colluvium derived from basalt
*Slope range:* 5 to 65 percent
*Elevation:* 1,500 to 2,700 feet
*Climatic data (average annual):*
Precipitation—15 to 18 inches
Air temperature—49 to 50 degrees F
Frost-free season (32 degrees F)—130 to 160 days

### *Typical Pedon Description*

A1—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; 5 percent gravel; neutral (pH 7.2); clear wavy boundary.

A2—8 to 17 inches; dark brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; 10 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bw—17 to 24 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine and medium tubular pores; 12 percent gravel; mildly alkaline (pH 7.8); clear smooth boundary.

Bk—24 to 35 inches; pale brown (10YR 6/3) gravelly silt loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine and medium tubular pores; slightly effervescent; 20 percent gravel; moderately alkaline (pH 8.2); abrupt smooth boundary.

Ck—35 to 39 inches; pale brown (10YR 6/3) very gravelly silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine and medium tubular pores; strongly effervescent; 40 percent gravel; moderately alkaline (pH 8.4); abrupt wavy boundary.

2R—39 inches; basalt coated with calcium carbonate.

### *Typical Pedon Location*

*Map unit in which located:* Almota-Linville complex, 30 to 50 percent slopes
*Location in survey area:* About 2 miles north of Lewiston, in Nez Perce County; about 1,900 feet south and 110 feet east of the northwest corner of sec. 19, T. 36 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—12 to 20 inches
Depth to bedrock—30 to 40 inches
Average annual soil temperature—51 to 52 degrees F

*Particle-size control section (weighted average):*
Clay content—18 to 22 percent
Coarse fragment content—10 to 20 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—neutral or mildly alkaline

*Bw horizon:*
Value—5 or 6 dry, 3 or 4 moist
Gravel content—5 to 15 percent
Clay content—18 to 22 percent
Reaction—neutral or mildly alkaline

*Bk horizon:*
Value—6 or 7 dry, 4 or 5 moist
Gravel content—15 to 25 percent
Clay content—18 to 22 percent

*Ck horizon:*
Texture—gravelly silt loam or very gravelly silt loam
Gravel content—20 to 40 percent

## Alpowa Series

*Taxonomic class:* Loamy-skeletal, mixed, mesic Calcic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Hills on plateaus, canyonsides
*Parent material:* Loess, material weathered from basalt
*Slope range:* 15 to 75 percent

*Elevation:* 800 to 2,500 feet
*Climatic data (average annual):*
Precipitation—12 to 16 inches
Air temperature—48 to 52 degrees F
Frost-free season (32 degrees F)—135 to 180 days

### *Typical Pedon Description*

A—0 to 8 inches; dark grayish brown (10YR 4/2) cobbly silt loam, very dark brown (10YR 2/2) moist; strong medium granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; 15 percent cobbles and 5 percent gravel; mildly alkaline (pH 7.4); clear smooth boundary.

AB—8 to 13 inches; brown (10YR 5/3) very cobbly silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; slightly effervescent; disseminated lime; 30 percent cobbles and 10 percent gravel; mildly alkaline (pH 7.6); clear wavy boundary.

Bk1—13 to 25 inches; brown (10YR 5/3) very cobbly silt loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; violently effervescent; disseminated lime; 40 percent cobbles and 10 percent gravel; mildly alkaline (pH 7.6); clear wavy boundary.

Bk2—25 to 30 inches; pale brown (10YR 6/3) very cobbly silt loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and common fine tubular pores; violently effervescent; disseminated lime and common fine soft masses of lime; 40 percent cobbles and 10 percent gravel; moderately alkaline (pH 8.0); gradual wavy boundary.

Bk3—30 to 44 inches; very pale brown (10YR 7/3) very cobbly silt loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; strongly effervescent; disseminated lime; 3 percent stones, 45 percent cobbles, and 10 percent gravel; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk4—44 to 60 inches; very pale brown (10YR 7/3) very cobbly silt loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; violently effervescent; disseminated lime; 3 percent stones, 45 percent cobbles, and 10 percent gravel; strongly alkaline (pH 9.0).

### *Typical Pedon Location*

*Map unit in which located:* Lickskillet-Alpowa-Rock outcrop complex, 50 to 75 percent slopes
*Location in survey area:* About 2 miles south of Lewiston Orchards, in Nez Perce County; about 2,050 feet south and 2,490 feet west of the northeast corner of sec. 35, T. 35 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—12 to 15 inches
Average annual soil temperature—49 to 52 degrees F

*Particle-size control section (weighted average):*
Clay content—10 to 18 percent
Rock fragment content—35 to 50 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—cobbly silt loam or silt loam

*Bk horizon:*
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—very cobbly silt loam, very gravelly silt loam, very cobbly loam, or very gravelly loam
Clay content—10 to 18 percent
Rock fragment content—35 to 60 percent
Reaction—mildly alkaline to strongly alkaline

## Aquents

*Taxonomic class:* Aquents

*Depth class:* Very deep
*Drainage class:* Poorly drained
*Permeability:* Rapid or very rapid
*Landform:* Flood plains
*Parent material:* Alluvium derived from mixed sources
*Slope range:* 0 to 3 percent
*Elevation:* 740 to 1,200 feet
*Climatic data (average annual):*
Precipitation—12 to 24 inches
Air temperature—50 to 53 degrees F
Frost-free season (32 degrees F)—160 to 180 days

### *Representative Pedon Description*

A—0 to 2 inches; brown (10YR 5/3) very cobbly very fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; soft, very friable, nonsticky and slightly plastic; many fine and very fine roots; common fine and very fine tubular pores; 5 percent gravel and 50 percent cobbles; slightly acid (pH 6.4); abrupt wavy boundary.

2C1—2 to 8 inches; light brownish gray (10YR 6/2) extremely cobbly loamy sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; many fine and very fine roots; many fine and very fine irregular pores; 35 percent gravel and 40 percent cobbles; neutral (pH 6.6); gradual wavy boundary.

2C2—8 to 25 inches; brown (10YR 5/3) extremely cobbly sand, brown (10YR 4/3) moist; common medium distinct mottles that are dark yellowish brown (10YR 4/4) when moist; single grain; loose, nonsticky and nonplastic; common fine and very fine roots; many fine and very fine irregular pores; 30 percent gravel and 40 percent cobbles; thin subhorizon of fine gravel at base of horizon; neutral (pH 6.8); clear wavy boundary.

2C3—25 to 60 inches; yellowish brown (10YR 5/4) extremely cobbly loamy sand, dark yellowish brown (10YR 4/4) moist; few coarse distinct mottles that are dark grayish brown (10YR 4/2) when moist; single grain; loose, nonsticky and nonplastic; few fine and very fine roots; many fine and very fine irregular pores; 35 percent gravel and 35 percent cobbles; neutral (pH 6.8).

### *Representative Pedon Location*

*Map unit in which located:* Riverwash-Aquents complex, nearly level

*Location in survey area:* About 5 miles east of Lewiston, in Nez Perce County; about 1,450 feet south and 500 feet west of the northeast corner of sec. 25, T. 36 N., R. 5 W.

### *Range in Characteristics*

*Profile:*

Depth to seasonal high water table—6 to 24 inches in November through July

Average annual soil temperature—52 to 55 degrees F

Frequency of flooding—frequent for long periods in December through June

*Particle-size control section (weighted average):*

Clay content—0 to 12 percent

Coarse fragment content—25 to 70 percent

*A horizon:*

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Reaction—slightly acid or neutral

*2C horizon:*

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Texture—sandy loam, loamy sand, or sand that is gravelly to extremely gravelly or cobbly to extremely cobbly

Coarse fragment content—20 to 85 percent

Clay content—0 to 20 percent

Reaction—slightly acid or neutral

## Aquolls

*Taxonomic class:* Aquolls

*Depth class:* Deep or very deep

*Drainage class:* Poorly drained

*Permeability:* Moderately slow

*Landform:* Flood plains, drainageways

*Parent material:* Alluvium

*Slope range:* 0 to 3 percent

*Elevation:* 4,000 to 5,200 feet

*Climatic data (average annual):*

Precipitation—26 to 28 inches

Air temperature—41 to 43 degrees F

Frost-free season (32 degrees F)—60 to 80 days

### *Representative Pedon Description*

A1—0 to 3 inches; very dark gray (10YR 3/1) silt loam, black (10YR 2/1) moist; moderate medium granular structure; slightly hard, friable, nonsticky and slightly plastic; many fine and very fine roots; common very fine tubular pores; moderately acid (pH 5.6); abrupt smooth boundary.

A2—3 to 10 inches; dark gray (10YR 4/1) silty clay loam, black (10YR 2/1) moist; strong fine and medium subangular blocky structure; hard, firm, sticky and very plastic; many fine and very fine roots; common very fine tubular pores; moderately acid (pH 5.6); abrupt smooth boundary.

E—10 to 13 inches; very pale brown (10YR 7/3) silt loam, dark grayish brown (10YR 4/2) moist; common fine prominent strong brown (7.5YR 4/6) mottles; moderate fine and medium subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; many fine and very fine roots; many fine and very fine tubular pores; few wormcasts and krotovinas of A horizon material; moderately acid (pH 5.8); abrupt smooth boundary.

Eg—13 to 18 inches; light gray (10YR 7/1) silt loam, grayish brown (2.5Y 5/2) moist; common fine and few medium prominent strong brown (7.5YR 4/6) mottles; massive; slightly hard, friable, nonsticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; moderately acid (pH 6.0); clear smooth boundary.

Btgb1—18 to 26 inches; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; many fine and few medium prominent strong brown (7.5YR 4/6) mottles; moderate medium prismatic structure; hard, friable, slightly sticky and plastic; common very fine roots; few fine and very fine tubular pores; few distinct patchy clay films on faces of peds and in pores; common fine black (2.5Y 2/0) coatings of manganese; common grayish brown (2.5Y 5/2) skeletans on faces of peds; slightly acid (pH 6.2); gradual wavy boundary.

Btgb2—26 to 38 inches; light gray (2.5Y 7/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; many fine prominent strong brown (7.5YR 4/6) mottles and few fine prominent greenish gray (5BG 5/1) mottles; moderate coarse subangular blocky structure; hard, friable, sticky and plastic; common very fine roots; few fine and very fine tubular pores; few distinct patchy clay films on faces of peds and in pores; many fine and medium black (2.5Y 2/0) coatings of manganese; slightly acid (pH 6.2); gradual wavy boundary.

2BCg—38 to 42 inches; light gray (2.5Y 7/2) extremely gravelly clay loam, dark grayish brown (2.5Y 4/2) moist; many medium and coarse prominent strong brown (7.5YR 4/6) mottles and common fine prominent greenish gray (5BG 5/1) mottles; few very fine roots; few fine and very fine tubular pores; weak medium subangular blocky structure; hard, friable, sticky and plastic; 40 percent gravel and 30 percent cobbles; slightly acid (pH 6.2); clear wavy boundary.

2R—42 inches; fractured basalt.

### *Representative Pedon Location*

*Map unit in which located:* Aquolls, nearly level

*Location in survey area:* About 3 miles east of Soldiers Meadow Reservoir, in Lewis County; about 100 feet south and 200 feet west of the northeast corner of sec. 3, T. 32 N., R. 3 W.

### *Range in Characteristics*

*Profile:*

Thickness of mollic epipedon—10 to 24 inches

Depth to apparent seasonal water table—6 inches above the surface (ponded) to 18 inches below the surface in March through June

Depth to bedrock—more than 40 inches

Average annual soil temperature—43 to 45 degrees F

Average summer soil temperature—57 to 61 degrees F

Frequency of flooding—occasional for brief periods in March through June

An Ab horizon is in some pedons.

*Particle-size control section (weighted average):*

Clay content—24 to 40 percent

Coarse fragment content—0 to 30 percent

*A horizon:*

Value—3 or 4 dry

*E and Eg horizons (absent in some pedons):*

Hue—2.5Y or 10YR

Value—6 to 8 dry, 4 or 5 moist

Chroma—1 to 3 dry

Clay content—10 to 24 percent

Reaction—moderately acid or slightly acid

*Btgb horizon:*

Hue—2.5Y or 10YR

Value—6 or 7 dry, 4 or 5 moist

Texture—silty clay loam, silt loam, gravelly clay loam, or silty clay

Gravel content—0 to 35 percent

Clay content—20 to 45 percent

Reaction—moderately acid or slightly acid

*2BCg horizon (absent in some pedons):*

Hue—2.5Y or 10YR

Value—6 or 7 dry, 4 or 5 moist

Texture—extremely gravelly clay loam, extremely gravelly loam, very gravelly clay loam, or very gravelly loam

Coarse fragment content—35 to 80 percent

Clay content—20 to 40 percent

Reaction—moderately acid or slightly acid

## Athena Series

*Taxonomic class:* Fine-silty, mixed, mesic Pachic Haploxerolls

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Landform:* Hills on plateaus, canyonsides

*Parent material:* Loess

*Slope range:* 2 to 65 percent

*Elevation:* 1,500 to 2,900 feet

*Climatic data (average annual):*
Precipitation—17 to 22 inches
Air temperature—48 to 52 degrees F
Frost-free season (32 degrees F)—130 to 180 days

### *Typical Pedon Description*

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak very fine granular structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine irregular pores; neutral (pH 6.8); abrupt smooth boundary.

A—9 to 14 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak very fine and fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine irregular pores and common very fine and fine tubular pores; neutral (pH 7.0); gradual smooth boundary.

AB—14 to 21 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure parting to moderate fine and medium granular; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine and fine irregular pores and common very fine and fine tubular pores; neutral (pH 7.0); clear smooth boundary.

Bw1—21 to 29 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine irregular pores and few fine tubular pores; neutral (pH 6.8); gradual smooth boundary.

Bw2—29 to 44 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine irregular pores and few fine tubular pores; neutral (pH 7.2); clear smooth boundary.

Bk1—44 to 52 inches; very pale brown (10YR 7/4) silt loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common very fine and fine tubular pores; violently effervescent; mildly alkaline (pH 7.8); clear smooth boundary.

Bk2—52 to 64 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine tubular pores; violently effervescent; moderately alkaline (pH 8.0).

### *Typical Pedon Location*

*Map unit in which located:* Palouse-Athena complex, 2 to 8 percent slopes
*Location in survey area:* About 5 miles southwest of Genesee, in Nez Perce County; about 2,000 feet south and 2,000 feet west of the northeast corner of sec. 12, T. 36 N., R. 6 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 30 inches
Depth to secondary carbonates—43 to 60 inches
Average annual soil temperature—50 to 54 degrees F

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—slightly acid or neutral

*Bw horizon:*
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Clay content—18 to 25 percent
Reaction—neutral or mildly alkaline

*Bk horizon:*
Hue—10YR or 2.5Y
Value—5 to 7 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Reaction—mildly alkaline or moderately alkaline

## Bakeoven Series

*Taxonomic class:* Loamy-skeletal, mixed, mesic Lithic Haploxerolls

*Depth class:* Very shallow
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Canyonsides
*Parent material:* Loess, residuum derived from basalt
*Slope range:* 10 to 35 percent
*Elevation:* 1,000 to 2,400 feet
*Climatic data (average annual):*
Precipitation—14 to 16 inches
Air temperature—50 to 52 degrees F
Frost-free season (32 degrees F)—150 to 165 days

### *Typical Pedon Description*

A—0 to 3 inches; dark grayish brown (10YR 4/2) very stony loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores; 20 percent gravel, 5 percent cobbles, and 30 percent stones; neutral (pH 6.8); clear wavy boundary.

Bw—3 to 6 inches; brown (10YR 4/3) very gravelly clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; hard, firm, sticky and plastic; many very fine and fine roots; common very fine irregular pores; 40 percent gravel and 5 percent cobbles; neutral (pH 7.2); clear smooth boundary.

R—6 inches; basalt.

### *Typical Pedon Location*

*Map unit in which located:* Bakeoven-Watama complex, 10 to 35 percent slopes

*Location in survey area:* About 2 miles north of Lewiston, in Nez Perce County; about 1,800 feet south and 2,400 feet west of the northeast corner of sec. 20, T. 36 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—4 to 10 inches
Depth to bedrock—4 to 10 inches
Average annual soil temperature—52 to 54 degrees F

*Particle-size control section (weighted average):*
Clay content—18 to 33 percent
Rock fragment content—40 to 60 percent

*A horizon:*
Value—4 or 5 dry
Chroma—2 or 3 moist

*Bw horizon:*
Value—4 or 5 dry
Texture—very gravelly clay loam or very gravelly loam
Rock fragment content—40 to 60 percent
Clay content—18 to 33 percent
Reaction—neutral or mildly alkaline

## Bluesprin Series

*Taxonomic class:* Loamy-skeletal, mixed, mesic Ultic Argixerolls

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus
*Parent material:* Loess over material weathered from basalt
*Slope range:* 10 to 35 percent
*Elevation:* 2,300 to 3,800 feet
*Climatic data (average annual):*
Precipitation—20 to 25 inches
Air temperature—45 to 48 degrees F
Frost-free season (32 degrees F)—100 to 130 days

### *Typical Pedon Description*

Ap1—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; less than 5 percent gravel; moderately acid (pH 5.8); clear smooth boundary.

Ap2—6 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak medium and coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few fine and very fine roots; common very fine and few fine tubular pores; less than 5 percent gravel; slightly acid (pH 6.3); gradual smooth boundary.

AB—9 to 14 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium and coarse subangular blocky structure; hard, firm, slightly sticky and plastic; few fine and very fine roots; common fine and very fine tubular pores; few faint patchy clay films on faces of peds and in pores; 5 percent gravel; neutral (pH 6.8); clear wavy boundary.

2Bt1—14 to 22 inches; brown (10YR 5/3) and yellowish brown (10YR 5/4) very gravelly silty clay loam, dark brown (10YR 3/3) and dark yellowish brown (10YR 3/4) moist; moderate medium and coarse subangular blocky structure; hard, firm, slightly sticky and plastic; few very fine roots; common fine and very fine tubular pores; common faint discontinuous clay films on faces of peds and in pores; few fine iron and manganese concretions; 20 percent cobbles and 30 percent gravel; slightly acid (pH 6.5); clear wavy boundary.

2Bt2—22 to 28 inches; yellowish brown (10YR 5/4) extremely gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and plastic; few very fine roots; common fine and very fine tubular pores; common faint and few distinct discontinuous clay films on faces of peds and in pores; common fine iron concretions;

few distinct strong brown (7.5YR 4/6) iron stains; 30 percent cobbles and 35 percent gravel; neutral (pH 6.8); clear wavy boundary.

2R—28 inches; basalt.

### *Typical Pedon Location*

*Map unit in which located:* Southwick-Bluesprin complex, 10 to 35 percent slopes

*Location in survey area:* About 1 mile north of Gifford, in Nez Perce County; about 800 feet south and 450 feet west of the northeast corner of sec. 22, T. 36 N., R. 2 W.

### *Range in Characteristics*

*Profile:*

Thickness of mollic epipedon—10 to 18 inches

Base saturation—60 to 75 percent in some part between 10 and 30 inches

Depth to bedrock—20 to 40 inches

Average annual soil temperature—47 to 50 degrees F

*Particle-size control section (weighted average):*

Clay content—27 to 34 percent

Coarse fragment content—50 to 80 percent

*A horizon:*

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Reaction—moderately acid to neutral

*2Bt horizon:*

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very gravelly silty clay loam, very gravelly silt loam, extremely gravelly silty clay loam, or extremely gravelly clay loam

Coarse fragment content—40 to 85 percent

Clay content—25 to 34 percent

Reaction—slightly acid or neutral

## Boles Series

*Taxonomic class:* Fine, montmorillonitic, frigid Xeric Argialbolls

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Permeability:* Slow

*Landform:* Hills on plateaus

*Parent material:* Loess

*Slope range:* 1 to 6 percent

*Elevation:* 4,000 to 4,500 feet

*Climatic data (average annual):*

Precipitation—22 to 25 inches

Air temperature—43 to 44 degrees F

Frost-free season (32 degrees F)—80 to 100 days

### *Typical Pedon Description*

Oi—1 inch to 0; undecomposed and partially decomposed needles, leaves, twigs, cones, and bark.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; strong fine and medium granular structure; slightly hard, friable, slightly sticky and plastic; many very fine, fine, and medium roots; many very fine and fine tubular pores; strongly acid (pH 5.4); gradual smooth boundary.

A2—4 to 10 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many very fine, fine, and medium roots; many very fine and fine tubular pores; strongly acid (pH 5.4); gradual wavy boundary.

AB—10 to 13 inches; grayish brown (10YR 5/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine, fine, and medium roots and few coarse roots; many very fine, fine, and medium tubular pores; slightly acid (pH 6.1); gradual wavy boundary.

E1—13 to 15 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium and coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; few fine rounded iron and manganese concretions; slightly acid (pH 6.2); clear smooth boundary.

E2—15 to 17 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; moderate medium and thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; few fine rounded iron and manganese concretions; slightly acid (pH 6.2); abrupt smooth boundary.

Btb1—17 to 21 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; moderate medium and coarse prismatic structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots, some flattened against faces of peds; common very fine and fine tubular pores; nearly continuous slickensides; few faint clay films on faces of peds and in pores; many prominent continuous skeletans capping tops of prisms; few fine rounded iron and manganese concretions; slightly acid (pH 6.2); clear wavy boundary.

Btb2—21 to 45 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; strong medium and coarse angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots, some flattened against faces of peds; few very fine and fine tubular pores; nearly continuous slickensides; few faint clay films on faces of peds and in pores; few fine rounded iron and manganese concretions; neutral (pH 6.6); abrupt smooth boundary.

Btkb—45 to 70 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse angular blocky structure; hard, firm, sticky and plastic; many very fine and fine tubular pores; many prominent clay films on faces of peds and in pores; strongly effervescent; common fine soft masses of lime; neutral (pH 7.2).

### *Typical Pedon Location*

*Map unit in which located:* Boles-Joel complex, 1 to 8 percent slopes

*Location in survey area:* About 2 miles south of Mason Butte, in Lewis County; about 600 feet south and 2,650 feet east of the northwest corner of sec. 34, T. 33 N., R. 2 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 18 inches
Organic matter content in mollic epipedon (weighted average)—3 to 6 percent
Depth to seasonal perched water table—10 to 18 inches in February through April
Depth to argillic horizon—14 to 22 inches
Depth to secondary carbonates—40 to 60 inches or more
Average annual soil temperature—45 to 46 degrees F

*Particle-size control section (weighted average):*
Clay content—40 to 52 percent

*A horizon:*
Value—3 or 4 dry
Chroma—1 or 2 dry or moist
Reaction—strongly acid to slightly acid

*E horizon:*
Value—6 or 7 dry, 4 or 5 moist
Chroma—1 or 2 dry or moist
Clay content—14 to 20 percent

*Btb horizon:*
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—silty clay or clay
Clay content—40 to 52 percent
Reaction—slightly acid or neutral

*Btkb horizon (absent in some pedons):*
Value—4 to 6 dry, 3 or 4 moist
Texture—silty clay loam, silty clay, or clay
Clay content—36 to 50 percent
Calcium carbonate equivalent—5 to 20 percent
Reaction—neutral or mildly alkaline

## Bridgewater Series

*Taxonomic class:* Loamy-skeletal, mixed, mesic Cumulic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part and very rapid in the lower part
*Landform:* Stream terraces
*Parent material:* Gravelly alluvium derived dominantly from basalt
*Slope range:* 1 to 4 percent
*Elevation:* 750 to 2,300 feet
*Climatic data (average annual):*
Precipitation—16 to 22 inches
Air temperature—50 to 54 degrees F
Frost-free season (32 degrees F)—160 to 190 days

### *Typical Pedon Description*

A1—0 to 16 inches; dark brown (10YR 4/3) extremely gravelly sandy loam, very dark brown (10YR 2/2) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; few fine and very fine tubular pores; 50 percent gravel and 25 percent cobbles; neutral (pH 7.2); clear smooth boundary.

A2—16 to 22 inches; brown (10YR 4/3) extremely gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many medium, fine, and very fine roots; few very fine tubular pores; slightly effervescent; disseminated lime throughout; 40 percent gravel and 20 percent cobbles; fine stratification of color and texture is visible; mildly alkaline (pH 7.6); clear wavy boundary.

AC—22 to 34 inches; brown (10YR 4/3) extremely cobbly sandy loam, very dark brown (10YR 2/2) moist; massive; soft, friable, slightly sticky and nonplastic; many medium, fine, and very fine roots; few very fine irregular pores; 30 percent gravel and 40 percent cobbles; mildly alkaline (pH 7.6); clear wavy boundary.

2C—34 to 60 inches; dark grayish brown (10YR 4/2) extremely gravelly loamy coarse sand, very dark brown (10YR 2/2) moist; single grain; loose, nonsticky and nonplastic; many medium, fine, and very fine roots; many very fine irregular pores; 50 percent gravel and 35 percent cobbles; 2-inch-thick lens of extremely gravelly sandy loam at a depth of 55 inches; mildly alkaline (pH 7.6).

### *Typical Pedon Location*

*Map unit in which located:* Lapwai-Bridgewater complex, 1 to 4 percent slopes
*Location in survey area:* About 3 miles southeast of Lapwai, in Nez Perce County; about 1,225 feet north and 1,620 feet east of the southwest corner of sec. 19, T. 35 N., R. 3 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 35 inches
Depth to 2C horizon—30 to 40 inches
Average annual soil temperature—52 to 56 degrees F
Frequency of flooding—rare

*Particle-size control section (weighted average):*
Clay content—8 to 15 percent
Coarse fragment content—60 to 80 percent

*A1 horizon:*
Value—3 or 4 dry
Chroma—2 or 3 dry, 1 or 2 moist
Reaction—slightly acid or neutral

*A2 and AC horizons:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—extremely gravelly loam, extremely gravelly sandy loam, or extremely cobbly sandy loam
Coarse fragment content—60 to 80 percent
Clay content—10 to 22 percent
Reaction—neutral or mildly alkaline

*2C horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—extremely gravelly loamy coarse sand, extremely gravelly sand, or extremely cobbly sand
Coarse fragment content—60 to 85 percent
Reaction—neutral or mildly alkaline

## Broadax Series

*Taxonomic class:* Fine-silty, mixed, mesic Calcic Argixerolls
*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 1 to 25 percent
*Elevation:* 1,500 to 2,900 feet
*Climatic data (average annual):*
Precipitation—15 to 20 inches
Air temperature—48 to 51 degrees F
Frost-free season (32 degrees F)—140 to 170 days

### *Typical Pedon Description*

Ap1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine tubular pores; moderately acid (pH 6.0); abrupt smooth boundary.

Ap2—4 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; weak thick platy structure parting to moderate fine and medium subangular blocky; hard, firm, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine tubular pores; moderately acid (pH 5.9); clear smooth boundary.

BA—9 to 16 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine tubular pores; worm channels filled with A horizon material; neutral (pH 6.8); clear smooth boundary.

Bt1—16 to 26 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; common very fine and few fine roots; many very fine and fine tubular pores; common distinct discontinuous clay films on faces of peds and lining pores; common prominent discontinuous skeletans on faces of peds; few organic stains on faces of peds; mildly alkaline (pH 7.4); clear wavy boundary.

Bt2—26 to 33 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/3) moist; weak fine and medium prismatic structure parting to weak fine and medium subangular blocky; hard, friable, sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular

pores; common faint and few distinct discontinuous clay films on faces of peds and lining pores; krotovinas of A horizon material 4 inches in diameter; much mixing evident in horizon; mildly alkaline (pH 7.6); abrupt wavy boundary.

BC—33 to 37 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine tubular pores; mildly alkaline (pH 7.6); clear wavy boundary.

Btkb1—37 to 41 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak fine prismatic structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine tubular pores; common faint discontinuous clay films lining pores; violently effervescent; few fine veins of lime, noncalcareous matrix; moderately alkaline (pH 7.9); gradual wavy boundary.

Btkb2—41 to 65 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine and common medium tubular pores; few faint clay films lining pores; violently effervescent; many medium white (10YR 8/2) veins of lime; 9 percent calcium carbonate equivalent; moderately alkaline (pH 8.4).

### *Typical Pedon Location*

*Map unit in which located:* Broadax-Hatwai complex, 1 to 8 percent slopes

*Location in survey area:* About 1.5 miles northeast of Mann Lake, in Nez Perce County; about 2,800 feet south and 2,500 feet east of the northwest corner of sec. 15, T. 35 N., R. 4 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—12 to 20 inches
Depth to secondary carbonates—30 to 43 inches
Average annual soil temperature—50 to 53 degrees F

*Ap horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 to 3 moist
Reaction—moderately acid to neutral

*Bt horizon:*
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—24 to 35 percent

*BC horizon (absent in some pedons):*
Value—4 or 5 moist
Chroma—3 or 4 dry or moist
Reaction—mildly alkaline or moderately alkaline

*Btkb horizon:*
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—15 to 25 percent
Calcium carbonate equivalent—2 to 25 percent
Sodium adsorption ratio—3 to 10
Exchangeable sodium percentage—5 to 15
Reaction—moderately alkaline or strongly alkaline

## Bryden Series

*Taxonomic class:* Fine-silty, mixed, mesic Typic Durixerolls

*Depth class:* Moderately deep to a duripan
*Drainage class:* Well drained
*Permeability:* Moderately slow above the duripan
*Landform:* Hills on plateaus
*Parent material:* Loess over material weathered from basalt
*Slope range:* 2 to 12 percent
*Elevation:* 1,400 to 2,500 feet
*Climatic data (average annual):*
Precipitation—13 to 16 inches
Air temperature—49 to 52 degrees F
Frost-free season (32 degrees F)—150 to 180 days

### *Typical Pedon Description*

Ap1—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate thick platy structure parting to moderate medium granular; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine tubular pores; slightly acid (pH 6.4); clear smooth boundary.

Ap2—7 to 10 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; neutral (pH 6.9); clear wavy boundary.

Bt—10 to 13 inches; dark brown (10YR 4/3) silty clay loam, very dark grayish brown (10YR 3/2) moist; strong fine prismatic structure; hard, firm, sticky and plastic; many very fine and fine roots; many very fine and fine tubular pores; many faint

discontinuous very dark grayish brown (10YR 3/2) clay films on faces of peds and lining pores; 9 percent exchangeable sodium; mildly alkaline (pH 7.8); clear wavy boundary.

Btn—13 to 19 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; strong medium prismatic structure; hard, firm, sticky and plastic; many very fine and fine roots; many very fine and fine tubular pores; many distinct discontinuous very dark grayish brown (10YR 3/2) clay films on faces of peds and lining pores; sodium adsorption ratio of 10; 15 percent exchangeable sodium; moderately alkaline (pH 8.4); gradual wavy boundary.

Btkn—19 to 25 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; few faint discontinuous clay films on faces of peds; strongly effervescent (5 percent calcium carbonate equivalent); disseminated lime and few very fine soft masses of lime; sodium adsorption ratio of 15; 21 percent exchangeable sodium; strongly alkaline (pH 8.7); clear irregular boundary.

Bkn—25 to 31 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak coarse prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; strongly effervescent (20 percent calcium carbonate equivalent); disseminated lime and few fine filaments of lime; 3 percent gravel; sodium adsorption ratio of 20; 28 percent exchangeable sodium; strongly alkaline (pH 8.7); clear irregular boundary.

2Bknq—31 to 37 inches; white (10YR 8/2) very gravelly silt loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; violently effervescent (60 percent calcium carbonate equivalent); disseminated lime; 30 percent indurated durinodes and 10 percent basalt gravel; sodium adsorption ratio of 19; 33 percent exchangeable sodium; strongly alkaline (pH 8.8); abrupt wavy boundary.

2Bknqm—37 to 60 inches; white (10YR 8/2) indurated duripan, very pale brown (10YR 7/3) moist; strong very thick platy structure; extremely hard, extremely firm; indurated plates are 1 to 2 inches thick and 4 to 8 inches long; nearly continuous laminar cap; 1-inch-thick lenses of soft, very friable gravelly silt loam between plates; violently effervescent (85 percent calcium carbonate equivalent); disseminated lime; sodium adsorption ratio of 18; 35 percent exchangeable sodium; very strongly alkaline (pH 9.5).

## *Typical Pedon Location*

*Map unit in which located:* Endicott-Bryden complex, 2 to 6 percent slopes (fig. 22)

*Location in survey area:* About 3 miles southeast of Lewiston, in Nez Perce County; about 2,550 feet north and 1,600 feet west of the southeast corner of sec. 36, T. 35 N., R. 5 W.

## *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—12 to 26 inches
Depth to natric horizon—8 to 18 inches
Depth to secondary carbonates—14 to 22 inches
Depth to duripan—25 to 40 inches
Depth to bedrock—more than 50 inches
Average annual soil temperature—50 to 54 degrees F

*Particle-size control section (weighted average):*
Clay content—20 to 27 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Reaction—slightly acid to mildly alkaline

*Bt horizon, and Btn horizon (absent in some pedons):*
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—silt loam or silty clay loam
Clay content—18 to 30 percent
Sodium adsorption ratio—4 to 20
Exchangeable sodium percentage—8 to 21
Reaction—neutral to moderately alkaline

*Btkn and Bkn horizons:*
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Clay content—18 to 26 percent
Calcium carbonate equivalent—5 to 25 percent
Sodium adsorption ratio—13 to 26
Exchangeable sodium percentage—18 to 30
Reaction—moderately alkaline or strongly alkaline

*2Bknq horizon:*
Value—7 or 8 dry
Chroma—2 or 3 dry or moist
Texture—very gravelly loam, very gravelly silt loam, gravelly loam, or gravelly silt loam
Coarse fragment content—15 to 45 percent
Calcium carbonate equivalent—50 to 85 percent
Sodium adsorption ratio—15 to 25
Exchangeable sodium percentage—25 to 35
Reaction—strongly alkaline or very strongly alkaline

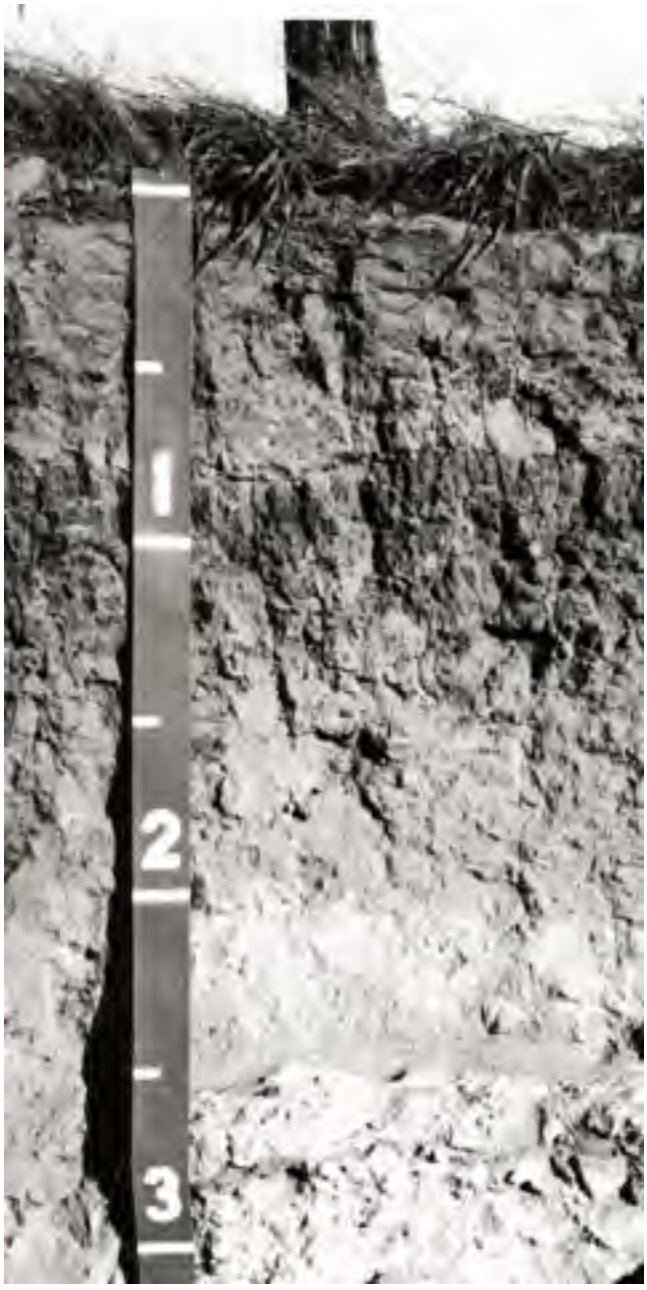


**Figure 22.—A profile of Bryden silt loam in an area of Endicott-Bryden complex, 2 to 6 percent slopes. A natric horizon is at a depth of about 9 inches, and an indurated duripan is at a depth of about 30 inches (numerals on tape indicate feet).**

## Caldwell Series

*Taxonomic class:* Fine-silty, mixed, mesic Cumulic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Permeability:* Moderately slow
*Landform:* Flood plains
*Parent material:* Alluvium
*Slope range:* 0 to 3 percent
*Elevation:* 2,570 to 2,780 feet
*Climatic data (average annual):*
Precipitation—18 to 23 inches
Air temperature—45 to 46 degrees F
Frost-free period—110 to 135 days

### *Typical Pedon Description*

Ap—0 to 9 inches; grayish brown (10YR 5/2) silt loam, very dark gray (10YR 3/1) moist; weak thick platy structure parting to weak fine granular; slightly hard, friable, slightly sticky and slightly plastic; many roots; common fine pores; neutral; abrupt smooth boundary.

A1—9 to 17 inches; dark gray (10YR 4/1) silt loam, black (10YR 2/1) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and slightly plastic; common roots; common fine pores; neutral; clear smooth boundary.

A2—17 to 26 inches; dark gray (10YR 4/1) silt loam, very dark gray (10YR 3/1) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, slightly firm, sticky and plastic; common roots; many fine pores; faint patchy clay films; some organic stains on peds; gray siliceous coatings on vertical faces of peds; neutral; clear smooth boundary.

Bw—26 to 39 inches; gray (10YR 5/1) silty clay loam, very dark gray (10YR 3/1) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; common fine roots; common fine pores; faint patchy clay films; gray coatings of silt on peds; neutral; abrupt smooth boundary.

Cg1—39 to 54 inches; light brownish gray (2.5Y 6/2) silty clay loam, very dark grayish brown (2.5Y 3/2) moist; many fine distinct yellowish brown (10YR 5/6) and brown (7.5YR 4/4) mottles; massive; hard, firm, sticky and plastic; few roots; few fine pores; few very faint clay films; neutral; abrupt smooth boundary.

Cg2—54 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; common fine distinct mottles; massive; hard, firm, sticky and plastic; few fine tubular pores; neutral.

### *Typical Pedon Location*

*Location in adjacent survey area:* About 5 miles northeast of Pullman, in Whitman County,

Washington; about 200 feet north and 400 feet west of the southeast corner of sec. 15, T. 15 N., R. 45 E.

### *Range in Characteristics*

*Profile:*
Depth to seasonal high water table—30 to 48 inches in November through June
Frequency of flooding—occasional for very brief periods in January through May

Small pockets of volcanic ash and basalt fragments are in the lower part in some pedons.

*Particle-size control section (weighted average):*
Clay content—25 to 30 percent

*A horizon:*
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist

*Bw horizon:*
Value—4 or 5 dry, 3 or 4 moist
Chroma—1 or 2 dry or moist

*Cg horizon:*
Hue—2.5Y or 10YR
Value—4 to 7 dry, 2 to 4 moist
Chroma—1 or 2 dry or moist
Texture—silt loam or silty clay loam

## Calouse Series

*Taxonomic class:* Fine-silty, mixed, mesic Calcic Pachic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 2 to 15 percent
*Elevation:* 1,900 to 2,700 feet
*Climatic data: (average annual):*
Precipitation—15 to 18 inches
Air temperature—49 to 52 degrees F
Frost-free season (32 degrees F)—130 to 170 days

### *Typical Pedon Description*

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate coarse and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; moderately acid (pH 5.7); clear smooth boundary.

BA—10 to 16 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium prismatic structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; mildly alkaline (pH 7.4); clear wavy boundary.

Bw1—16 to 23 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; mildly alkaline (pH 7.8); gradual wavy boundary.

Bw2—23 to 32 inches; yellowish brown (10YR 5/4) silt loam, brown (10YR 4/3) moist; moderate medium prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk1—32 to 39 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 4/3) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine and fine roots; many very fine and fine tubular pores; slightly effervescent (3 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.3); abrupt irregular boundary.

Bk2—39 to 57 inches; white (10YR 8/2) and very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) and brown (10YR 5/3) moist; weak coarse prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; white part is slightly cemented, and very pale brown part is noncemented; few very fine and fine roots; many very fine and fine tubular pores; few fine and medium durinodes; white part is violently effervescent (30 percent calcium carbonate equivalent) and very pale brown part is strongly effervescent (16 percent calcium carbonate equivalent); disseminated lime; 2 percent fine gravel; strongly alkaline (pH 9.0); clear wavy boundary.

Bk3—57 to 68 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak coarse prismatic structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine tubular pores; few fine and medium durinodes; violently effervescent (25 percent calcium

carbonate equivalent); disseminated lime; 3 percent fine gravel; strongly alkaline (pH 9.0).

### *Typical Pedon Location*

*Map unit in which located:* Calouse-Endicott-Bryden complex, 2 to 6 percent slopes

*Location in survey area:* About 5 miles southeast of Lewiston, in Nez Perce County; about 750 feet south and 1,230 feet west of the northeast corner of sec. 3, T. 34 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 26 inches
Depth to secondary carbonates—27 to 36 inches
Average annual soil temperature—51 to 54 degrees F

A weakly cemented Bkq horizon is below a depth of 50 inches in some pedons.

*Particle-size control section (weighted average):*
Clay content—18 to 23 percent

*Ap horizon:*
Value—4 or 5 dry
Chroma—2 or 3 dry
Reaction—moderately acid to neutral

*Bw horizon:*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry
Clay content—18 to 23 percent
Reaction—neutral to moderately alkaline

*Bk horizon:*
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 to 4 dry, 2 or 3 moist
Calcium carbonate equivalent—1 to 30 percent
Durinode content—0 to 5 percent
Sodium adsorption ratio—2 to 10
Reaction—moderately alkaline or strongly alkaline

## Carlinton Series

*Taxonomic class:* Fine-silty, mixed, frigid Vitrandic Fragixeralfs

*Depth class:* Moderately deep to a fragipan
*Drainage class:* Moderately well drained
*Permeability:* Moderate above the fragipan and very slow through it
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 2 to 20 percent
*Elevation:* 3,800 to 4,500 feet

*Climatic data (average annual):*
Precipitation—24 to 26 inches
Air temperature—42 to 44 degrees F
Frost-free season (32 degrees F)—60 to 110 days

### *Typical Pedon Description*

Ap—0 to 8 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; strong coarse subangular blocky structure parting to strong medium granular; slightly hard, friable, nonsticky and nonplastic; common very fine roots; strongly acid (pH 5.3); abrupt smooth boundary.

Bt1—8 to 15 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; weak very thick platy structure parting to weak coarse subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many fine and very fine tubular pores; few faint patchy clay films on faces of peds and in pores; slightly acid (pH 6.2); clear wavy boundary.

Bt2—15 to 22 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many fine and very fine tubular pores; common faint discontinuous clay films on faces of peds and in pores; slightly acid (pH 6.4); clear wavy boundary.

B/E—22 to 26 inches; 80 percent light yellowish brown (10YR 6/4) silt loam B material, dark yellowish brown (10YR 3/4) moist, and 20 percent very pale brown (10YR 7/3) silt loam E material, brown (10YR 5/3) moist; many fine distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many fine and very fine tubular pores; slightly acid (pH 6.4); clear wavy boundary.

E—26 to 28 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; many fine distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many fine and very fine tubular pores; common small spots of B horizon material; slightly acid (pH 6.3); abrupt smooth boundary.

Btxb1—28 to 40 inches; pale brown (10YR 6/3) silty clay loam, dark yellowish brown (10YR 3/4) moist; strong coarse and very coarse prismatic structure; very hard, very firm, brittle, sticky and plastic; few very fine roots along faces of prisms; common fine and very fine tubular pores; many prominent continuous dark yellowish brown (10YR 3/4) clay

films on faces of prisms and many faint patchy clay films on faces of prisms; few continuous very dark brown (10YR 2/2) organic coatings on faces of prisms; many very fine pockets of uncoated silt in prisms; many prominent continuous light gray (10YR 7/2) skeletans on faces of prisms; neutral (pH 6.7); gradual wavy boundary.

Btxb2—40 to 50 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 3/4) moist; moderate very coarse prismatic structure parting to strong fine and medium angular blocky; very hard, firm, brittle, sticky and plastic; common fine and very fine tubular pores; many continuous prominent dark yellowish brown (10YR 3/4) clay films on faces of prisms; few continuous very dark brown (10YR 2/2) organic coatings on faces of peds; many very fine pockets of uncoated silt in prisms; common discontinuous distinct light gray (10YR 7/2) skeletans on faces of prisms; common prominent patchy iron and manganese coatings on faces of peds; neutral (pH 7.2); gradual wavy boundary.

Btb—50 to 61 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 3/4) moist; strong medium and fine angular blocky structure; very hard, firm, sticky and plastic; common fine and very fine tubular pores; many discontinuous faint clay films on faces of peds and in pores; few fine and medium rounded iron and manganese concretions and common prominent patchy iron and manganese coatings on faces of peds; mildly alkaline (pH 7.5).

### *Typical Pedon Location*

*Map unit in which located:* Carlinton silt loam, 2 to 10 percent slopes

*Location in survey area:* About 4 miles north of Winchester, in Lewis County; about 550 feet south and 2,465 feet west of the northeast corner of sec. 13, T. 34 N., R. 3 W.

### *Range in Characteristics*

*Profile:*
Depth to seasonal perched water table—18 to 36 inches in February through May
Depth to fragipan—26 to 36 inches
Average annual soil temperature—44 to 46 degrees F

*Particle-size control section (weighted average):*
Clay content—19 to 22 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—strongly acid to slightly acid

*Bt horizon:*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—18 to 22 percent
Base saturation—60 to 75 percent
Reaction—moderately acid or slightly acid

*B/E horizon:*
Value (B material)—5 or 6 dry, 3 or 4 moist
Chroma (B material)—3 or 4 dry or moist
Value (E material)—6 or 7 dry, 4 or 5 moist
Chroma (E material)—2 or 3 dry or moist
Clay content—20 to 26 percent
Base saturation—60 to 80 percent
Reaction—moderately acid or slightly acid

*E horizon:*
Value—7 or 8 dry, 6 or 7 moist
Chroma—2 or 3 dry or moist
Clay content—18 to 24 percent
Reaction—moderately acid to neutral

*Btxb horizon:*
Value—3 or 4 moist
Chroma—3 or 4 dry
Clay content—28 to 34 percent
Bulk density—1.60 to 1.70 grams per centimeter
Reaction—moderately acid to neutral

*Btb horizon:*
Value—3 or 4 moist
Clay content—28 to 34 percent
Reaction—slightly acid to mildly alkaline

## Cavendish Series

*Taxonomic class:* Fine-loamy, mixed, frigid Ultic Haploxeralfs

*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus
*Parent material:* Loess over material weathered from basalt
*Slope range:* 8 to 20 percent
*Elevation:* 2,600 to 4,000 feet
*Climatic data (average annual):*
Precipitation—24 to 25 inches
Air temperature—44 to 45 degrees F
Frost-free season (32 degrees F)—110 to 130 days

### *Typical Pedon Description*

Ap—0 to 5 inches; brown (7.5YR 5/4) silt loam, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure parting to weak fine granular;

slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine irregular pores; 5 percent gravel; moderately acid (pH 5.8); abrupt smooth boundary.

A—5 to 8 inches; brown (7.5YR 5/4) silt loam, dark brown (7.5YR 3/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores and few fine tubular pores; 5 percent gravel; moderately acid (pH 6.0); clear wavy boundary.

Bt1—8 to 15 inches; reddish brown (5YR 5/4) silty clay loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common fine roots; common fine irregular and tubular pores; 5 percent gravel; many faint discontinuous clay films lining pores and on faces of peds; slightly acid (pH 6.4); gradual wavy boundary.

Bt2—15 to 30 inches; yellowish red (5YR 5/6) silty clay loam, reddish brown (5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; few fine roots; many very fine and fine irregular pores and common fine tubular pores; 10 percent gravel; many faint discontinuous clay films lining pores and on faces of peds; neutral (pH 6.6); gradual wavy boundary.

2Bt3—30 to 43 inches; yellowish red (5YR 5/6) gravelly clay loam, yellowish red (5YR 4/6) moist; moderate medium and coarse subangular blocky structure; hard, friable, sticky and plastic; few fine roots; many very fine and fine irregular and tubular pores; 30 percent gravel; many faint continuous clay films lining pores and on faces of peds; neutral (pH 6.8); clear wavy boundary.

2Cr—43 inches; weathered basalt.

### *Typical Pedon Location*

*Location in adjacent survey area:* About 1 mile south of Teakean, in Clearwater County; about 50 feet north and 1,500 feet west of the southeast corner of sec. 19, T. 37 N., R. 1 E.

### *Range in Characteristics*

*Profile:*
Depth to weathered basalt—40 to 60 inches
Average annual soil temperature—45 to 47 degrees F

*Particle-size control section (weighted average):*
Clay content—25 to 33 percent
Coarse fragment content—10 to 35 percent

*A horizon:*
Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist

*Bt horizon:*
Hue—5YR, 7.5YR, or 10YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Texture—silty clay loam, clay loam, silt loam, gravelly clay loam, or gravelly silty clay loam
Coarse fragment content—5 to 20 percent
Reaction—strongly acid to neutral

*2Bt horizon:*
Hue—5YR, 7.5YR, or 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—4 to 6 dry, 3 to 6 moist
Texture—gravelly clay loam, cobbly clay loam, or clay loam
Rock fragment content—10 to 30 percent gravel and 0 to 30 percent cobbles
Reaction—strongly acid to neutral

## Chard Series

*Taxonomic class:* Coarse-loamy, mixed, mesic Calcic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate to a depth of 55 inches and rapid below
*Landform:* Dissected alluvial terraces
*Parent material:* Alluvium with some influence of loess in upper part
*Slope range:* 1 to 65 percent
*Elevation:* 740 to 1,360 feet
*Climatic data (average annual):*
Precipitation—12 to 15 inches
Air temperature—52 to 53 degrees F
Frost-free season (32 degrees F)—170 to 190 days

### *Typical Pedon Description*

Ap—0 to 6 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine tubular pores; neutral (pH 7.0); abrupt smooth boundary.

A—6 to 15 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; mildly alkaline (pH 7.4); gradual wavy boundary.

Bw1—15 to 26 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate coarse prismatic structure parting to weak medium subangular blocky; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; mildly alkaline (pH 7.8); gradual wavy boundary.

Bw2—26 to 32 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to weak coarse subangular blocky; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; mildly alkaline (pH 7.8); abrupt wavy boundary.

Bk1—32 to 39 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; violently effervescent (11 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.4); clear wavy boundary.

2Bk2—39 to 46 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; massive; very soft, very friable, nonsticky and nonplastic; few very fine tubular pores; violently effervescent (5 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.4); clear wavy boundary.

2Bk3—46 to 55 inches; light gray (10YR 7/2) loam, brown (10YR 4/3) moist; massive; soft, friable, nonsticky and nonplastic; few very fine tubular pores; violently effervescent (10 percent calcium carbonate equivalent); disseminated lime; strongly alkaline (pH 8.8); abrupt wavy boundary.

3C—55 to 62 inches; multicolored sand that is dominantly gray (10YR 5/1), dark gray (10YR 4/1) moist; single grain; loose, nonsticky and nonplastic; slightly effervescent (3 percent calcium carbonate equivalent); disseminated lime; strongly alkaline (pH 8.6).

### *Typical Pedon Location*

*Map unit in which located:* Chard silt loam, 10 to 25 percent slopes (fig. 23)

*Location in survey area:* Near the intersection of 9th Street and 11th Avenue in Lewiston, in Nez Perce County; about 100 feet north and 2,540 feet east of the southwest corner of sec. 32, T. 36 N., R. 5 W.

### *Range in Characteristics*

*Profile:*

Thickness of mollic epipedon—10 to 16 inches

**Figure 23.—A profile of Chard silt loam, 10 to 25 percent slopes (numerals on tape indicate feet).**

Depth to secondary carbonates—20 to 34 inches

Average annual soil temperature—54 to 55 degrees F

*Particle-size control section (weighted average):*

Clay content—6 to 12 percent

Content of fine sand and coarser—15 to 30 percent

*A horizon:*

Value—4 or 5 dry

Chroma—2 or 3 dry
Reaction—neutral or mildly alkaline

*Bw horizon:*
Value—3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—silt loam or loam
Reaction—neutral to moderately alkaline

*Bk1, 2Bk2, and 2Bk3 horizons:*
Value—4 to 6 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist
Texture—loam, fine sandy loam, or very fine sandy loam
Gravel content—less than 5 percent
Calcium carbonate equivalent—1 to 12 percent
Sodium adsorption ratio—2 to 20
Reaction—moderately alkaline or strongly alkaline

*3C horizon:*
Value—4 to 6 dry, 3 to 5 moist
Texture—sand, loamy fine sand, or fine sand
Sodium adsorption ratio—10 to 25
Reaction—strongly alkaline or very strongly alkaline

## Cramont Series

*Taxonomic class:* Fine, montmorillonitic, frigid Vitrandic Haploxeralfs

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Landform:* Hills on high plateaus
*Parent material:* Volcanic ash, loess, material weathered from basalt
*Slope range:* 2 to 20 percent
*Elevation:* 4,100 to 5,000 feet
*Climatic data (average annual):*
Precipitation—25 to 28 inches
Air temperature—41 to 43 degrees F
Frost-free season (32 degrees F)—60 to 85 days

### *Typical Pedon Description*

Oi—1 inch to 0; slightly decomposed moss, needles, and twigs.

A—0 to 2 inches; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; strong fine granular structure; soft, friable, slightly sticky and slightly plastic; many fine and very fine roots; common very fine tubular pores; moderately acid (pH 5.7); clear smooth boundary.

E—2 to 4 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; soft, friable, slightly sticky and slightly plastic; many fine and very fine roots and few medium roots; common very fine tubular pores; moderately acid (pH 5.6); clear smooth boundary.

EB—4 to 10 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots and few medium roots; common very fine tubular pores; few faint pale brown (10YR 6/3) skeletans on faces of peds; strongly acid (pH 5.4); clear wavy boundary.

BE—10 to 14 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and very fine roots and few medium roots; common fine and very fine tubular pores; many distinct pale brown (10YR 6/3) skeletans on faces of peds; strongly acid (pH 5.4); clear wavy boundary.

2Bt1—14 to 18 inches; dark yellowish brown (10YR 4/4) silty clay loam, dark yellowish brown (10YR 4/6) crushed, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; common fine and very fine roots and few medium roots; common fine and very fine tubular pores; many distinct pale brown (10YR 6/3) skeletans on faces of peds; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; strongly acid (pH 5.5); gradual wavy boundary.

2Bt2—18 to 31 inches; brown (7.5YR 4/4) silty clay loam, brown (7.5YR 5/4) crushed, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure parting to strong fine angular blocky; hard, firm, sticky and plastic; common fine roots; common fine and very fine tubular pores; common distinct pale brown (10YR 6/3) discontinuous skeletans on faces of peds; many prominent brown (7.5YR 4/4) clay films on faces of peds; 3 percent gravel; moderately acid (pH 5.8); gradual wavy boundary.

2Bt3—31 to 44 inches; brown (7.5YR 4/4) silty clay loam, brown (7.5YR 5/4) crushed, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure parting to strong medium and coarse angular blocky; hard, firm, sticky and plastic; few fine roots; many fine and very fine tubular pores; common distinct pale brown (10YR 6/3) skeletans on faces of peds; many prominent brown (7.5YR 4/4) clay films on faces of peds; 3 percent gravel; moderately acid (pH 5.9); diffuse wavy boundary.

2Bt4—44 to 65 inches; brown (7.5YR 4/4) silty clay

loam, brown (7.5YR 5/4) crushed, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure parting to strong medium and coarse angular blocky; hard, firm, sticky and plastic; few fine roots; many fine and very fine tubular pores; common distinct pale brown (10YR 6/3) discontinuous skeletans on faces of peds; many prominent brown (7.5YR 4/4) clay films on faces of peds; 3 percent gravel; moderately acid (pH 6.0).

### *Typical Pedon Location*

*Map unit in which located:* Cramont-Culdesac complex, 2 to 20 percent slopes
*Location in survey area:* About 1 mile south of Soldiers Meadow Reservoir, in Nez Perce County; about 930 feet south and 720 feet west of the northeast corner of sec. 5, T. 32 N., R. 3 W.

### *Range in Characteristics*

*Profile:*
Depth to cobbly material—40 to 60 inches or more
Average annual soil temperature—43 to 45 degrees F

*Particle-size control section (weighted average):*
Clay content—35 to 40 percent

*A horizon:*
Value—4 or 5 dry
Chroma—2 or 3 dry or moist
Volcanic glass content (0.02- to 2.0-millimeter fraction)—10 to 30 percent
Coarse silt and sand content—30 to 45 percent
Acid-oxalate extractable Al plus $^1/_2$ Fe—0.4 to 1.2 percent
Reaction—moderately acid to neutral

*E and EB horizons:*
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—14 to 24 percent
Volcanic glass content (0.02- to 2-millimeter fraction)—5 to 30 percent
Coarse silt and sand content—30 to 45 percent
Acid-oxalate extractable Al plus $^1/_2$ Fe—0.4 to 1.2 percent
Reaction—strongly acid to slightly acid

*2Bt horizon:*
Hue—7.5YR or 10YR
Value—4 or 5 dry
Chroma—4 to 6 dry or moist
Texture—silty clay loam or silty clay
Gravel content—less than 5 percent
Clay content—32 to 42 percent
Base saturation—55 to 75 percent
Reaction—strongly acid to slightly acid

*3Bt horizon (present only in some pedons):*
Hue—7.5YR or 10YR
Chroma—4 to 6 dry or moist
Clay content—32 to 40 percent
Rock fragment content—5 to 25 percent

## Crowers Series

*Taxonomic class:* Coarse-loamy, mixed, mesic Calcic Pachic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Canyonsides
*Parent material:* Loess with a minor amount of volcanic ash over colluvium derived from basalt
*Slope range:* 45 to 80 percent
*Elevation:* 740 to 2,800 feet
*Climatic data (average annual):*
Precipitation—13 to 16 inches
Air temperature—48 to 52 degrees F
Frost-free season (32 degrees F)—160 to 190 days

### *Typical Pedon Description*

A1—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, black (10YR 2/1) moist; weak coarse subangular blocky structure parting to strong fine granular; slightly hard, very friable, nonsticky and nonplastic; many fine and very fine roots; many very fine irregular pores; neutral (pH 6.8); clear smooth boundary.
A2—10 to 17 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak coarse subangular blocky structure parting to strong fine granular; slightly hard, very friable, nonsticky and nonplastic; many fine and very fine roots; many very fine irregular pores; 5 percent gravel; mildly alkaline (pH 7.4); clear smooth boundary.
A3—17 to 27 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate medium granular; slightly hard, friable, nonsticky and slightly plastic; many fine and very fine roots; many very fine irregular pores; 5 percent gravel; mildly alkaline (pH 7.4); clear smooth boundary.
Bw—27 to 31 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine

tubular pores; 5 percent gravel and 5 percent cobbles; mildly alkaline (pH 7.8); clear irregular boundary.

2Bk1—31 to 41 inches; brown (10YR 5/3) very cobbly silt loam, dark brown (10YR 3/3) moist; weak coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; strongly effervescent (5 percent calcium carbonate equivalent); lime is disseminated and in many very fine filaments and coatings on coarse fragments; 15 percent gravel and 25 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary.

2Bk2—41 to 62 inches; brown (10YR 5/3) cobbly silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine and very fine tubular pores; strongly effervescent (5 percent calcium carbonate equivalent); lime is disseminated and in many fine and medium seams and soft masses and coatings on coarse fragments; 5 percent gravel and 10 percent cobbles; moderately alkaline (pH 8.4).

### *Typical Pedon Location*

*Map unit in which located:* Limekiln-Crowers association, 45 to 80 percent slopes

*Location in survey area:* About 8 miles south of Lewiston, in Nez Perce County; about 170 feet north and 1,600 feet west of the southeast corner of sec. 27, T. 34 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Mollic epipedon thickness—22 to 34 inches
Depth to 2Bk horizon—28 to 36 inches
Average annual soil temperature—50 to 54 degrees F

*Particle-size control section (weighted average):*
Clay content—16 to 18 percent
Coarse fragment content—15 to 30 percent
Silt content—more than 50 percent

*A horizon:*
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 or 2 moist
Gravel content (lower part)—0 to 5 percent
Clay content (lower part)—12 to 16 percent
Reaction—neutral or mildly alkaline

*Bw horizon:*
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—silt loam or cobbly silt loam
Coarse fragment content—5 to 25 percent
Clay content—16 to 22 percent
Reaction—neutral or mildly alkaline

*2Bk1 horizon:*
Texture—extremely cobbly silt loam or very cobbly silt loam
Coarse fragment content—35 to 70 percent
Clay content—16 to 24 percent
Calcium carbonate equivalent—5 to 10 percent

*2Bk2 horizon (absent in some pedons):*
Coarse fragment content—15 to 35 percent
Clay content—16 to 24 percent
Calcium carbonate equivalent—5 to 10 percent

## Culdesac Series

*Taxonomic class:* Ashy over loamy, mixed, frigid Alfic Vitrixerands

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on high plateaus
*Parent material:* Volcanic ash, loess, material weathered from basalt
*Slope range:* 10 to 20 percent
*Elevation:* 4,100 to 5,000 feet
*Climatic data (average annual):*
Precipitation—26 to 28 inches
Air temperature—41 to 43 degrees F
Frost-free season (32 degrees F)—60 to 85 days

### *Typical Pedon Description*

Oi—2 inches to 1 inch; undecomposed needles and twigs.

Oe—1 inch to 0; partially decomposed needles and twigs.

A—0 to 3 inches; yellowish brown (10YR 5/4) silt loam, dark brown (7.5YR 3/4) moist; weak medium and thick platy structure parting to weak fine and medium subangular blocky; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine irregular pores; slightly acid (pH 6.4); clear wavy boundary.

Bw1—3 to 10 inches; light yellowish brown (10YR 6/4) silt loam, brown (7.5YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots and common coarse roots; many very fine and common fine irregular pores; slightly acid (pH 6.2); gradual wavy boundary.

Bw2—10 to 18 inches; light yellowish brown (10YR

6/4) silt loam, strong brown (7.5YR 4/6) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots and common coarse roots; many very fine and common fine irregular pores; slightly acid (pH 6.2); abrupt wavy boundary.

2Btb1—18 to 25 inches; light yellowish brown (10YR 6/4) silty clay loam, dark brown (7.5YR 4/4) moist; weak fine prismatic structure parting to moderate fine subangular blocky; hard, firm, sticky and plastic; many medium and coarse roots and common very fine and fine roots; many very fine and fine and common medium irregular pores and many very fine tubular pores; common faint and few distinct clay films lining pores and on faces of peds; few light yellowish brown (10YR 6/4) skeletans on faces of peds; 5 percent gravel; neutral (pH 6.6); clear smooth boundary.

2Btb2—25 to 41 inches; brown (7.5YR 5/4) silty clay loam, dark brown (7.5YR 4/4) moist; moderate fine and medium prismatic structure parting to moderate fine subangular blocky; hard, firm, sticky and plastic; common fine and medium roots; many very fine and fine and common medium irregular pores and common very fine and fine tubular pores; many distinct clay films lining pores and on faces of peds; 5 percent gravel; common light yellowish brown (10YR 6/4) skeletans on faces of peds; slightly acid (pH 6.5); clear wavy boundary.

2Btb3—41 to 54 inches; brown (7.5YR 5/4) silty clay loam, brown (7.5YR 4/4) moist; moderate fine prismatic structure parting to common fine subangular blocky; very hard, firm, sticky and plastic; few very fine roots and common fine and medium roots; many very fine and fine and common medium irregular pores and common very fine and fine tubular pores; common faint and few distinct clay films lining pores and on faces of peds; 5 percent gravel; few light yellowish brown (10YR 6/4) skeletans on faces of peds; neutral (pH 6.6); clear wavy boundary.

2Btb4—54 to 60 inches; brown (7.5YR 5/4) clay loam, strong brown (7.5YR 4/6) moist; weak fine and medium prismatic structure parting to moderate fine and medium subangular blocky; very hard, firm, sticky and plastic; few very fine, fine, and medium roots; many very fine and fine and common medium irregular pores; few distinct and common faint clay films lining pores and on faces of peds; 10 percent gravel; neutral (pH 6.6).

## *Typical Pedon Location*

*Map unit in which located:* Cramont-Culdesac complex, 2 to 20 percent slopes

*Location in survey area:* About 3 miles east of Soldiers Meadow Reservoir, in Lewis County; about 150 feet north and 2,200 feet east of the southwest corner of sec. 34, T. 33 N., R. 3 W.

## *Range in Characteristics*

*Profile:*

Average annual soil temperature—42 to 45 degrees F

*Volcanic ash mantle:*

Thickness—14 to 20 inches

Volcanic glass content (0.02- to 2.0-millimeter fraction)—20 to 45 percent

Acid-oxalate extractable Al plus $^1/_2$ Fe—0.5 to 2.0 percent

Bulk density—0.75 to 0.95 gram per centimeter

15-bar water retention—8 to 12 percent

*Lower part of particle-size control section (weighted average):*

Clay content—28 to 35 percent

Gravel content—0 to 5 percent

*A horizon:*

Hue—7.5YR or 10YR

Value—4 or 5 dry, 2 to 4 moist

Chroma—2 to 4 dry or moist

Reaction—moderately acid to neutral

*Bw horizon:*

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Fine gravel content—0 to 10 percent

Reaction—moderately acid or slightly acid

*2Btb horizon (upper part):*

Hue—7.5YR or 10YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Gravel content—0 to 10 percent

Clay content—28 to 38 percent

Base saturation—55 to 70 percent

Reaction—moderately acid to neutral

*2Btb horizon (lower part):*

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Texture—clay loam, silty clay loam, gravelly clay loam, or cobbly clay loam

Coarse fragment content—0 to 25 percent

Clay content—28 to 38 percent

Reaction—moderately acid to neutral

*3Btb horizon (present only in some pedons):*
Texture—extremely gravelly clay loam or very gravelly clay loam
Clay content—30 to 38 percent

## Dragnot Series

*Taxonomic class:* Fine-loamy, mixed, mesic Typic Argixerolls

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Canyonsides
*Parent material:* Colluvium derived from granodiorite
*Slope range:* 40 to 70 percent
*Elevation:* 1,200 to 3,000 feet
*Climatic data (average annual):*
Precipitation—22 to 24 inches
Air temperature—47 to 49 degrees F
Frost-free season (32 degrees F)—120 to 150 days

### *Typical Pedon Description*

A1—0 to 4 inches; brown (10YR 5/3) stony loam, very dark grayish brown (10YR 3/2) moist; weak fine to coarse granular structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; many very fine, fine, and medium tubular pores; 10 percent fine gravel and 3 percent stones; neutral (pH 7.0)); clear smooth boundary.
A2—4 to 11 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine to coarse granular structure; slightly hard, very friable, slightly sticky and nonplastic; many medium and common very fine and fine roots; many very fine and fine tubular and irregular pores; 10 percent fine gravel; neutral (pH 6.8); clear smooth boundary.
Bt—11 to 18 inches; brown (10YR 4/3) fine gravelly loam, dark brown (10YR 3/3) moist; weak fine to coarse subangular blocky structure; hard, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; many very fine and fine tubular and irregular pores; common faint patchy clay films on faces of peds and in pores; 15 percent fine gravel; neutral (pH 6.8); abrupt wavy boundary.
BC—18 to 31 inches; brown (10YR 5/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; hard, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; common very fine and fine tubular and irregular pores; 60 percent fine gravel; neutral (pH 6.8); abrupt wavy boundary.
R—31 inches; granodiorite.

### *Typical Pedon Location*

*Map unit in which located:* Johnson-Dragnot association, 40 to 70 percent slopes
*Location in survey area:* About 12 miles west of Kamiah, in Lewis County; about 2,000 feet north and 2,100 feet east of the southwest corner of sec. 7, T. 34 N., R. 3 E.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—8 to 16 inches
Base saturation—75 to 95 percent
Depth to bedrock—20 to 40 inches
Average annual soil temperature—49 to 52 degrees F

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

*Bt horizon:*
Value—4 or 5 dry, 3 or 4 moist
Texture—loam or fine gravelly loam
Gravel content—5 to 20 percent, dominantly fine gravel
Clay content—18 to 24 percent
Reaction—slightly acid or neutral

*BC horizon (absent in some pedons):*
Value—4 or 5 dry
Chroma—3 or 4 dry or moist
Texture—very gravelly sandy loam or very gravelly loam
Clay content—5 to 15 percent
Gravel content—40 to 60 percent, dominantly fine gravel
Reaction—slightly acid or neutral

## Driscoll Series

*Taxonomic class:* Fine, montmorillonitic, mesic Ultic Palexerolls

*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 2 to 25 percent
*Elevation:* 2,300 to 3,400 feet
*Climatic data (average annual):*
Precipitation—22 to 24 inches

Air temperature—45 to 47 degrees F
Frost-free season (32 degrees F)—100 to 130 days

### *Typical Pedon Description*

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; moderately acid (pH 5.6); clear smooth boundary.

A—7 to 13 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine and fine tubular pores; slightly acid (pH 6.4); gradual wavy boundary.

Bt—13 to 19 inches; brown (10YR 4/3) silt loam, mixed very dark grayish brown (10YR 3/2) and dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; hard, firm, slightly sticky and slightly plastic; few very fine roots; many very fine and fine tubular pores; few faint patchy clay films on faces of peds; neutral (pH 6.6); clear wavy boundary.

BE—19 to 27 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; common medium faint mottles that are yellowish brown (10YR 5/4) when moist; weak medium and coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; slightly brittle; few very fine roots; common very fine and fine and few medium tubular pores; few fine iron and manganese concretions; common dark organic stains on faces of peds; neutral (pH 6.6); clear wavy boundary.

E—27 to 31 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; common fine distinct mottles that are yellowish brown (10YR 5/4) when moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine and fine and few medium tubular pores; few fine iron and manganese concretions; neutral (pH 6.6); abrupt wavy boundary.

Btb1—31 to 37 inches; mixed pale brown (10YR 6/3) and light brown (7.5YR 6/4) silty clay, dark brown (10YR 4/3 and 7.5YR 4/4) moist; moderate coarse subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine and fine tubular pores; many prominent continuous clay films on faces of peds and in pores; common fine iron and manganese concretions; moderately acid (pH 5.6); clear wavy boundary.

Btb2—37 to 46 inches; light yellowish brown (10YR 6/4) silty clay, dark yellowish brown (10YR 4/6) moist; moderate coarse prismatic structure; very hard, very firm, very sticky and very plastic; few very fine and fine tubular pores; many distinct and common prominent discontinuous clay films on faces of peds and in pores; few fine iron and manganese concretions; slightly acid (pH 6.5); gradual wavy boundary.

2Btb3—46 to 60 inches; mixed light yellowish brown (10YR 6/4) and brownish yellow (10YR 6/6) silty clay loam, yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/6) moist; weak coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine tubular pores; common faint patchy clay films and few distinct discontinuous clay films on faces of peds and in pores; few fine iron and manganese concretions; neutral (pH 7.3).

### *Typical Pedon Location*

*Map unit in which located:* Southwick-Driscoll complex, 3 to 12 percent slopes

*Location in survey area:* About 3 miles west of Peck, in Nez Perce County; about 850 feet north and 1,650 feet east of the southwest corner of sec. 9, T. 36 N., R. 1 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—11 to 20 inches
Depth to seasonal perched water table—15 to 30 inches in January through April
Average annual soil temperature—47 to 50 degrees F

*Particle-size control section (weighted average):*
Clay content—40 to 50 percent
Coarse fragment content—0 to 3 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid to neutral

*Bt horizon:*
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Clay content—22 to 26 percent
Reaction—slightly acid or neutral

*E horizon:*
Value—6 to 8 dry, 4 to 6 moist

Texture—silt loam or silt
Clay content—12 to 22 percent
Reaction—moderately acid to neutral

*Btb horizon:*
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Texture—silty clay or silty clay loam
Clay content—38 to 55 percent
Base saturation—60 to 75 percent in some part
Reaction—moderately acid to neutral

*2Btb horizon:*
Hue—7.5YR or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—4 to 6 dry
Gravel content—0 to 5 percent
Clay content—32 to 38 percent
Reaction—slightly acid or neutral

### *Taxadjunct Feature*

The Driscoll soils in this survey area are less than 30 inches deep to the E horizon, which is outside the range for the series. This difference, however, does not significantly affect use and management.

## Endicott Series

*Taxonomic class:* Coarse-silty, mixed, mesic Haplic Durixerolls

*Depth class:* Moderately deep to a duripan
*Drainage class:* Well drained
*Permeability:* Moderate above the duripan
*Landform:* Hills on plateaus
*Parent material:* Loess, material weathered from basalt
*Slope range:* 2 to 16 percent
*Elevation:* 1,400 to 2,500 feet
*Climatic data (average annual):*
Precipitation—13 to 16 inches
Air temperature—49 to 52 degrees F
Frost-free season (32 degrees F)—150 to 180 days

### *Typical Pedon Description*

Ap1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate thick platy structure parting to moderate medium granular; slightly hard, very friable, nonsticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; neutral (pH 6.7); clear smooth boundary.

Ap2—5 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; neutral (pH 6.6); clear wavy boundary.

A—9 to 12 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; mildly alkaline (pH 7.6); clear wavy boundary.

Bw—12 to 20 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; moderately alkaline (pH 8.1); clear wavy boundary.

Bk—20 to 30 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak fine prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; few fine and very fine roots; many fine and very fine tubular pores; few extremely coarse platelike durinodes; strongly effervescent (9 percent calcium carbonate equivalent); disseminated lime and few fine filaments of lime; less than 2 percent gravel; moderately alkaline (pH 8.3); abrupt wavy boundary.

2Bkq—30 to 36 inches; white (10YR 8/2) gravelly silt loam, light brownish gray (10YR 6/2) moist; massive; hard and very hard, firm and very firm, nonsticky and nonplastic; very few very fine roots; common very fine tubular pores; many medium and coarse platelike durinodes; violently effervescent (45 percent calcium carbonate equivalent); disseminated lime; 30 percent gravel; moderately alkaline (pH 8.4); abrupt wavy boundary.

2Bkqm—36 to 60 inches; white (10YR 8/2) strongly cemented duripan, very pale brown (10YR 7/3) moist; very thick platy structure; extremely hard, extremely firm; thin lenses of sandy loam between plates; violently effervescent (80 percent calcium carbonate equivalent); strongly alkaline (pH 9.0).

### *Typical Pedon Location*

*Map unit in which located:* Endicott-Bryden complex, 2 to 6 percent slopes (fig. 24)

**Figure 24.—A profile of Endicott silt loam in an area of Endicott-Bryden complex, 2 to 6 percent slopes. A strongly cemented duripan is at a depth of 3 feet (numerals on tape indicate feet).**

*Location in survey area:* About 3 miles south of Lewiston Orchards, in Nez Perce County; about 2,240 feet north and 1,890 feet west of the southeast corner of sec. 34, T. 35 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—12 to 24 inches
Depth to calcic horizon—22 to 34 inches
Depth to duripan—28 to 40 inches
Depth to bedrock—50 to 60 inches or more
Average annual soil temperature—50 to 54 degrees F

*Particle-size control section (weighted average):*
Clay content—14 to 18 percent
Coarse fragment content—5 to 10 percent

*Ap and A horizons:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid to mildly alkaline

*Bw horizon, and BA horizon (present only in some pedons):*
Value—4 or 5 dry
Chroma—2 or 3 dry or moist
Clay content—14 to 18 percent
Reaction—neutral to moderately alkaline

*Bk horizon:*
Value—5 to 8 dry, 4 to 6 moist
Chroma—2 to 4 dry or moist
Calcium carbonate equivalent—5 to 25 percent
Clay content—14 to 18 percent
Reaction—moderately alkaline or strongly alkaline

*2Bkq horizon:*
Value—6 or 7 moist
Chroma—2 or 3 dry or moist
Texture—gravelly silt loam, gravelly loam, or very gravelly loam
Coarse fragment content—20 to 50 percent
Calcium carbonate equivalent—40 to 80 percent
Reaction—moderately alkaline to very strongly alkaline

### *Taxadjunct Feature*

The content of clay in the Endicott soil in the Calouse-Endicott-Bryden complex, 2 to 6 percent slopes, is slightly higher than the range for the Endicott series. This difference, however, does not significantly affect use and management.

## Entic Haploxerolls

*Taxonomic class:* Entic Haploxerolls

*Depth class:* Shallow and moderately deep to a paralithic contact
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Canyonsides
*Parent material:* Colluvium derived from shale, phyllite, and limestone
*Slope range:* 40 to 80 percent

*Elevation:* 1,300 to 2,400 feet
*Climatic data (average annual):*
Precipitation—12 to 15 inches
Air temperature—51 to 54 degrees F
Frost-free season (32 degrees F)—140 to 180 days

### *Representative Pedon Description*

A—0 to 8 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark gray (10YR 3/1) moist; weak and moderate fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine tubular pores; strongly effervescent; disseminated lime; 25 percent gravel; moderately alkaline (pH 8.2); clear wavy boundary.

AC—8 to 17 inches; dark gray (10YR 4/1) gravelly loam, very dark gray (10YR 3/1) moist; weak and moderate fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine tubular pores; strongly effervescent; disseminated lime; 25 percent gravel; moderately alkaline (pH 8.0); clear wavy boundary.

Cr—17 to 28 inches; gray (N 5/0) soft weathered phyllite, very dark gray (N 3/0) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few very fine and fine tubular pores; strongly effervescent; disseminated lime; 65 percent gravel; moderately alkaline (pH 8.0); gradual wavy boundary.

R—28 inches; phyllite.

### *Representative Pedon Location*

*Map unit in which located:* Entic Haploxerolls, very steep
*Location in survey area:* About 5 miles southwest of Waha, in Nez Perce County; about 2,525 feet north and 1,750 feet east of the southwest corner of sec. 32, T. 33 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—7 to 12 inches
Depth to paralithic contact—12 to 30 inches
Average annual soil temperature—54 to 57 degrees F

*Particle-size control section (weighted average):*
Clay content—10 to 22 percent
Gravel content—10 to 50 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist

*AC horizon:*
Value—4 or 5 dry
Chroma—1 to 3 dry or moist
Texture—gravelly loam, very gravelly loam, or loam
Gravel content—10 to 50 percent
Clay content—10 to 22 percent

## Flybow Series

*Taxonomic class:* Loamy-skeletal, mixed, nonacid, mesic Lithic Xerorthents

*Depth class:* Very shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Hills on plateaus, canyonsides
*Parent material:* Material weathered from basalt and greenstone
*Slope range:* 10 to 100 percent
*Elevation:* 1,000 to 3,500 feet
*Climatic data (average annual):*
Precipitation—16 to 26 inches
Air temperature—45 to 50 degrees F
Frost-free season (32 degrees F)—120 to 170 days

### *Typical Pedon Description*

A1—0 to 2 inches; dark brown (10YR 3/3) very gravelly silt loam, dark brown (7.5YR 3/2) moist; weak very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine tubular and irregular pores; 35 percent gravel and 5 percent cobbles; neutral (pH 7.2); clear smooth boundary.

A2—2 to 4 inches; brown (7.5YR 4/4) very gravelly silt loam, dark brown (7.5YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds; 35 percent gravel and 10 percent cobbles; neutral (pH 6.8); abrupt wavy boundary.

R—4 inches; fractured basalt.

### *Typical Pedon Location*

*Map unit in which located:* Watama-Flybow complex, 10 to 35 percent slopes
*Location in survey area:* About 5 miles southwest of Nezperce, in Lewis County; about 900 feet south and 2,550 feet west of the northeast corner of sec. 20, T. 33 N., R. 1 E.

### *Range in Characteristics*

*Profile:*
Depth to bedrock—4 to 10 inches
Average annual soil temperature—47 to 52 degrees F

*A horizon:*
Hue—10YR or 7.5YR
Value—3 or 4 dry or moist
Chroma—2 to 4 dry or moist
Clay content—15 to 25 percent
Coarse fragment content—40 to 60 percent
Reaction—slightly acid or neutral

## Garfield Series

*Taxonomic class:* Fine, mixed, mesic Mollic Haploxeralfs

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 8 to 12 percent
*Elevation:* 2,500 to 2,800 feet
*Climatic data (average annual):*
Precipitation—19 to 22 inches
Air temperature—47 to 50 degrees F
Frost-free season (32 degrees F)—120 to 150 days

### *Typical Pedon Description*

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to strong medium subangular blocky; very hard, very firm, sticky and plastic; many very fine and common fine roots; many fine and very fine tubular pores and common very fine interstitial pores; slightly acid (pH 6.2); abrupt smooth boundary.

Bt1—4 to 14 inches; brown (7.5YR 4/4) silty clay, dark brown (7.5YR 3/4) moist; strong medium and coarse prismatic structure parting to strong fine and medium subangular blocky; very hard, very firm, very sticky and very plastic; many very fine roots; many fine and very fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; common organic coatings on vertical faces of peds; many fine round black concretions; neutral (pH 6.6); clear wavy boundary.

Bt2—14 to 23 inches; yellowish brown (10YR 5/6) silty clay, dark yellowish brown (10YR 4/4) moist; moderate fine and medium prismatic structure parting to strong fine and medium subangular blocky; very hard, firm, very sticky and very plastic; common very fine roots; many fine and very fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; few prominent discontinuous skeletans on faces of peds; common organic coatings on vertical faces of peds; many fine round black concretions; neutral (pH 6.8); gradual wavy boundary.

Bt3—23 to 29 inches; yellowish brown (10YR 5/6) silty clay loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, sticky and plastic; common very fine roots; many very fine and common fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; common prominent discontinuous skeletans on faces of peds; common round black concretions; neutral (pH 6.8); gradual wavy boundary.

Bt4—29 to 36 inches; brownish yellow (10YR 6/6) silty clay loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, sticky and plastic; common very fine roots; many very fine and common fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; common round black concretions; few worm channels; mildly alkaline (pH 7.4); gradual wavy boundary.

Bt5—36 to 61 inches; brownish yellow (10YR 6/6) silty clay loam, yellowish brown (10YR 4/4) moist; weak coarse prismatic structure; hard, firm, sticky and plastic; common very fine roots concentrated along faces of peds; many fine and very fine tubular pores; common distinct discontinuous clay films on faces of peds and in pores; many round black concretions; mildly alkaline (pH 7.6).

### *Typical Pedon Location*

*Map unit in which located:* Naff-Palouse-Garfield complex, 8 to 20 percent slopes
*Location in survey area:* About 2 miles southeast of Genesee, in Nez Perce County; about 1,600 feet north and 2,300 feet west of the southeast corner of sec. 24, T. 37 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Average annual soil temperature—48 to 52 degrees F

*Particle-size control section (weighted average):*
Clay content—35 to 40 percent

*A horizon:*
Hue—7.5YR or 10YR

Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

*Bt horizon (upper part):*
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silty clay or silty clay loam
Clay content—35 to 55 percent
Reaction—neutral to moderately alkaline

*Bt horizon (lower part):*
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 to 6 dry, 3 or 4 moist
Texture—silt loam or silty clay loam
Clay content—25 to 40 percent
Reaction—neutral to moderately alkaline

## Gwin Series

*Taxonomic class:* Loamy-skeletal, mixed, mesic Lithic Argixerolls

*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Canyonsides, hills on plateaus
*Parent material:* Colluvium derived from basalt mixed with loess
*Slope range:* 5 to 75 percent
*Elevation:* 1,200 to 4,800 feet
*Climatic data (average annual):*
Precipitation—16 to 28 inches
Air temperature—45 to 51 degrees F
Frost-free season (32 degrees F)—90 to 160 days

### *Typical Pedon Description*

A—0 to 6 inches; brown (10YR 4/3) very stony silt loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to weak fine and very fine granular; soft, friable, sticky and plastic; many fine and very fine roots; many fine and very fine irregular pores; 25 percent gravel, 10 percent cobbles, and 10 percent stones; neutral (pH 6.6); clear smooth boundary.
Bt—6 to 12 inches; brown (7.5YR 4/4) extremely gravelly silty clay loam, dark brown (7.5YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; common fine and very fine roots; common fine irregular pores; few faint discontinuous very dark grayish brown (10YR 3/2) clay films on faces of peds; 40 percent gravel and 20 percent cobbles; slightly acid (pH 6.4); clear wavy boundary.
R—12 inches; basalt.

### *Typical Pedon Location*

*Map unit in which located:* Kettenbach-Gwin complex, 35 to 75 percent slopes
*Location in survey area:* About 5 miles southeast of Peck, in Nez Perce County; about 50 feet south and 1,530 feet east of the northwest corner of sec. 32, T. 36 N., R. 1 E.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—7 to 18 inches
Depth to bedrock—10 to 20 inches
Average annual soil temperature—48 to 52 degrees F

*Particle-size control section (weighted average):*
Clay content—24 to 35 percent
Rock fragment content—50 to 80 percent

*A horizon:*
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—slightly acid or neutral

*Bt horizon:*
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist
Texture—extremely gravelly silty clay loam, very gravelly silty clay loam, extremely cobbly silty clay loam, extremely gravelly clay loam, very gravelly clay loam, or very gravelly silt loam
Rock fragment content—50 to 80 percent
Clay content—24 to 35 percent
Reaction—slightly acid or neutral

## Haploxerolls

*Taxonomic class:* Haploxerolls

*Depth class:* Moderately deep to very deep
*Drainage class:* Well drained
*Permeability:* Moderate and moderately slow
*Landform:* Landslides
*Parent material:* Colluvium derived from interbedded basalt
*Slope range:* 2 to 20 percent
*Elevation:* 800 to 1,300 feet
*Climatic data (average annual):*
Precipitation—12 to 13 inches
Air temperature—52 to 54 degrees F
Frost-free season (32 degrees F)—180 to 190 days

### *Representative Pedon Description*

A1—0 to 7 inches; very dark grayish brown (10YR 3/2) silty clay loam, very dark gray (10YR 3/1) moist; strong fine and medium granular structure; slightly hard, friable, sticky and plastic; many fine and very fine roots; many very fine tubular pores; neutral (pH 7.2); clear smooth boundary.

A2—7 to 14 inches; very dark grayish brown (10YR 3/2) silty clay loam, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common fine and very fine roots; many very fine tubular pores; mildly alkaline (pH 7.4); clear wavy boundary.

Bw—14 to 23 inches; olive brown (2.5Y 4/3) silty clay loam, dark olive brown (2.5Y 3/2) moist; weak medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine and very fine roots; common fine and very fine tubular pores; 10 percent gravel; moderately alkaline (pH 8.0); clear wavy boundary.

Bk1—23 to 34 inches; light olive brown (2.5Y 5/3) silty clay loam, olive brown (2.5Y 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, sticky and plastic; common fine and very fine roots; many fine and very fine tubular pores; slightly effervescent (8 percent calcium carbonate equivalent); common irregular carbonate filaments; 10 percent gravel; strongly alkaline (pH 8.8); clear wavy boundary.

Bk2—34 to 60 inches; light gray (2.5Y 7/2) gravelly clay loam, light olive brown (2.5Y 5/4) moist; massive; soft, friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; strongly effervescent (11 percent calcium carbonate equivalent); disseminated lime; 15 percent gravel; strongly alkaline (pH 9.2).

### *Representative Pedon Location*

*Map unit in which located:* Haploxerolls, rolling
*Location in survey area:* About 2 miles south of downtown Lewiston, in Nez Perce County; about 2,650 feet south and 3,450 feet west of the northeast corner of sec. 12, T. 35 N., R. 6 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—14 to 26 inches
Depth to secondary carbonates—20 to 43 inches
Depth to bedrock—30 to 60 inches or more
Average annual soil temperature—54 to 56 degrees F

*Particle-size control section (weighted average):*
Clay content—24 to 34 percent
Coarse fragment content—0 to 25 percent

*A horizon:*
Hue—2.5Y or 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—neutral or mildly alkaline

*Bw horizon:*
Hue—2.5Y or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—1 to 3 dry or moist
Texture—silt loam, silty clay loam, clay loam, gravelly clay loam, or cobbly clay loam
Coarse fragment content—0 to 25 percent
Clay content—24 to 40 percent
Reaction—mildly alkaline or moderately alkaline

*Bk horizon:*
Hue—2.5Y or 10YR
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 or 3 dry, 3 or 4 moist
Texture—silt loam, silty clay loam, clay loam, gravelly clay loam, or cobbly clay loam
Coarse fragment content—0 to 35 percent
Clay content—24 to 40 percent
Reaction—moderately alkaline to very strongly alkaline

## Hatwai Series

*Taxonomic class:* Fine-silty, mixed, mesic Typic Natrixerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Landform:* Hills on plateaus, canyonsides
*Parent material:* Loess
*Slope range:* 1 to 65 percent
*Elevation:* 1,500 to 2,200 feet
*Climatic data (average annual):*
Precipitation—15 to 18 inches
Air temperature—49 to 52 degrees F
Frost-free season (32 degrees F)—150 to 170 days

### *Typical Pedon Description*

Ap1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium subangular blocky structure parting to weak medium granular; soft, friable, slightly sticky and

slightly plastic; common very fine and fine roots; many very fine tubular pores; slightly acid (pH 6.1); abrupt smooth boundary.

Ap2—4 to 13 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium and thick platy structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular pores; slightly acid (pH 6.2); clear smooth boundary.

E—13 to 21 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; mildly alkaline (pH 7.5); abrupt smooth boundary.

Btn—21 to 26 inches; brown (10YR 4/3) silt loam, dark brown (10YR 3/3) moist; strong medium and coarse prismatic structure; very hard, firm, sticky and plastic; common very fine and fine roots; many very fine and fine tubular pores; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct skeletans on faces of peds; common very dark grayish brown (10YR 3/2) organic coatings on faces of peds; moderately alkaline (pH 8.0); clear smooth boundary.

Btkn—26 to 36 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; many very fine and fine roots; many very fine and fine tubular pores; common distinct clay films on faces of peds; few distinct skeletans on faces of peds; few organic coatings on faces of peds; strongly effervescent; many fine seams and filaments of lime; strongly alkaline (pH 8.8); clear smooth boundary.

Btk—36 to 50 inches; brown (10YR 5/3) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores; few distinct patchy clay films on faces of peds; strongly effervescent; common fine seams and filaments of lime; strongly alkaline (pH 9.0); gradual smooth boundary.

Btkb—50 to 66 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium prismatic structure; hard, friable, sticky and plastic; many very fine and fine tubular pores; common distinct discontinuous clay films lining pores; slightly effervescent; disseminated lime and few fine filaments of lime; strongly alkaline (pH 8.6).

### *Typical Pedon Location*

*Map unit in which located:* Broadax-Hatwai complex, 1 to 8 percent slopes (fig. 25)

**Figure 25.—A profile of Hatwai silt loam in an area of Broadax-Hatwai complex, 1 to 8 percent slopes. A natric horizon is at a depth of about 15 inches (numerals on tape indicate feet).**

*Location in survey area:* About 5 miles east of Lewiston Orchards, in Nez Perce County; about 2,575 feet south and 2,600 feet east of the northwest corner of sec. 15, T. 35 N., R. 4 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 18 inches
Organic matter content in mollic epipedon (below 18 inches)—less than 1 percent
Depth to natric horizon—15 to 21 inches
Depth to secondary carbonates—20 to 35 inches
Number of dry days (soil moisture control section)—75 to 90
Average annual soil temperature—51 to 54 degrees F

*Particle-size control section (weighted average):*
Clay content—22 to 32 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—slightly acid or neutral

*E horizon (absent in some pedons):*
Value—5 or 6 dry
Reaction—neutral or mildly alkaline

*Btn horizon:*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—22 to 34 percent
Sodium adsorption ratio—13 to 20
Exchangeable sodium percentage—30 to 55
Reaction—moderately alkaline or strongly alkaline

*Btkn horizon:*
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—22 to 34 percent
Sodium adsorption ratio—20 to 40
Exchangeable sodium percentage—30 to 55
Reaction—moderately alkaline or strongly alkaline

*Btk and Btkb horizons:*
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—16 to 30 percent
Reaction—moderately alkaline to very strongly alkaline

## Hooverton Series

*Taxonomic class:* Loamy-skeletal, mixed, mesic Typic Argixerolls

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Canyonsides
*Parent material:* Colluvium derived from basalt
*Slope range:* 35 to 75 percent
*Elevation:* 2,800 to 5,300 feet
*Climatic data (average annual):*
Precipitation—22 to 28 inches
Air temperature—44 to 50 degrees F
Frost-free season (32 degrees F)—70 to 120 days

### *Typical Pedon Description*

A—0 to 11 inches; very dark grayish brown (10YR 3/2) stony loam, very dark brown (10YR 2/2) moist; strong fine and medium granular structure; soft, friable, nonsticky and slightly plastic; many fine and very fine roots and few medium roots; common fine and very fine tubular pores; 20 percent gravel, 3 percent cobbles, and 3 percent stones; neutral (pH 6.8); clear wavy boundary.

BA—11 to 17 inches; brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; 15 percent gravel and 25 percent cobbles; neutral (pH 6.8); clear wavy boundary.

Bt1—17 to 26 inches; dark yellowish brown (10YR 4/4) very cobbly clay loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine roots matted around rock fragments; many very fine tubular pores; very few faint patchy clay films on faces of peds; 15 percent gravel, 40 percent cobbles, and 5 percent stones; neutral (pH 6.8); clear wavy boundary.

Bt2—26 to 35 inches; dark yellowish brown (10YR 4/4) extremely cobbly clay loam, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine roots matted around rock fragments; common very fine tubular pores; very few faint patchy clay films on faces of peds; 10 percent gravel, 60 percent cobbles, and 5 percent

stones; slightly acid (pH 6.4); clear wavy boundary.
R—35 inches; fractured basalt.

### *Typical Pedon Location*

*Map unit in which located:* Hooverton stony loam, 35 to 75 percent slopes
*Location in survey area:* About 11 miles south of Winchester, in Lewis County; about 750 feet north and 1,000 feet east of the southwest corner of sec. 30, T. 32 N., R. 2 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 18 inches
Base saturation—75 to 100 percent
Depth to bedrock—24 to 40 inches
Average annual soil temperature—48 to 52 degrees F

*Particle-size control section (weighted average):*
Clay content—24 to 34 percent
Coarse fragment content—60 to 80 percent

*A horizon:*
Hue—7.5YR or 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 to 4 dry
Reaction—slightly acid or neutral

*BA horizon:*
Hue—7.5YR or 10YR
Value—3 or 4 dry
Chroma—2 or 3 dry or moist
Texture—very cobbly loam, very cobbly silt loam, or very gravelly silt loam
Rock fragment content—35 to 50 percent
Clay content—20 to 27 percent
Reaction—slightly acid or neutral

*Bt horizon:*
Hue—7.5YR or 10YR
Value—3 or 4 dry or moist
Texture—very cobbly clay loam, extremely cobbly clay loam, very cobbly silt loam, very gravelly silty clay loam, extremely gravelly silt loam, or very gravelly loam
Rock fragment content—50 to 85 percent
Clay content—24 to 34 percent
Reaction—slightly acid or neutral

## Immig Series

*Taxonomic class:* Clayey-skeletal, montmorillonitic, mesic Typic Argixerolls

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Slow
*Landform:* Canyonsides
*Parent material:* Colluvium derived from greenstone and basalt
*Slope range:* 40 to 80 percent
*Elevation:* 2,000 to 4,000 feet
*Climatic data (average annual):*
Precipitation—15 to 20 inches
Air temperature—45 to 49 degrees F
Frost-free season (32 degrees F)—120 to 160 days

### *Typical Pedon Description*

A—0 to 5 inches; dark brown (10YR 3/3) very stony clay loam, very dark brown (10YR 2/2) moist; moderate very fine and fine granular structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; common very fine and fine tubular and irregular pores; 25 percent gravel, 5 percent cobbles, and 5 percent stones; neutral (pH 6.8); clear wavy boundary.
BA—5 to 10 inches; dark brown (10YR 3/3) gravelly clay loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure parting to weak very fine and fine granular; slightly hard, firm, sticky and plastic; many very fine and fine roots; common very fine and fine tubular and irregular pores; 30 percent gravel and 5 percent cobbles; neutral (pH 6.6); clear wavy boundary.
Bt1—10 to 15 inches; dark brown (7.5YR 3/3) extremely gravelly clay, dark brown (7.5YR 3/3) moist; strong fine and medium subangular blocky structure; hard, very firm, very sticky and very plastic; common very fine and fine roots; common very fine and fine tubular pores; common distinct discontinuous clay films on faces of peds and in pores; 55 percent gravel and 15 percent cobbles; neutral (pH 6.6); clear wavy boundary.
Bt2—15 to 21 inches; dark brown (7.5YR 3/4) extremely gravelly clay, dark brown (7.5YR 3/4) moist; strong fine and medium subangular blocky structure; hard, very firm, very sticky and very plastic; few fine roots; few very fine and fine tubular pores; many distinct clay films on faces of peds and in pores; 65 percent gravel and 15 percent cobbles; neutral (pH 6.6); gradual wavy boundary.
Bt3—21 to 29 inches; strong brown (7.5YR 4/6) extremely gravelly clay, strong brown (7.5YR 4/6) moist; strong fine and medium subangular blocky structure; hard, very firm, very sticky and

very plastic; few fine roots throughout and matted on coarse fragments; few very fine and fine tubular pores; many distinct clay films on faces of peds and in pores; 70 percent gravel and 20 percent cobbles; neutral (pH 6.6); clear wavy boundary.

R—29 inches; greenstone; paralithic material near upper boundary.

### *Typical Pedon Location*

*Map unit in which located:* Immig very stony clay loam, 40 to 80 percent slopes

*Location in survey area:* About 3 miles southwest of Waha, in Nez Perce County; about 1,125 feet south and 2,350 feet west of the northeast corner of sec. 24, T. 33 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 16 inches
Depth to argillic horizon—8 to 16 inches
Depth to bedrock—26 to 40 inches
Base saturation—75 to 90 percent throughout the upper 30 inches
Average annual soil temperature—47 to 51 degrees F

*Particle-size control section (weighted average):*
Clay content—40 to 50 percent
Coarse fragment content—65 to 85 percent

*A horizon:*
Chroma—2 or 3 dry

*BA horizon:*
Value—2 or 3 moist
Texture—gravelly clay loam or very gravelly clay loam
Coarse fragment content—15 to 50 percent
Clay content—27 to 36 percent

*Bt horizon:*
Value—3 to 5 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist
Coarse fragment content—65 to 90 percent
Clay content—40 to 50 percent

## Jacket Series

*Taxonomic class:* Fine, montmorillonitic, mesic Pachic Ultic Argixerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Slow
*Landform:* Hills on plateaus, canyon benches
*Parent material:* Loess
*Slope range:* 3 to 50 percent
*Elevation:* 1,200 to 4,300 feet
*Climatic data (average annual):*
Precipitation—22 to 26 inches
Air temperature—45 to 48 degrees F
Frost-free season (32 degrees F)—100 to 130 days

### *Typical Pedon Description*

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; many fine and medium tubular pores; slightly acid (pH 6.1); clear smooth boundary.

AB—7 to 17 inches; dark grayish brown (10YR 4/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common fine and few medium roots; many fine and common medium tubular pores; neutral (pH 6.7); gradual smooth boundary.

Bt1—17 to 27 inches; brown (10YR 4/3) silty clay loam, dark brown (10YR 3/3) moist; moderate medium and coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, slightly sticky and plastic; few fine roots; common fine and medium tubular pores and few coarse vesicular pores; many faint discontinuous clay films on faces of peds and in pores; few distinct discontinuous very dark brown (10YR 2/2) organic coatings on faces of peds; neutral (pH 6.9); clear wavy boundary.

Bt2—27 to 36 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; weak medium and coarse prismatic structure parting to moderate fine and medium subangular blocky; very hard, very firm, sticky and plastic; few fine roots; common fine and few medium tubular pores; many distinct clay films on faces of peds and in pores; few vertically aligned black (10YR 2/1) cicada nodules; neutral (pH 7.1); gradual wavy boundary.

Bt3—36 to 56 inches; yellowish brown (10YR 5/4) silty clay, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; very hard, very firm, sticky and plastic; few medium tubular pores; many distinct clay films on faces of peds and in pores; common fine iron and manganese concretions; mildly alkaline (pH 7.5); gradual wavy boundary.

2Bt4—56 to 63 inches; mixed strong brown (7.5YR

5/6) and yellowish brown (10YR 5/4) silty clay loam, dark brown (7.5YR 4/4) and dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; hard, friable, sticky and plastic; many fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; common fine iron and manganese concretions; 5 percent basalt gravel; mildly alkaline (pH 7.4).

### *Typical Pedon Location*

*Map unit in which located:* Jacket silt loam, 12 to 30 percent slopes

*Location in survey area:* About 3 miles southeast of Lenore, in Nez Perce County; about 2,500 feet north and 1,900 feet west of the southeast corner of sec. 7, T. 36 N., R. 1 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 35 inches
Average annual soil temperature—47 to 50 degrees F

*Particle-size control section (weighted average):*
Clay content—35 to 50 percent
Coarse fragment content—0 to 10 percent

*A and AB horizons:*
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—slightly acid or neutral

*Bt1 horizon:*
Value—4 or 5 dry
Clay content—27 to 35 percent

*Bt2 and Bt3 horizons:*
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam or silty clay
Clay content—35 to 50 percent
Reaction—neutral or mildly alkaline

*2Bt4 horizon:*
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 to 6 dry, 3 or 4 moist
Texture—silty clay, silty clay loam, gravelly silty clay loam, or gravelly silty clay
Coarse fragment content—0 to 25 percent
Clay content—35 to 50 percent
Reaction—neutral or mildly alkaline

### *Taxadjunct Feature*

The base saturation of the Jacket soils in this survey area is more than 75 percent throughout, which is slightly outside the range for the series. This difference, however, does not significantly affect use and management.

## Joel Series

*Taxonomic class:* Fine-silty, mixed, frigid Boralfic Argixerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 1 to 40 percent
*Elevation:* 2,300 to 4,600 feet
*Climatic data (average annual):*
Precipitation—24 to 26 inches
Air temperature—42 to 45 degrees F
Frost-free season (32 degrees F)—80 to 130 days

### *Typical Pedon Description*

A1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; strong medium and coarse granular structure; slightly hard, friable, slightly sticky and plastic; many fine and very fine roots; common fine and very fine irregular and tubular pores; slightly acid (pH 6.4); clear smooth boundary.

A2—5 to 12 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many fine and very fine roots; common fine and very fine tubular pores; moderately acid (pH 5.8); clear wavy boundary.

BA—12 to 18 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and few medium roots; many fine and very fine tubular pores; few distinct skeletans on faces of peds; moderately acid (pH 6.0); clear wavy boundary.

Bt1—18 to 24 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common fine and few medium roots; many fine and very fine and common medium tubular pores; many faint dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; many distinct skeletans on faces of peds and in pores; moderately acid (pH 5.8); gradual wavy boundary.

Bt2—24 to 41 inches; yellowish brown (10YR 5/4) silty

clay loam, dark yellowish brown (10YR 3/4) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; few fine and medium roots; common fine and very fine and few medium tubular pores; many faint dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; many distinct skeletans on faces of peds and in pores; moderately acid (pH 5.8); clear wavy boundary.

Bt3—41 to 48 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine roots; common fine and very fine and few medium tubular pores; few faint patchy clay films on faces of peds; common distinct patchy skeletans on faces of peds; moderately acid (pH 5.8); clear wavy boundary.

Btb—48 to 60 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few fine roots; common fine and very fine and few medium tubular pores; common faint discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; many distinct skeletans on faces of peds and in pores; moderately acid (pH 5.8).

### *Typical Pedon Location*

*Map unit in which located:* Joel silt loam, 8 to 16 percent slopes

*Location in survey area:* About 7 miles southeast of Winchester, in Lewis County; about 215 feet south and 140 feet west of the northeast corner of sec. 10, T. 32 N., R. 2 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 20 inches
Base saturation—60 to 80 percent between depths of 10 and 30 inches
Average annual soil temperature—44 to 47 degrees F

*Particle-size control section (weighted average):*
Clay content—28 to 34 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 to 3 moist
Reaction—moderately acid to neutral

*Bt horizon (upper part):*
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry, 2 to 4 moist
Clay content—20 to 27 percent
Reaction—moderately acid to neutral

*Bt horizon (lower part) and Btb horizon:*
Hue—7.5YR or 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 moist
Texture—silt loam or silty clay loam
Clay content—24 to 35 percent
Reaction—moderately acid to neutral

### *Taxadjunct Features*

The Joel soils in the Joel-Setters complex, 2 to 10 percent slopes, and the Joel-Setters complex, 10 to 20 percent slopes, have higher reaction (pH) and higher base saturation in the subsoil than is typical for the Joel series. These differences, however, do not significantly affect use and management.

## Johnson Series

*Taxonomic class:* Fine-loamy, mixed, frigid Ultic Argixerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Canyonsides, hills
*Parent material:* Loess, material weathered from granite
*Slope range:* 5 to 70 percent
*Elevation:* 1,000 to 4,640 feet
*Climatic data (average annual):*
Precipitation—22 to 26 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—80 to 120 days

### *Typical Pedon Description*

Oi—2 inches to 0; needles.

A—0 to 3 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular pores; 7 percent fine gravel; neutral (pH 6.6); clear smooth boundary.

AB—3 to 10 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots and few coarse roots; many very fine tubular pores and common fine irregular

pores; 7 percent fine gravel; neutral (pH 6.6); gradual smooth boundary.

Bt1—10 to 21 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; weak fine prismatic structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots and few coarse roots; many very fine tubular pores; 7 percent fine gravel; few faint discontinuous clay films on faces of peds and lining pores; organic stains on faces of peds; neutral (pH 6.8); gradual smooth boundary.

Bt2—21 to 34 inches; dark brown (7.5YR 4/4) clay loam, dark brown (7.5YR 3/4) moist; weak coarse subangular blocky structure; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine tubular pores; 7 percent fine gravel; common faint and few distinct discontinuous clay films on faces of peds and common faint clay films lining pores; neutral (pH 6.8); gradual smooth boundary.

Bt3—34 to 50 inches; dark brown (7.5YR 4/4) clay loam, dark brown (7.5YR 3/4) moist; weak medium prismatic structure and weak coarse subangular blocky; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine tubular pores; 7 percent fine gravel; common faint discontinuous clay films on faces of peds and lining pores; neutral (pH 6.8); gradual smooth boundary.

Bt4—50 to 63 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 4/4) moist; weak coarse and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; 7 percent fine gravel; common faint discontinuous clay films on faces of peds and lining pores; neutral (pH 7.2).

### *Typical Pedon Location*

*Map unit in which located:* Johnson-Dragnot association, 40 to 70 percent slopes

*Location in survey area:* About 12 miles northwest of Kamiah, in Lewis County; about 1,350 feet north and 1,300 feet west of the southeast corner of sec. 15, T. 35 N., R. 2 E.

### *Range in Characteristics*

*Profile:*

Thickness of mollic epipedon—10 to 20 inches

Base saturation—50 to 75 percent in some part between depths of 10 and 30 inches

Average annual soil temperature—45 to 47 degrees F

A C horizon is in some pedons.

*Particle-size control section (weighted average):*

Clay content—22 to 35 percent

Gravel content—0 to 20 percent

*A horizon:*

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Reaction—moderately acid to neutral

*Bt horizon:*

Hue—7.5YR or 10YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Texture—clay loam, loam, gravelly clay loam, or gravelly loam

Clay content—20 to 35 percent

Gravel content—0 to 25 percent

Reaction—moderately acid to neutral

## Joseph Series

*Taxonomic class:* Sandy-skeletal, mixed, mesic Aquic Xerofluvents

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Permeability:* Very rapid

*Landform:* Flood plains

*Parent material:* Alluvium derived from basalt

*Slope range:* 0 to 2 percent

*Elevation:* 750 to 2,300 feet

*Climatic data (average annual):*

Precipitation—16 to 22 inches

Air temperature—48 to 53 degrees F

Frost-free season (32 degrees F)—120 to 180 days

### *Typical Pedon Description*

A—0 to 10 inches; grayish brown (10YR 5/2) extremely cobbly loamy coarse sand, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many fine irregular pores; 30 percent gravel and 30 percent cobbles; neutral (pH 7.2); clear smooth boundary.

C1—10 to 26 inches; grayish brown (10YR 5/2) extremely cobbly loamy coarse sand, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many fine irregular pores; 35 percent gravel and 35 percent cobbles; thin layer of extremely gravelly fine sandy loam at lower boundary; neutral (pH 7.2); abrupt smooth boundary.

C2—26 to 36 inches; grayish brown (10YR 5/2) extremely cobbly sand, very dark grayish brown

(10YR 3/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many fine irregular pores; 35 percent gravel and 35 percent cobbles; neutral (pH 7.0); clear smooth boundary.

C3—36 to 60 inches; grayish brown (10YR 5/2) extremely gravelly coarse sand, very dark grayish brown (10YR 3/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many fine irregular pores; 35 percent gravel and 35 percent cobbles; neutral (pH 7.2).

### *Typical Pedon Location*

*Map unit in which located:* Joseph-Tombeall complex, 0 to 2 percent slopes, occasionally flooded

*Location in survey area:* About 1 mile north of Lapwai, in Nez Perce County; about 1,200 feet north and 2,100 feet west of the southeast corner of sec. 35, T. 36 N., R. 4 W.

### *Range in Characteristics*

*Profile:*

Depth to seasonal high water table—36 to 60 inches in December through June

Frequency of flooding—occasional or frequent for long periods in December through June

Average annual soil temperature—50 to 54 degrees F

*Particle-size control section (weighted average):*

Clay content—0 to 5 percent

Coarse fragment content—60 to 85 percent

*A horizon:*

Chroma—2 or 3 dry or moist

*C horizon:*

Chroma—2 or 3 dry or moist

Texture—extremely gravelly sand, extremely gravelly coarse sand, extremely cobbly sand, or extremely cobbly loamy coarse sand

## Kettenbach Series

*Taxonomic class:* Loamy-skeletal, mixed, mesic Pachic Argixerolls

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Permeability:* Moderately slow

*Landform:* Canyonsides

*Parent material:* Colluvium derived from basalt with an influence of loess

*Slope range:* 35 to 90 percent

*Elevation:* 800 to 4,000 feet

*Climatic data (average annual):*

Precipitation—15 to 22 inches

Air temperature—45 to 51 degrees F

Frost-free season (32 degrees F)—120 to 160 days

### *Typical Pedon Description*

A—0 to 4 inches; brown (10YR 4/3) stony silt loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine irregular pores; 15 percent gravel and 5 percent stones; neutral (pH 7.0); clear wavy boundary.

BA—4 to 10 inches; dark brown (10YR 3/3) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; many very fine and fine roots and few medium roots; many very fine and fine irregular pores and few fine tubular pores; common faint clay films on faces of peds and in pores; 15 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bt1—10 to 21 inches; brown (10YR 4/3) very gravelly silt loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure parting to moderate fine angular blocky; hard, firm, sticky and plastic; many very fine and fine roots and few coarse roots; many very fine and fine irregular pores and common fine tubular pores; common distinct clay films on faces of peds and in pores; 40 percent gravel; slightly acid (pH 6.3); gradual wavy boundary.

2Bt2—21 to 25 inches; dark yellowish brown (10YR 4/4) extremely gravelly silty clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; common fine roots; many very fine and fine irregular and tubular pores; common distinct clay films on faces of peds and in pores; 70 percent gravel and 10 percent cobbles; slightly acid (pH 6.3); clear wavy boundary.

2R1—25 to 30 inches; fractured basalt; 3 percent of fractures filled with clay; few roots.

2R2—30 inches; nonfractured basalt.

### *Typical Pedon Location*

*Map unit in which located:* Kettenbach-Gwin complex, 35 to 75 percent slopes

*Location in survey area:* About 3 miles southeast of Peck, in Lewis County; about 1,300 feet south and 100 feet east of the northwest corner of sec. 30, T. 36 N., R. 1 E.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 30 inches
Base saturation—80 to 100 percent
Depth to bedrock—20 to 40 inches
Average annual soil temperature—48 to 53 degrees F

*Particle-size control section (weighted average):*
Clay content—24 to 32 percent
Coarse fragment content—40 to 80 percent

*A horizon:*
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

*BA horizon, and Bt1 horizon (present only in some pedons):*
Value—3 or 4 dry
Chroma—2 or 3 dry or moist
Texture—gravelly silt loam, gravelly silty clay loam, very gravelly silt loam, or very gravelly silty clay loam
Rock fragment content—15 to 45 percent
Clay content—20 to 30 percent
Reaction—slightly acid or neutral

*Bt and 2Bt horizons:*
Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—very gravelly silt loam, very gravelly silty clay loam, extremely gravelly silty clay loam, very cobbly silty clay loam, extremely cobbly silty clay loam, or extremely gravelly clay loam
Rock fragment content—35 to 80 percent
Clay content—24 to 35 percent
Reaction—slightly acid or neutral

## Keuterville Series

*Taxonomic class:* Loamy-skeletal, mixed, mesic Ultic Argixerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Canyonsides, hills on plateaus, canyon benches
*Parent material:* Colluvium derived from basalt with some loess in the upper part
*Slope range:* 10 to 90 percent
*Elevation:* 1,200 to 3,700 feet
*Climatic data (average annual):*
Precipitation—20 to 24 inches
Air temperature—45 to 49 degrees F
Frost-free season (32 degrees F)—110 to 160 days

### *Typical Pedon Description*

A—0 to 8 inches; dark brown (10YR 3/3) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common coarse roots; many very fine and fine irregular pores; 10 percent gravel and 5 percent cobbles; slightly acid (pH 6.4); clear smooth boundary.

AB—8 to 13 inches; dark brown (10YR 3/3) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common coarse roots; many very fine and fine irregular pores; 15 percent gravel and 5 percent cobbles; slightly acid (pH 6.4); clear wavy boundary.

Bt1—13 to 20 inches; brown (7.5YR 5/4) very gravelly loam, dark brown (7.5YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common coarse roots; many very fine and fine tubular pores; few faint patchy clay films lining pores; 40 percent gravel and 5 percent cobbles; slightly acid (pH 6.4); gradual wavy boundary.

Bt2—20 to 30 inches; brown (7.5YR 5/4) very gravelly silty clay loam, dark brown (7.5YR 4/4) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; common fine and medium roots and few coarse roots; many fine tubular pores; common distinct discontinuous clay films on faces of peds and lining pores; 40 percent gravel and 5 percent cobbles; neutral (pH 6.6); gradual wavy boundary.

Bt3—30 to 49 inches; strong brown (7.5YR 5/6) very gravelly silty clay loam, dark brown (7.5YR 4/4) moist; strong fine and medium subangular blocky structure; hard, firm, sticky and plastic; common fine and medium roots; common coarse tubular pores; many distinct discontinuous clay films on faces of peds and lining pores; 50 percent gravel and 10 percent cobbles; neutral (pH 6.6); gradual wavy boundary.

Bt4—49 to 61 inches; strong brown (7.5YR 5/6) very cobbly silty clay loam, strong brown (7.5YR

4/6) moist; strong fine and medium subangular blocky structure; hard, firm, very sticky and plastic; few fine and medium roots; common coarse tubular pores; many distinct discontinuous clay films on faces of peds and lining pores; 10 percent gravel and 40 percent cobbles; neutral (pH 6.8).

### *Typical Pedon Location*

*Map unit in which located:* Keuterville-Rock outcrop complex, 35 to 90 percent slopes
*Location in survey area:* About 3 miles southwest of Southwick, in Nez Perce County; about 2,110 feet south and 2,640 feet east of the northwest corner of sec. 7, T. 37 N., R. 1 W.

### *Range in Characteristics*

*Profile*:
Thickness of mollic epipedon—10 to 20 inches
Base saturation—60 to 75 percent in some part between depths of 10 and 30 inches
Average annual soil temperature—47 to 50 degrees F

*Particle-size control section (weighted average):*
Clay content—20 to 35 percent
Coarse fragment content—35 to 50 percent

*A horizon:*
Hue—10YR or 7.5YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

*Bt horizon:*
Hue—10YR, 7.5YR, or 5YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Texture—very gravelly loam, very gravelly silty clay loam, very gravelly silt loam, very cobbly silty clay loam, extremely gravelly silty clay loam, or extremely gravelly clay loam
Coarse fragment content—35 to 70 percent
Reaction—slightly acid or neutral

## Klickson Series

*Taxonomic class:* Loamy-skeletal, mixed, frigid Vitrandic Argixerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Canyonsides
*Parent material:* Loess, colluvium derived from basalt
*Slope range:* 15 to 90 percent
*Elevation:* 1,500 to 5,300 feet

*Climatic data (average annual):*
Precipitation—24 to 28 inches
Air temperature—41 to 45 degrees F
Frost-free season (32 degrees F)—70 to 100 days

### *Typical Pedon Description*

Oi—1 inch to 0; partially decomposed forest litter mixed with moss.
A—0 to 7 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and few coarse roots; many very fine and fine tubular pores; 10 percent gravel; neutral (pH 6.8); gradual wavy boundary.
AB—7 to 15 inches; brown (10YR 5/3) gravelly silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and few coarse roots; many very fine and fine tubular pores; 20 percent gravel and 10 percent cobbles; neutral (pH 7.0); gradual wavy boundary.
Bt1—15 to 36 inches; brown (7.5YR 5/4) very cobbly silt loam, dark brown (10YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine, fine, and medium roots; many very fine and fine tubular pores; few faint patchy clay films on faces of peds and lining pores; 20 percent gravel and 25 percent cobbles; slightly acid (pH 6.4); gradual wavy boundary.
Bt2—36 to 61 inches; brown (7.5YR 5/4) very cobbly silt loam, dark brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores; few faint discontinuous clay films on faces of peds and lining pores; 20 percent gravel and 35 percent cobbles; slightly acid (pH 6.4).

### *Typical Pedon Location*

*Map unit in which located:* Klickson-Hooverton association, 35 to 90 percent slopes
*Location in survey area:* About 1.5 miles east of Reubens, in Nez Perce County; about 1,700 feet north and 2,900 feet east of the southwest corner of sec. 31, T. 35 N., R. 1 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 20 inches

Base saturation—50 to 75 percent in some part between depths of 10 and 30 inches
Average annual soil temperature—43 to 47 degrees F

*Upper 7 to 14 inches:*
Volcanic glass content—5 to 10 percent
Acid-oxalate extractable Al plus $^1/_2$ Fe—0.4 to 1.0 percent

*Particle-size control section (weighted average):*
Clay content—24 to 32 percent
Coarse fragment content—35 to 60 percent

*A horizon:*
Hue—10YR or 7.5YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry

*Bt horizon (upper part):*
Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly or very gravelly silt loam or silty clay loam
Clay content—24 to 36 percent
Rock fragment content—35 to 60 percent
Reaction—slightly acid or neutral

*Bt horizon (lower part):*
Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly, very gravelly, extremely gravelly, or extremely cobbly silt loam or silty clay loam
Clay content—24 to 36 percent
Rock fragment content—45 to 75 percent
Reaction—slightly acid or neutral

## Kruse Series

*Taxonomic class:* Fine-loamy, mixed, frigid Vitrandic Haploxeralfs

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills
*Parent material:* Material weathered from granite with some loess in the upper part
*Slope range:* 10 to 40 percent
*Elevation:* 3,200 to 4,640 feet
*Climatic data (average annual):*
Precipitation—25 to 26 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—80 to 100 days

### *Typical Pedon Description*

Oi—1 inch to 0; partially decomposed needles, twigs, cones, and moss.
A—0 to 3 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine irregular pores; moderately acid (pH 5.8); clear smooth boundary.
EB1—3 to 9 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine tubular pores; slightly acid (pH 6.2); clear wavy boundary.
EB2—9 to 16 inches; mixed pale brown (10YR 6/3) and light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; many very fine tubular pores; few faint patchy clay films on faces of peds; slightly acid (pH 6.4); clear wavy boundary.
Bt1—16 to 22 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to strong coarse angular blocky; hard, firm, sticky and plastic; few very fine to coarse roots, some flattened on faces of peds; common very fine tubular pores; many faint and distinct discontinuous clay films on faces of peds and lining pores; slightly acid (pH 6.4); gradual wavy boundary.
Bt2—22 to 40 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to strong coarse angular blocky; hard, firm, sticky and plastic; few very fine to coarse roots on faces of peds, some flattened; common very fine tubular pores; many faint and distinct discontinuous clay films on faces of peds and lining pores; higher content of medium and coarse sand than in horizon above; slightly acid (pH 6.4); gradual wavy boundary.
Bt3—40 to 49 inches; strong brown (7.5YR 5/6) clay loam, dark brown (7.5YR 4/4) moist; weak coarse subangular blocky structure parting to moderate thin platy; hard, firm, sticky and plastic; few very fine to coarse roots on faces of peds, some flattened; common very fine tubular pores; common faint and distinct discontinuous clay films

on faces of peds and lining pores; less than 3 percent gravel; neutral (pH 6.8); clear wavy boundary.

BC—49 to 65 inches; light brown (7.5YR 6/4) coarse sandy loam, dark brown (7.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine to coarse roots on faces of peds, some flattened; many fine irregular pores; less than 3 percent gravel; neutral (pH 6.8).

### *Typical Pedon Location*

*Map unit in which located:* Johnson-Kruse complex, 5 to 40 percent slopes

*Location in survey area:* About 1 mile northwest of Winchester, in Lewis County; about 1,150 feet north and 1,000 feet west of the southeast corner of sec. 36, T. 34 N., R. 3 W.

### *Range in Characteristics*

*Profile:*
Thickness of solum—40 to 55 inches
Average annual soil temperature—45 to 46 degrees F

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist
Reaction—moderately acid or slightly acid

*EB horizon:*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Reaction—moderately acid or slightly acid

*Bt horizon:*
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 to 6 dry or moist
Texture—clay loam, sandy clay loam, or loam
Clay content—24 to 34 percent
Gravel content—0 to 5 percent
Base saturation—60 to 75 percent
Reaction—slightly acid or neutral

*BC horizon:*
Texture—coarse sandy loam or sandy loam
Gravel content—0 to 10 percent

## Labuck Series

*Taxonomic class:* Coarse-loamy, mixed, frigid Vitrandic Xerochrepts

*Depth class:* Moderately deep to a paralithic contact
*Drainage class:* Well drained
*Permeability:* Moderately rapid
*Landform:* Hills
*Parent material:* Material weathered from granodiorite
*Slope range:* 15 to 35 percent
*Elevation:* 3,700 to 4,640 feet
*Climatic data (average annual):*
Precipitation—24 to 26 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—80 to 100 days

### *Typical Pedon Description*

A—0 to 4 inches; brown (10YR 5/3) coarse sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, friable, nonsticky and nonplastic; many fine and very fine roots; few fine and very fine tubular pores; 10 percent fine gravel; slightly acid (pH 6.4); clear smooth boundary.

BA—4 to 15 inches; brown (10YR 5/3) coarse sandy loam, dark brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common fine and very fine roots; few fine and very fine tubular pores; 10 percent fine gravel; moderately acid (pH 6.0); clear wavy boundary.

Bt—15 to 26 inches; light yellowish brown (10YR 6/4) fine gravelly coarse sandy loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; few prominent discontinuous dark yellowish brown (10YR 3/4) clay films occurring as 1-centimeter-wide lamellae; 15 percent fine gravel; moderately acid (pH 5.9); clear irregular boundary.

Cr1—26 to 34 inches; multicolored, but dominantly very pale brown (10YR 7/4), weathered granodiorite; massive; few fine roots; gradual wavy boundary.

Cr2—34 to 60 inches; multicolored, but dominantly light gray (10YR 7/2), weathered granodiorite.

### *Typical Pedon Location*

*Map unit in which located:* Johnson-Labuck complex, 15 to 35 percent slopes

*Location in survey area:* About 4 miles southeast of Winchester, in Lewis County; about 1,600 feet south and 600 feet west of the northeast corner of sec. 21, T. 33 N., R. 2 W.

### *Range in Characteristics*

*Profile:*
Base saturation—60 to 75 percent
Depth to paralithic contact—20 to 40 inches
Average annual soil temperature—45 to 47 degrees F

A BC horizon is in some pedons.

*Particle-size control section (weighted average):*
Clay content—10 to 18 percent
Gravel content—10 to 25 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry

*BA horizon (absent in some pedons):*
Value—4 or 5 dry
Texture—coarse sandy loam, fine gravelly coarse sandy loam, or fine gravelly sandy loam
Gravel content—5 to 20 percent
Clay content—8 to 16 percent
Reaction—moderately acid to neutral

*Bt horizon:*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry
Texture—fine gravelly coarse sandy loam or fine gravelly sandy loam
Gravel content—15 to 30 percent
Clay content—10 to 18 percent
Reaction—moderately acid or slightly acid

### *Taxadjunct Feature*

The Labuck soils in this survey area have less than 5 percent volcanic glass in the surface layer, which is slightly outside the range for the Labuck series. This difference, however, does not significantly affect use and management.

## Lapwai Series

*Taxonomic class:* Coarse-loamy, mixed, mesic Cumulic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Stream terraces
*Parent material:* Alluvium derived from mixed sources
*Slope range:* 1 to 4 percent
*Elevation:* 750 to 1,200 feet
*Climatic data (average annual):*
Precipitation—16 to 20 inches
Air temperature—51 to 53 degrees F
Frost-free season (32 degrees F)—160 to 185 days

### *Typical Pedon Description*

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; weak coarse granular structure parting to weak fine granular; hard, firm, sticky and slightly plastic; many very fine and fine roots; many very fine and common fine tubular pores; neutral (pH 6.8); abrupt smooth boundary.

Bw1—9 to 16 inches; grayish brown (10YR 5/2) silt loam, very dark gray (10YR 3/1) moist; weak fine and medium prismatic structure; slightly hard, friable, sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and common fine tubular pores; neutral (pH 7.0); gradual smooth boundary.

Bw2—16 to 28 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure; soft, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; common very fine, fine, and medium tubular pores; neutral (pH 7.1); gradual smooth boundary.

Bw3—28 to 35 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; weak coarse prismatic structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; neutral (pH 7.3); abrupt wavy boundary.

2Bk—35 to 60 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; single grain; loose, very friable, nonsticky and nonplastic; common very fine roots; many very fine to coarse irregular pores; 30 percent gravel and 20 percent cobbles; coatings of secondary lime on coarse fragments; strongly effervescent (2 percent calcium carbonate equivalent); moderately alkaline (pH 8.0).

### *Typical Pedon Location*

*Map unit in which located:* Lapwai-Bridgewater complex, 1 to 4 percent slopes
*Location in survey area:* About 1 mile south of Spalding, in Nez Perce County; about 1,250 feet south and 50 feet west of the northeast corner of sec. 27, T. 36 N., R. 4 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 30 inches
Depth to secondary carbonates—30 to 40 inches
Average annual soil temperature—53 to 55 degrees F
Frequency of flooding—rare

*Particle-size control section (weighted average):*
Clay content—10 to 18 percent
Coarse fragment content—2 to 20 percent

*A horizon:*
Value—2 or 3 moist
Chroma—2 or 3 dry, 1 to 3 moist
Reaction—neutral or mildly alkaline

*Bw horizon:*
Value—3 to 6 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 to 3 moist
Texture—silt loam, loam, or gravelly loam
Clay content—10 to 20 percent
Coarse fragment content—0 to 20 percent
Reaction—neutral or mildly alkaline

*2Bk horizon:*
Texture—very gravelly sandy loam or very gravelly loam
Coarse fragment content—35 to 50 percent
Calcium carbonate equivalent—1 to 5 percent
Reaction—mildly alkaline or moderately alkaline

## Larabee Series

*Taxonomic class:* Loamy-skeletal, mixed, frigid Vitrandic Argixerolls

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on high plateaus, canyonsides
*Parent material:* Material weathered from basalt
*Slope range:* 4 to 75 percent
*Elevation:* 3,400 to 5,300 feet
*Climatic data (average annual):*
Precipitation—24 to 28 inches
Air temperature—42 to 44 degrees F
Frost-free season (32 degrees F)—60 to 90 days

### *Typical Pedon Description*

A1—0 to 4 inches; brown (7.5YR 5/2) loam, dark brown (7.5YR 3/2) moist; moderate medium granular structure; soft, very friable, nonsticky and slightly plastic; many fine and medium roots; common very fine and fine irregular pores; 5 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

A2—4 to 10 inches; brown (7.5YR 5/4) gravelly silt loam, dark brown (7.5YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; 15 percent gravel and 5 percent cobbles; moderately acid (pH 6.0); clear wavy boundary.

Bt1—10 to 20 inches; brown (7.5YR 5/4) very gravelly silt loam, dark brown (7.5YR 3/4) moist; strong medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores; common faint patchy clay films on faces of peds; common faint patchy skeletans on faces of peds; 35 percent gravel and 10 percent cobbles; moderately acid (pH 5.8); clear wavy boundary.

Bt2—20 to 29 inches; brown (7.5YR 4/4) extremely gravelly clay loam, dark brown (7.5YR 3/4) moist; weak fine angular blocky structure; hard, firm, sticky and plastic; very few very fine roots; few very fine irregular and tubular pores; very few faint patchy clay films on faces of peds; 50 percent gravel and 35 percent cobbles; moderately acid (pH 6.0); clear wavy boundary.

R—29 inches; fractured basalt.

### *Typical Pedon Location*

*Map unit in which located:* Larabee-Zaza-Seddow complex, 10 to 40 percent slopes
*Location in survey area:* About 6 miles southwest of Soldiers Meadow Reservoir, in Nez Perce County; about 2,150 feet north and 2,580 feet east of the southwest corner of sec. 14, T. 32 N., R. 4 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 20 inches
Base saturation—50 to 75 percent
Depth to bedrock—20 to 36 inches
Average annual soil temperature—44 to 46 degrees F

*Particle-size control section (weighted average):*
Clay content—30 to 35 percent
Coarse fragment content—45 to 65 percent

*A horizon:*
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry, 2 or 3 moist
Volcanic glass content (0.02- to 2.0-millimeter fraction)—5 to 15 percent
Acid-oxalate extractable Al plus $^1/_2$ Fe—0.4 to 1.5 percent
Reaction—moderately acid or slightly acid

*Bt1 horizon:*
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Texture—very gravelly silt loam, very gravelly clay loam, gravelly loam, or gravelly clay loam
Coarse fragment content—25 to 50 percent
Clay content—24 to 32 percent

*Bt2 horizon:*
Value—4 or 5 dry, 3 or 4 moist
Texture—extremely gravelly clay loam, extremely cobbly clay loam, or very cobbly clay loam
Coarse fragment content—40 to 85 percent
Clay content—30 to 40 percent

## Larkin Series

*Taxonomic class:* Fine-silty, mixed, mesic Ultic Argixerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 2 to 50 percent
*Elevation:* 2,300 to 3,400 feet
*Climatic data (average annual):*
Precipitation—22 to 24 inches
Air temperature—46 to 48 degrees F
Frost-free season (32 degrees F)—100 to 130 days

### *Typical Pedon Description*

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to weak fine and medium granular; slightly hard, friable, nonsticky and slightly plastic; many fine and very fine roots and common medium roots; many very fine and common medium irregular pores; neutral (pH 6.6); clear wavy boundary.

AB—8 to 15 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium angular blocky structure; hard, firm, slightly sticky and slightly plastic; many fine and very fine roots and few medium roots; many fine and very fine irregular pores; neutral (pH 6.7); gradual wavy boundary.

BAt—15 to 19 inches; yellowish brown (10YR 5/4) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate fine and medium angular blocky; hard, firm, slightly sticky and slightly plastic; many fine and very fine roots; many fine and very fine tubular pores; few faint clay films on faces of peds and in pores; neutral (pH 6.8); gradual wavy boundary.

Bt1—19 to 37 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 4/3) moist; moderate medium and coarse prismatic structure parting to moderate medium angular blocky; very hard, very firm, sticky and plastic; common fine and very fine roots; many fine and very fine and few medium tubular pores; common distinct discontinuous clay films on faces of peds and in pores; irregular 1-inch-thick lamellae; common prominent skeletans on faces of peds; neutral (pH 6.6); gradual wavy boundary.

Bt2—37 to 51 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse prismatic structure parting to moderate fine and medium angular blocky; very hard, very firm, sticky and plastic; common fine and very fine roots; common fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; few prominent skeletans on faces of peds; neutral (pH 6.6); gradual wavy boundary.

Bt3—51 to 61 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse angular blocky structure; hard, firm, sticky and plastic; few fine roots; common fine tubular pores; many prominent discontinuous clay films on faces of peds and in pores; common pockets of uncoated silt in peds; common fine iron and manganese concretions; neutral (pH 6.6).

### *Typical Pedon Location*

*Map unit in which located:* Southwick-Larkin complex, 12 to 25 percent slopes
*Location in survey area:* About 1 mile west of Cameron, in Nez Perce County; about 400 feet south and 900 feet west of the northeast corner of sec. 28, T. 38 N., R. 2 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 20 inches
Base saturation—60 to 75 percent in some part between depths of 10 and 30 inches
Average annual soil temperature—48 to 50 degrees F

*Particle-size control section (weighted average):*
Clay content—24 to 32 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid to neutral

*Bt horizon:*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—24 to 35 percent
Reaction—slightly acid or neutral

## Latah Series

*Taxonomic class:* Fine, mixed, mesic Xeric Argialbolls

*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained

*Permeability:* Very slow
*Landform:* Flood plains
*Parent material:* Alluvium
*Slope range:* 0 to 3 percent
*Elevation:* 2,570 to 2,780 feet
*Climatic data (average annual):*
Precipitation—18 to 23 inches
Air temperature—45 to 46 degrees F
Frost-free period—110 to 135 days

### *Typical Pedon Description*

A1—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium granular structure; slightly sticky and slightly plastic; many roots; many very fine pores; neutral; abrupt smooth boundary.

A2—6 to 10 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many roots; many very fine pores; neutral; clear wavy boundary.

A3—10 to 19 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; many roots; many very fine pores; neutral; clear wavy boundary.

E1—19 to 24 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak fine and medium prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common roots; common very fine pores; neutral; clear irregular boundary.

E2—24 to 30 inches; light gray (10YR 7/1) silt loam, gray (10YR 5/1) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common roots; many very fine pores; neutral; abrupt smooth boundary.

Bt1—30 to 36 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 4/3) moist; few fine and medium light brown (7.5YR 6/4) and light gray (2.5YR 7/2) mottles on peds; strong fine and medium subangular blocky structure; hard, very firm, sticky and plastic; some flattened roots between peds, no roots in peds; common very fine pores; prominent continuous clay films on peds; organic stains along vertical planes; neutral; clear smooth boundary.

Bt2—36 to 60 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 4/3) moist; common medium reddish yellow (7.5YR 6/6) mottles and common medium and coarse light gray (2.5YR 7/2) mottles on peds; strong fine and medium subangular blocky structure; hard, very firm, sticky and plastic; some flattened roots between peds, no roots in peds; many very fine pores; faint continuous clay films on peds; organic stains along fractures; neutral.

### *Typical Pedon Location*

*Location in adjacent survey area:* About 6 miles northeast of Pullman, in Whitman County, Washington; about 2,600 feet south and 600 feet west of the northeast corner of sec. 7, T. 15 N., R. 46 E.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—17 to 32 inches
Depth to seasonal perched water table—6 to 30 inches in December through April
Frequency of flooding—occasional or frequent for brief periods in December through April

In some pedons, mottles are below the A1 horizon and few very fine and fine manganese concretions are in the E and Bt horizons.

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—neutral or mildly alkaline

*E horizon:*
Value—5 to 7 dry, 4 or 5 moist
Chroma—1 or 2 dry or moist
Reaction—neutral or mildly alkaline

*Bt horizon:*
Value—4 to 6 dry, 3 to 5 moist
Chroma—2 or 3 dry or moist
Texture—silty clay loam, silty clay, or clay
Clay content—35 to 60 percent
Reaction—neutral or mildly alkaline

## Latahco Series

*Taxonomic class:* Fine-silty, mixed, frigid Argiaquic Xeric Argialbolls

*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Permeability:* Moderately slow
*Landform:* Drainageways on plateaus
*Parent material:* Silty alluvium

*Slope range:* 0 to 3 percent
*Elevation:* 2,200 to 4,200 feet
*Climatic data (average annual):*
Precipitation—20 to 24 inches
Air temperature—41 to 45 degrees F
Frost-free season (32 degrees F)—100 to 135 days

### *Typical Pedon Description*

Ap—0 to 13 inches; very dark grayish brown (10YR 3/2) silt loam, black (10YR 2/1) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular and irregular pores; neutral (pH 6.8); clear smooth boundary.

A—13 to 22 inches; very dark gray (10YR 3/1) silt loam, black (10YR 2/1) moist; weak medium prismatic structure parting to weak coarse and medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular pores; neutral (pH 7.3); gradual smooth boundary.

E1—22 to 28 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (10YR 5/2) moist; weak coarse subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; common very fine tubular pores; neutral (pH 7.3); gradual smooth boundary.

E2—28 to 35 inches; white (10YR 8/1) silt loam, light brownish gray (10YR 6/2) moist; weak coarse and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; neutral (pH 7.3); abrupt smooth boundary.

Bt1—35 to 43 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; few fine distinct strong brown (10YR 5/6) mottles; weak fine prismatic structure parting to weak medium subangular blocky; hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; few faint patchy clay films on faces of peds and lining pores; common distinct skeletans on faces of peds; 5 percent angular basalt gravel; mildly alkaline (pH 7.4); clear smooth boundary.

Bt2—43 to 60 inches; pale brown (10YR 6/3) silty clay loam, dark brown (2.5Y 4/2) moist; common fine distinct strong brown (10YR 5/6) mottles; massive; very hard, firm, very sticky and very plastic; few very fine roots; very few very fine tubular pores; 5 percent angular basalt gravel; mildly alkaline (pH 7.4).

### *Typical Pedon Location*

*Map unit in which located:* Westlake-Latahco complex, 0 to 3 percent slopes
*Location in survey area:* About 4 miles west of Nezperce, in Lewis County; about 3,700 feet south and 500 feet west of the northeast corner of sec. 4, T. 33 N., R. 1 E.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—13 to 22 inches
Depth to seasonal perched water table—18 to 34 inches in February through May
Frequency of flooding—occasional for brief periods in February through April
Depth to Bt horizon—18 to 35 inches
Average annual soil temperature—43 to 47 degrees F

*Particle-size control section (weighted average):*
Clay content—25 to 35 percent

*Ap and A horizons:*
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—slightly acid or neutral

*E horizon:*
Value—6 to 8 dry, 5 or 6 moist
Chroma—1 or 2 dry
Reaction—slightly acid or neutral

*Bt horizon:*
Hue—2.5Y or 10YR
Value—4 or 5 moist
Chroma—2 or 3 dry or moist
Clay content—25 to 35 percent
Reaction—mildly alkaline or moderately alkaline

## Lauby Series

*Taxonomic class:* Fine-loamy, mixed, mesic Pachic Ultic Argixerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus
*Parent material:* Loess over material weathered from granite
*Slope range:* 15 to 35 percent
*Elevation:* 2,700 to 3,400 feet

*Climatic data (average annual):*
Precipitation—22 to 25 inches
Air temperature—47 to 50 degrees F
Frost-free season (32 degrees F)—110 to 130 days

### *Typical Pedon Description*

Ap—0 to 6 inches; grayish brown (10YR 5/2) silt loam, very dark brown (10YR 2/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and plastic; few fine and very fine roots; few very fine tubular pores; moderately acid (pH 6.0); clear smooth boundary.

A—6 to 12 inches; grayish brown (10YR 5/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; many very fine tubular pores; many organic stains on faces of peds; moderately acid (pH 6.0); clear wavy boundary.

AB—12 to 17 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, sticky and plastic; few very fine and fine roots; many very fine tubular pores; many distinct clay films on faces of peds and in pores; few faint coatings of silt on faces of peds; 5 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt—17 to 24 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate fine prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, sticky and plastic; few very fine and fine roots; common very fine tubular pores; many distinct clay films on faces of peds and in pores; few patchy coatings of silt on faces of peds; 7 percent fine gravel; neutral (pH 6.8); clear wavy boundary.

2Btb1—24 to 32 inches; light yellowish brown (10YR 6/4) clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; many prominent clay films on faces of peds and in pores; 7 percent fine gravel; neutral (pH 6.8); clear wavy boundary.

2Btb2—32 to 50 inches; light brown (7.5YR 6/4) clay loam, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure; very hard, very firm, sticky and plastic; few very fine roots; common very fine tubular pores; many prominent brown (7.5YR 5/4) clay films on faces of peds and in pores; 7 percent fine gravel; slightly acid (pH 6.5); clear irregular boundary.

2C—50 to 60 inches; very pale brown (10YR 7/4) loam, mixed yellow (10YR 7/6) and brownish yellow (10YR 6/6) moist; massive; very hard, very firm, slightly sticky and slightly plastic; common very fine tubular pores; prominent clay accumulations on faces of weathered rock fragments; many very fine mica flakes; 5 percent fine gravel; slightly acid (pH 6.5).

### *Typical Pedon Location*

*Map unit in which located:* Lauby-Southwick complex, 15 to 35 percent slopes

*Location in survey area:* About 9 miles north of Nezperce, in Lewis County; about 2,400 feet south and 700 feet east of the northwest corner of sec. 18, T. 35 N., R. 2 E.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 30 inches
Base saturation—50 to 75 percent in some part between depths of 10 and 30 inches
Average annual soil temperature—48 to 51 degrees F

A BE horizon is in some pedons.

*Particle-size control section (weighted average):*
Clay content—28 to 35 percent
Coarse fragment content—0 to 10 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid or slightly acid

*Bt horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist
Texture—silty clay loam or silt loam
Clay content—20 to 30 percent
Fine gravel content—0 to 10 percent
Reaction—slightly acid or neutral

*2Btb horizon:*
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—4 to 6 dry, 3 or 4 moist
Texture—silty clay loam or clay loam
Gravel content—0 to 10 percent
Clay content—28 to 37 percent
Reaction—slightly acid or neutral

*2C horizon:*
Texture—loam or gravelly loam
Gravel content—0 to 25 percent

## Lickskillet Series

*Taxonomic class:* Loamy-skeletal, mixed, mesic Lithic Haploxerolls

*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Canyonsides, hills
*Parent material:* Colluvium derived from basalt with a thin mantle of loess
*Slope range:* 15 to 75 percent
*Elevation:* 800 to 2,500 feet
*Climatic data (average annual):*
Precipitation—12 to 16 inches
Air temperature—45 to 52 degrees F
Frost-free season (32 degrees F)—160 to 180 days

### *Typical Pedon Description*

A—0 to 5 inches; dark grayish brown (10YR 4/2) stony silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure parting to moderate fine and medium granular; hard, friable, sticky and plastic; many very fine and fine roots and common medium roots; many very fine and fine irregular pores; 15 percent gravel, 5 percent cobbles, and 5 percent stones; neutral (pH 7.2); clear wavy boundary.

AB—5 to 9 inches; brown (10YR 4/3) very gravelly silty clay loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to weak fine and medium granular; hard, friable, sticky and plastic; many very fine and fine roots and common medium and coarse roots; common very fine and fine and few medium irregular pores; few faint patchy clay films on faces of peds; 30 percent gravel and 20 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

Bt—9 to 13 inches; brown (10YR 5/3) very gravelly silty clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; many very fine and fine roots and common medium and coarse roots; common very fine and fine and few medium irregular pores; common faint patchy clay films on faces of peds and lining pores; 50 percent gravel and 10 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

Btk—13 to 16 inches; yellowish brown (10YR 5/4) extremely gravelly silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; common fine and medium roots; common very fine and fine and few medium irregular pores; slightly effervescent, disseminated lime; 70 percent gravel; mildly alkaline (pH 7.6); clear wavy boundary.

R—16 inches; fractured basalt; coatings of lime on some rock fragments.

### *Typical Pedon Location*

*Map unit in which located:* Lickskillet-Alpowa-Rock outcrop complex, 50 to 75 percent slopes
*Location in survey area:* About 1 mile north of Lewiston, in Nez Perce County; about 1,600 feet north and 1,000 feet west of the southeast corner of sec. 16, T. 36 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—7 to 15 inches
Depth to bedrock—12 to 20 inches
Average annual soil temperature—47 to 54 degrees F

*Particle-size control section (weighted average):*
Clay content—23 to 33 percent
Rock fragment content—35 to 70 percent

*A horizon:*
Hue—10YR or 7.5YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

*Bt and Btk horizons:*
Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly or extremely gravelly loam, silty clay loam, or clay loam
Clay content—23 to 33 percent
Rock fragment content—50 to 70 percent
Reaction—neutral to moderately alkaline

## Limekiln Series

*Taxonomic class:* Loamy-skeletal, mixed, mesic Lithic Haploxerolls

*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Canyonsides
*Parent material:* Loess, colluvium derived from basalt
*Slope range:* 40 to 60 percent
*Elevation:* 750 to 2,600 feet
*Climatic data (average annual):*
Precipitation—13 to 16 inches

Air temperature—51 to 54 degrees F
Frost-free season (32 degrees F)—140 to 190 days

### *Typical Pedon Description*

A—0 to 8 inches; brown (10YR 5/3) very stony silt loam, very dark grayish brown (10YR 3/2) moist; strong fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; 3 percent stones, 10 percent cobbles, and 25 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bk1—8 to 13 inches; brown (10YR 5/3) very gravelly silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; strongly effervescent (15 percent calcium carbonate equivalent); disseminated lime and coatings of lime on many rock fragments; 10 percent cobbles and 30 percent gravel; moderately alkaline (pH 8.0); clear smooth boundary.

Bk2—13 to 16 inches; very pale brown (10YR 7/3) extremely gravelly silt loam, brown (10YR 5/3) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; violently effervescent (46 percent calcium carbonate equivalent); disseminated lime and coatings of lime on many rock fragments; 30 percent cobbles and 35 percent gravel; moderately alkaline (pH 8.4); abrupt wavy boundary.

2R—16 inches; basalt.

### *Typical Pedon Location*

*Map unit in which located:* Limekiln very stony silt loam, 40 to 60 percent slopes

*Location in survey area:* About 5 miles south of Lewiston, in Nez Perce County; 900 feet north and 1,150 feet east of the southwest corner of sec. 5, T. 34 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 16 inches
Depth to calcic horizon—7 to 12 inches
Depth to bedrock—12 to 20 inches
Average annual soil temperature—53 to 56 degrees F

*Particle-size control section (weighted average):*
Rock fragment content—50 to 70 percent

*A horizon:*
Value—4 or 5 dry
Reaction—neutral or mildly alkaline

*Bk1 horizon:*
Rock fragment content—35 to 55 percent
Clay content—18 to 24 percent
Calcium carbonate equivalent—15 to 25 percent

*Bk2 horizon:*
Value—6 or 7 dry, 4 or 5 moist
Texture—extremely gravelly silt loam, extremely cobbly silt loam, or very cobbly silt loam
Rock fragment content—50 to 75 percent
Clay content—18 to 24 percent
Calcium carbonate equivalent—30 to 50 percent
Reaction—moderately alkaline or strongly alkaline

## Linville Series

*Taxonomic class:* Fine-loamy, mixed, mesic Pachic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Hills, canyonsides
*Parent material:* Loess, colluvium derived from basalt
*Slope range:* 25 to 75 percent
*Elevation:* 800 to 2,800 feet
*Climatic data (average annual):*
Precipitation—16 to 18 inches
Air temperature—46 to 50 degrees F
Frost-free season (32 degrees F)—130 to 160 days

### *Typical Pedon Description*

A1—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and very fine granular structure; slightly hard, friable, slightly sticky and nonplastic; many fine and very fine roots; many very fine to medium tubular pores; 7 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—3 to 6 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak thin and very thin platy structure; slightly hard, friable, slightly sticky and nonplastic; many fine and very fine roots; many fine and very fine tubular pores; 7 percent gravel; neutral (pH 7.2); clear smooth boundary.

A3—6 to 19 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic;

common fine and very fine roots; many very fine and common fine tubular pores; 10 percent gravel; mildly alkaline (pH 7.4); gradual smooth boundary.

AB—19 to 31 inches; dark grayish brown (10YR 4/2) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; weak coarse and medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common fine and very fine roots; common very fine tubular pores; common organic coatings on faces of peds; 25 percent gravel; mildly alkaline (pH 7.4); diffuse wavy boundary.

Bt1—31 to 48 inches; brown (10YR 5/3) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; weak coarse and medium subangular blocky structure; hard, friable, sticky and plastic; common fine and very fine roots; common fine and very fine tubular and irregular pores; very few distinct patchy clay films on faces of peds; common organic coatings on faces of peds; 25 percent gravel; mildly alkaline (pH 7.4); clear wavy boundary.

Bt2—48 to 67 inches; brown (10YR 5/3) gravelly silt loam, dark brown (10YR 3/3) moist; moderate medium and fine subangular blocky structure; hard, friable, sticky and plastic; common very fine roots; common fine and very fine tubular and irregular pores; common distinct patchy clay films on faces of peds; 20 percent gravel and 10 percent cobbles; mildly alkaline (pH 7.4).

### *Typical Pedon Location*

*Map unit in which located:* Linville-Kettenbach association, 45 to 75 percent slopes

*Location in survey area:* About 3 miles northeast of Spalding, in Nez Perce County; about 1,230 feet south and 150 feet west of the northeast corner of sec. 13, T. 36 N., R. 4 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 48 inches
Average annual soil temperature—47 to 50 degrees F

*Particle-size control section (weighted average):*
Clay content—20 to 27 percent
Coarse fragment content—5 to 30 percent

*A and AB horizons:*
Value—2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—neutral or mildly alkaline

*Bt horizon:*
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Coarse fragment content—15 to 30 percent
Clay content—20 to 27 percent
Reaction—mildly alkaline or moderately alkaline

## Mallory Series

*Taxonomic class:* Clayey-skeletal, montmorillonitic, mesic Pachic Argixerolls

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Slow
*Landform:* Hills, canyonsides
*Parent material:* Colluvium derived from basalt
*Slope range:* 20 to 40 percent
*Elevation:* 3,000 to 4,300 feet
*Climatic data (average annual):*
Precipitation—22 to 25 inches
Air temperature—46 to 47 degrees F
Frost-free season (32 degrees F)—110 to 130 days

### *Typical Pedon Description*

A—0 to 7 inches; very dark grayish brown (10YR 3/2) very stony loam, very dark brown (10YR 2/2) moist; weak very fine and fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine irregular pores; 25 percent gravel, 5 percent cobbles, and 5 percent stones; slightly acid (pH 6.5); clear smooth boundary.

Bt1—7 to 15 inches; dark brown (10YR 3/3) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; common very fine and fine irregular pores; 40 percent gravel and 10 percent cobbles; neutral (pH 6.7); clear wavy boundary.

Bt2—15 to 25 inches; brown (7.5YR 4/4) extremely gravelly clay, dark brown (7.5YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine and fine tubular pores; few distinct continuous clay films on faces of peds; 50 percent gravel and 15 percent cobbles; neutral (pH 6.8); clear wavy boundary.

Bt3—25 to 34 inches; brown (7.5YR 5/4) extremely gravelly clay loam, brown (7.5YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, firm, very sticky and very plastic;

few fine roots; few very fine and fine tubular pores; common distinct continuous clay films on faces of peds; 60 percent gravel and 25 percent cobbles; neutral (pH 6.8); clear wavy boundary.

R—34 inches; basalt; fractures 4 to 18 inches apart.

### *Typical Pedon Location*

*Map unit in which located:* Mallory-Jacket complex, 10 to 40 percent slopes

*Location in survey area:* About 1 mile south of Waha, in Nez Perce County; about 2,010 feet south and 2,450 feet west of the northeast corner of sec. 17, T. 33 N., R. 4 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 30 inches
Depth to bedrock—20 to 40 inches
Base saturation—75 to 90 percent
Average annual soil temperature—47 to 48 degrees F

*Particle-size control section (weighted average):*
Clay content—38 to 45 percent
Coarse fragment content—50 to 75 percent

*A horizon:*
Chroma—2 or 3 dry
Reaction—slightly acid or neutral

*Bt1 horizon:*
Value—3 or 4 dry or moist
Chroma—2 or 3 dry or moist
Rock fragment content—40 to 60 percent
Clay content—28 to 40 percent
Reaction—slightly acid or neutral

*Bt2 and Bt3 horizons:*
Hue—7.5YR or 10YR
Value—3 or 4 dry or moist
Chroma—2 to 4 dry or moist
Texture—extremely gravelly clay or extremely gravelly clay loam
Rock fragment content—60 to 90 percent
Clay content—36 to 45 percent
Reaction—slightly acid or neutral

## Maloney Series

*Taxonomic class:* Fine-loamy, mixed, frigid Typic Xerochrepts

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Hills on plateaus
*Parent material:* Material weathered from basalt with loess mixed in the upper part
*Slope range:* 5 to 20 percent
*Elevation:* 4,400 to 5,350 feet
*Climatic data (average annual):*
Precipitation—25 to 28 inches
Air temperature—41 to 43 degrees F
Frost-free season (32 degrees F)—60 to 90 days

### *Typical Pedon Description*

A—0 to 5 inches; dark yellowish brown (10YR 4/4) fine gravelly silt loam, dark brown (7.5YR 3/2) moist; strong fine granular structure; soft, friable, slightly sticky and slightly plastic; many fine and very fine roots and few medium roots; common fine and very fine tubular and irregular pores; 25 percent gravel, dominantly fine gravel; slightly acid (pH 6.4); clear smooth boundary.

Bw1—5 to 12 inches; dark yellowish brown (10YR 4/6) fine gravelly silt loam, dark brown (7.5YR 3/4) moist; weak medium and coarse subangular blocky structure parting to strong coarse granular; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots and few medium roots; common fine and medium tubular and irregular pores; 20 percent gravel, dominantly fine gravel; slightly acid (pH 6.2); clear wavy boundary.

Bw2—12 to 18 inches; dark yellowish brown (10YR 4/6) fine gravelly silt loam, dark brown (7.5YR 3/4) moist; weak medium and coarse subangular blocky structure parting to strong coarse granular; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots and few medium roots; common fine and medium tubular and irregular pores; 20 percent gravel, dominantly fine gravel; moderately acid (pH 6.0); gradual smooth boundary.

Bw3—18 to 25 inches; dark yellowish brown (10YR 4/6) fine gravelly silt loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; common fine and medium tubular and irregular pores; 25 percent gravel, dominantly fine gravel, and 5 percent cobbles; slightly acid (pH 6.2); abrupt irregular boundary.

2R—25 inches; basalt.

### *Typical Pedon Location*

*Map unit in which located:* Maloney-Zaza complex, 5 to 20 percent slopes

*Location in survey area:* About 3 miles southeast of Soldiers Meadow Reservoir, in Nez Perce County; about 2,600 feet south and 2,170 feet

west of the northeast corner of sec. 9, T. 32 N., R. 3 W.

### *Range in Characteristics*

*Profile:*
Volcanic glass content—0 to 5 percent
Depth to bedrock—22 to 36 inches
Average annual soil temperature—44 to 46 degrees F

*Particle-size control section (weighted average):*
Coarse fragment content—10 to 35 percent
Clay content—18 to 24 percent

*A horizon:*
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 to 6 dry, 2 to 4 moist

*Bw horizon:*
Hue—5YR, 7.5YR, or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 to 6 dry
Texture—fine gravelly silt loam, fine gravelly loam, or silt loam
Clay content—18 to 24 percent
Gravel content—10 to 25 percent, dominantly fine gravel
Cobble content—0 to 10 percent
Base saturation—60 to 75 percent
Reaction—moderately acid or slightly acid

## Meland Series

*Taxonomic class:* Fine-loamy, mixed, mesic Ultic Argixerolls

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus, canyon benches
*Parent material:* Loess, material weathered from basalt
*Slope range:* 5 to 25 percent
*Elevation:* 1,500 to 3,700 feet
*Climatic data (average annual):*
Precipitation—20 to 24 inches
Air temperature—45 to 50 degrees F
Frost-free season (32 degrees F)—110 to 160 days

### *Typical Pedon Description*

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak medium and coarse subangular blocky structure parting to weak fine and medium granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine and few fine tubular pores; moderately acid (pH 6.0); clear wavy boundary.

Bt1—10 to 16 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine tubular pores; few faint clay films on faces of peds and in pores; 5 percent gravel; slightly acid (pH 6.5); gradual wavy boundary.

Bt2—16 to 35 inches; pale brown (10YR 6/3) gravelly silty clay loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; common faint clay films on faces of peds and in pores; 20 percent gravel; slightly acid (pH 6.5); abrupt irregular boundary.

R—35 inches; fractured basalt.

### *Typical Pedon Location*

*Map unit in which located:* Meland-Jacket complex, 5 to 20 percent slopes
*Location in survey area:* About 1.5 miles northeast of Lenore, in Nez Perce County; about 15 feet south and 20 feet east of the northwest corner of sec. 25, T. 37 N., R. 2 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—15 to 20 inches
Depth to bedrock—20 to 40 inches
Average annual soil temperature—47 to 52 degrees F

*Particle-size control section (weighted average):*
Coarse fragment content—5 to 25 percent

*Ap horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma (upper part)—1 or 2 dry or moist
Chroma (lower part)—2 or 3 dry or moist
Reaction—moderately acid or slightly acid

*Bt horizon:*
Hue—10YR or 7.5YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture (upper part)—silt loam or silty clay loam
Texture (lower part)—gravelly silty clay loam, gravelly clay loam, or clay loam
Clay content—24 to 35 percent
Coarse fragment content—0 to 25 percent

## Mohler Series

*Taxonomic class:* Fine-silty, mixed, mesic Pachic Argixerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 4 to 10 percent
*Elevation:* 3,200 to 3,700 feet
*Climatic data (average annual):*
Precipitation—22 to 23 inches
Air temperature—44 to 46 degrees F
Frost-free season (32 degrees F)—105 to 120 days

### *Typical Pedon Description*

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silty clay loam, black (10YR 2/1) moist; moderate coarse granular structure; slightly hard, friable, slightly sticky and nonplastic; common very fine roots; common very fine and fine tubular and irregular pores; moderately acid (pH 6.0); abrupt wavy boundary.

A1—7 to 11 inches; dark grayish brown (10YR 4/2) silty clay loam, black (10YR 2/1) moist; moderate coarse prismatic structure parting to weak fine prismatic; hard, friable, slightly sticky and nonplastic; common very fine roots; common very fine and few fine tubular pores; neutral (pH 6.7); clear wavy boundary.

A2—11 to 17 inches; brown (10YR 4/3) silt loam, very dark brown (10YR 2/2) moist; moderate coarse prismatic structure parting to weak fine prismatic; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine and fine tubular pores; neutral (pH 6.9); clear wavy boundary.

A3—17 to 23 inches; brown (10YR 4/3) silt loam, very dark brown (10YR 2/2) moist; weak medium prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular and irregular pores and common fine tubular pores; neutral (pH 7.2); abrupt wavy boundary.

Bt1—23 to 29 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to weak fine prismatic; hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few medium tubular pores; few faint discontinuous clay films on faces of peds and in pores; few prominent discontinuous skeletans on faces of peds; discontinuous clay lamellae 2 to 5 millimeters thick; neutral (pH 7.2); clear smooth boundary.

Bt2—29 to 41 inches; light yellowish brown (10YR 6/4) silty clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to weak fine prismatic; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular and irregular pores and common fine tubular pores; few faint discontinuous clay films on faces of peds and in pores; common prominent discontinuous light gray (10YR 7/2) skeletans on faces of peds and as pockets in peds; wavy dark brown (7.5YR 4/4) clay lamellae that are 5 to 10 millimeters thick and are oriented horizontally; neutral (pH 7.3); clear wavy boundary.

Bt3—41 to 50 inches; light yellowish brown (10YR 6/4) silty clay loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to weak fine prismatic; hard, firm, slightly sticky and slightly plastic; few very fine roots; common very fine and fine tubular pores; common prominent discontinuous clay films on faces of peds and in pores; common prominent discontinuous light gray (10YR 7/2) skeletans on faces of peds and as pockets in peds; wavy dark brown (7.5YR 4/4) clay lamellae that are 5 to 10 millimeters thick and are oriented horizontally; mildly alkaline (pH 7.4); clear wavy boundary.

Bt4—50 to 68 inches; brown (7.5YR 5/4) silty clay loam, dark brown (10YR 4/3) moist; weak coarse prismatic structure parting to moderate medium prismatic; hard, firm, slightly sticky and slightly plastic; few very fine roots; common very fine and fine tubular pores; common faint discontinuous clay films on faces of peds and in pores; common prominent discontinuous light gray (10YR 7/2) skeletans on faces of peds and as pockets in peds; wavy dark brown (7.5YR 4/4) clay lamellae that are 5 to 10 millimeters thick and are oriented horizontally; mildly alkaline (pH 7.4).

### *Typical Pedon Location*

*Map unit in which located:* Mohler-Nez Perce-Uhlorn complex, 2 to 10 percent slopes

*Location in survey area:* About 3 miles northeast of Craigmont, in Lewis County; about 340 feet north and 1,980 feet west of the southeast corner of sec. 26, T. 34 N., R. 1 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—24 to 30 inches
Base saturation—75 to 95 percent between depths of 10 and 30 inches
Average annual soil temperature—47 to 49 degrees F

*Particle-size control section (weighted average):*
Clay content—25 to 32 percent

*A horizon:*
Chroma—2 or 3 dry, 1 or 2 moist (1 moist in upper part only)
Reaction—moderately acid to neutral

*Bt1 horizon:*
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—24 to 34 percent
Reaction—slightly acid or neutral

*Bt2, Bt3, and Bt4 horizons, and Btb horizon (present in some pedons):*
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—28 to 35 percent
Reaction—neutral or mildly alkaline

## Naff Series

*Taxonomic class:* Fine-silty, mixed, mesic Ultic Argixerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 2 to 40 percent
*Elevation:* 1,800 to 2,800 feet
*Climatic data (average annual):*
Precipitation—18 to 22 inches
Air temperature—47 to 50 degrees F
Frost-free season (32 degrees F)—130 to 160 days

### *Typical Pedon Description*

Ap—0 to 10 inches; grayish brown (10YR 5/2) silt loam, very dark brown (10YR 2/2) moist; weak coarse granular structure parting to weak medium and fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine irregular pores; slightly acid (pH 6.2); clear smooth boundary.

AB—10 to 18 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine irregular pores; slightly acid (pH 6.3); gradual wavy boundary.

Bt1—18 to 25 inches; light yellowish brown (10YR 6/4) silty clay loam, brown (10YR 4/3) moist; moderate medium angular blocky structure parting to moderate fine angular blocky; hard, firm, sticky and plastic; many very fine and fine roots; many very fine and fine tubular pores; many distinct discontinuous yellowish red (5YR 5/6) clay films lining pores and on faces of peds; slightly acid (pH 6.3); gradual wavy boundary.

Bt2—25 to 29 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 4/3) moist; moderate medium angular blocky structure parting to moderate fine and medium angular blocky; hard, firm, sticky and plastic; many fine roots; many very fine and fine tubular pores; many prominent yellowish red (5YR 5/6) clay films lining pores and on faces of peds; slightly acid (pH 6.4); gradual wavy boundary.

Bt3—29 to 37 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 5/3) moist; moderate coarse prismatic structure parting to moderate coarse and medium angular blocky; very hard, very firm, sticky and plastic; many fine roots; many very fine and fine tubular pores; many prominent discontinuous yellowish red (5YR 5/6) clay films lining pores and on faces of peds; slightly acid (pH 6.4); gradual wavy boundary.

Bt4—37 to 46 inches; pale brown (10YR 6/3) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse prismatic structure parting to moderate medium prismatic and strong medium and coarse angular blocky; many fine roots; many very fine and fine tubular pores; many prominent discontinuous yellowish red (5YR 5/6) clay films lining pores and on faces of peds; slightly acid (pH 6.3); gradual smooth boundary.

Bt5—46 to 55 inches; brownish yellow (10YR 6/6) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse prismatic structure parting to moderate medium and coarse angular blocky; hard, firm, sticky and plastic; few fine roots; many very fine and fine tubular pores; many distinct discontinuous yellowish red (5YR 5/6) clay films

lining pores and on faces of peds; slightly acid (pH 6.3); gradual smooth boundary.

Bt6—55 to 60 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse angular blocky structure; hard, firm, sticky and plastic; very few fine roots; many very fine and fine tubular pores; common distinct discontinuous yellowish red (5YR 5/6) clay films lining pores and on faces of peds; neutral (pH 6.6).

### *Typical Pedon Location*

*Map unit in which located:* Naff-Palouse complex, 8 to 20 percent slopes

*Location in survey area:* About 1 mile south of Genesee, in Nez Perce County; about 1,320 feet south and 2,640 feet west of the northeast corner of sec. 23, T. 37 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 20 inches
Organic matter content in mollic epipedon (weighted average)—2 to 3 percent
Average annual soil temperature—49 to 52 degrees F

*Particle-size control section (weighted average):*
Clay content—30 to 35 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 dry
Reaction—slightly acid or neutral

*Bt horizon (upper part):*
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Texture—silty clay loam or silt loam
Clay content—26 to 35 percent
Reaction—slightly acid or neutral

*Bt horizon (lower part):*
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Clay content—30 to 35 percent
Reaction—slightly acid to mildly alkaline

## Nez Perce Series

*Taxonomic class:* Fine, montmorillonitic, mesic Xeric Argialbolls

*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 1 to 20 percent
*Elevation:* 2,600 to 4,100 feet
*Climatic data (average annual):*
Precipitation—20 to 24 inches
Air temperature—44 to 48 degrees F
Frost-free season (32 degrees F)—100 to 140 days

### *Typical Pedon Description*

Ap1—0 to 3 inches; dark grayish brown (10YR 4/2) silty clay loam, black (10YR 2/1) moist; weak very fine and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; many fine to coarse irregular pores and few fine to coarse tubular pores; moderately acid (pH 5.7); clear smooth boundary.

Ap2—3 to 11 inches; dark grayish brown (10YR 4/2) silty clay loam, black (10YR 2/1) moist; weak medium and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; few fine and very fine tubular pores; moderately acid (pH 5.9); clear smooth boundary.

Bw—11 to 15 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; common fine and very fine roots; common very fine tubular pores; many continuous distinct dark grayish brown (10YR 4/2) organic coatings on faces of peds; neutral (pH 6.7); clear smooth boundary.

E—15 to 21 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak fine prismatic structure; hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common very fine tubular pores; few fine rounded iron and manganese concretions; neutral (pH 7.1); abrupt smooth boundary.

Btb1—21 to 26 inches; brown (10YR 4/3) silty clay, dark brown (10YR 3/3) moist; weak fine and very fine prismatic structure; very hard, very firm, very sticky and very plastic; common fine and very fine roots; common very fine tubular pores; few distinct patchy light brownish gray (10YR 6/2) skeletans on faces of peds; many distinct continuous clay films on faces of peds; many distinct continuous dark grayish brown (10YR 4/2) organic coatings on faces of peds; few fine rounded iron and manganese concretions; mildly alkaline (pH 7.6); clear smooth boundary.

Btb2—26 to 31 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; weak fine and very fine prismatic structure; very hard, very firm, very sticky and very plastic; common very fine roots; common very fine tubular pores; few distinct discontinuous intersecting slickensides on horizontal faces of peds; few distinct patchy light brownish gray (10YR 6/2) skeletans on vertical faces of peds; many distinct continuous clay films on faces of peds; few fine rounded iron and manganese concretions; moderately alkaline (pH 8.3); clear smooth boundary.

Btkb1—31 to 43 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; weak coarse prismatic structure; very hard, very firm, very sticky and very plastic; common very fine roots; common very fine tubular pores; common distinct discontinuous pressure faces on horizontal faces of peds; few fine rounded iron and manganese concretions; strongly effervescent (15 percent calcium carbonate equivalent); few fine filaments of lime; strongly alkaline (pH 8.5); gradual smooth boundary.

Btkb2—43 to 53 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; weak coarse prismatic structure; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine tubular pores; common distinct discontinuous pressure faces on horizontal faces of peds; few fine rounded iron and manganese concretions; strongly effervescent (13 percent calcium carbonate equivalent); disseminated lime and few fine filaments of lime; strongly alkaline (pH 8.8); gradual smooth boundary.

Btkb3—53 to 66 inches; pale brown (10YR 6/3) silty clay, brown (10YR 5/3) moist; weak coarse prismatic structure; hard, friable, very sticky and plastic; few very fine roots; few very fine tubular pores; common distinct discontinuous pressure faces on horizontal faces of peds; few fine rounded iron and manganese concretions; strongly effervescent (12 percent calcium carbonate equivalent); disseminated lime and few fine filaments of lime; strongly alkaline (pH 8.8).

### *Typical Pedon Location*

*Map unit in which located:* Uhlorn-Nez Perce complex, 2 to 10 percent slopes

*Location in survey area:* About 3 miles east of Craigmont, in Lewis County; about 1,600 feet south and 100 feet west of the northeast corner of sec. 2, T. 33 N., R. 1 W.

### *Range in Characteristics*

*Profile:*

Thickness of mollic epipedon and depth to E horizon—12 to 20 inches

Organic matter content in mollic epipedon (weighted average)—3 to 6 percent

Depth to seasonal perched water table—12 to 20 inches in February through April

Depth to argillic horizon—14 to 27 inches

Depth to secondary carbonates—26 to 40 inches

Average annual soil temperature—47 to 50 degrees F

*Particle-size control section (weighted average):*

Clay content—40 to 55 percent

*A horizon:*

Value—3 or 4 dry

Chroma—1 or 2 dry or moist

Reaction—moderately acid to neutral

*Bw horizon, and BA and AB horizons (present in some pedons):*

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry, 1 to 3 moist

Clay content—16 to 24 percent

Reaction—slightly acid or neutral

*E horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—1 or 2 dry

Texture—silt loam or silt

Clay content—10 to 20 percent

Reaction—slightly acid or neutral

*Btb horizon:*

Hue—7.5YR or 10YR

Value—4 to 6 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist

Clay content—40 to 55 percent

Reaction—neutral to moderately alkaline

*Btkb horizon:*

Hue—7.5YR or 10YR

Value—5 to 7 dry, 4 to 6 moist

Chroma—2 to 4 dry or moist

Texture—silty clay or silty clay loam

Gravel content—0 to 3 percent

Clay content—30 to 55 percent

Calcium carbonate equivalent—5 to 20 percent

Sodium adsorption ratio—3 to 10

Reaction—moderately alkaline or strongly alkaline

## Oliphant Series

*Taxonomic class:* Coarse-silty, mixed, mesic Calcic Pachic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Hills on plateaus
*Parent material:* Loess, colluvium derived from basalt
*Slope range:* 1 to 40 percent
*Elevation:* 1,200 to 2,600 feet
*Climatic data (average annual):*
Precipitation—13 to 16 inches
Air temperature—50 to 52 degrees F
Frost-free season (32 degrees F)—160 to 180 days

### *Typical Pedon Description*

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to strong coarse granular; soft, friable, nonsticky and nonplastic; common medium, fine, and very fine roots; common very fine tubular pores; neutral (pH 6.6); abrupt smooth boundary.

A—7 to 16 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak coarse and medium subangular blocky structure; soft, friable, nonsticky and nonplastic; common fine and very fine roots; common fine and very fine tubular pores; neutral (pH 7.0); clear wavy boundary.

Bw1—16 to 24 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak coarse and medium subangular blocky structure; soft, friable, nonsticky and nonplastic; few fine and very fine roots; many fine and very fine tubular pores; mildly alkaline (pH 7.6); gradual wavy boundary.

Bw2—24 to 29 inches; brown (10YR 5/3) silt loam, brown (10YR 4/3) moist; weak coarse and medium subangular blocky structure; soft, friable, nonsticky and nonplastic; few fine and very fine roots; many fine and very fine tubular pores; mildly alkaline (pH 7.6); clear wavy boundary.

Bk1—29 to 39 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak very coarse subangular blocky structure; soft, friable, nonsticky and nonplastic; very few very fine roots; common fine and very fine tubular pores; strongly effervescent; disseminated lime and few fine filaments of lime; moderately alkaline (pH 8.0); clear wavy boundary.

Bk2—39 to 62 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine tubular pores; violently effervescent; disseminated lime; strongly alkaline (pH 8.8).

### *Typical Pedon Location*

*Map unit in which located:* Oliphant silt loam, 1 to 4 percent slopes
*Location in survey area:* In the eastern part of Lewiston Orchards, in Nez Perce County; about 100 feet north and 2,620 feet east of the southwest corner of sec. 10, T. 35 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 26 inches
Depth to calcic horizon—26 to 36 inches
Depth to very gravelly substratum—40 to 60 inches or more
Average annual soil temperature—52 to 54 degrees F

*Particle-size control section (weighted average):*
Clay content—14 to 18 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

*Bw1 horizon:*
Chroma—3 or 4 dry
Clay content—12 to 18 percent
Reaction—mildly alkaline or moderately alkaline

*Bw2 horizon:*
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—12 to 18 percent
Reaction—mildly alkaline or moderately alkaline

*Bk horizon:*
Value—6 to 8 dry, 5 or 6 moist
Chroma—2 or 3 dry or moist
Calcium carbonate equivalent—15 to 30 percent
Reaction—moderately alkaline or strongly alkaline

*2Bk horizon (present in some pedons):*
Texture—gravelly silt loam or very gravelly silt loam

## Palouse Series

*Taxonomic class:* Fine-silty, mixed, mesic Pachic Ultic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 2 to 20 percent
*Elevation:* 1,800 to 2,900 feet

*Climatic data (average annual):*
Precipitation—18 to 22 inches
Air temperature—47 to 51 degrees F
Frost-free season (32 degrees F)—130 to 160 days

### *Typical Pedon Description*

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine and common medium tubular pores and common very fine irregular pores; slightly acid (pH 6.5); clear smooth boundary.

A—8 to 15 inches; dark brown (10YR 4/3) silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine and common medium tubular pores; many vertical worm channels filled with darker material; neutral (pH 7.1); clear wavy boundary.

AB—15 to 27 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine tubular pores; many vertical worm channels filled with darker material; neutral (pH 7.2); clear wavy boundary.

Bt1—27 to 40 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine tubular pores; few faint patchy clay films on faces of peds; common skeletans on faces of peds; many vertical worm channels filled with darker material; neutral (pH 7.3); gradual wavy boundary.

Bt2—40 to 50 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, sticky and slightly plastic; common very fine and fine roots; many very fine and fine and common medium tubular pores; few faint patchy clay films on faces of peds; common skeletans on faces of peds; many vertical worm channels filled with darker material; neutral (pH 7.3); gradual wavy boundary.

Bt3—50 to 63 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine and few medium tubular pores; few faint patchy clay films on faces of peds; few skeletans on faces of peds; many vertical worm channels filled with darker material; mildly alkaline (pH 7.4).

### *Typical Pedon Location*

*Map unit in which located:* Palouse-Athena complex, 8 to 20 percent slopes

*Location in survey area:* About 3 miles northwest of Spalding, in Nez Perce County; about 2,040 feet south and 2,640 feet west of the northeast corner of sec. 9, T. 36 N., R. 4 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 30 inches
Base saturation—75 to 90 percent between depths of 10 and 30 inches
Average annual soil temperature—49 to 52 degrees F

*Particle-size control section (weighted average):*
Clay content—20 to 27 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry, 1 or 2 moist
Reaction—slightly acid or neutral

*Bt horizon (upper part):*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—20 to 27 percent

*Bt horizon (lower part):*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—24 to 30 percent
Reaction—neutral or mildly alkaline

### *Taxadjunct Feature*

The base saturation of the Palouse soils in this survey area is slightly outside the range for the series. This difference, however, does not significantly affect use and management.

## Redmore Series

*Taxonomic class:* Fine, montmorillonitic, mesic Typic Natrixerolls

*Depth class:* Deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Landform:* Hills on plateaus
*Parent material:* Loess, material weathered from basalt
*Slope range:* 1 to 6 percent
*Elevation:* 2,450 to 2,800 feet
*Climatic data (average annual):*
Precipitation—16 to 18 inches
Air temperature—49 to 50 degrees F
Frost-free season (32 degrees F)—130 to 140 days

### *Typical Pedon Description*

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak coarse angular blocky structure parting to moderate fine subangular blocky; slightly hard, friable, nonsticky and slightly plastic; many very fine and fine roots; few very fine tubular pores; strongly acid (pH 5.3); clear smooth boundary.

A—8 to 12 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; moderately acid (pH 5.7); abrupt wavy boundary.

Btn1—12 to 16 inches; very dark grayish brown (10YR 3/2) silty clay, black (10YR 2/1) moist, dark brown (10YR 4/3) dry and crushed, very dark grayish brown (10YR 3/2) moist and crushed; moderate medium prismatic structure parting to strong medium angular blocky; very hard, firm, very sticky and very plastic; common fine and very fine roots; few very fine and fine tubular pores; many distinct discontinuous clay films on faces of peds; many black (10YR 2/1) organic coatings on faces of peds; 9 percent exchangeable sodium; mildly alkaline (pH 7.7); clear wavy boundary.

Btn2—16 to 19 inches; brown (10YR 4/3) silty clay loam, dark brown (10YR 3/3) moist, yellowish brown (10YR 5/4) and dark yellowish brown (10YR 3/4) moist and crushed; moderate medium prismatic structure parting to strong medium angular blocky; very hard, firm, very sticky and very plastic; common fine and very fine roots; common very fine tubular pores; many distinct discontinuous clay films on faces of peds; common black (10YR 2/1) organic coatings on faces of peds; 11 percent exchangeable sodium; strongly alkaline (pH 8.6); clear wavy boundary.

Btkn—19 to 28 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, sticky and plastic; few fine and very fine roots; common very fine tubular pores; common faint and distinct discontinuous clay films on faces of peds; slightly effervescent disseminated lime and strongly effervescent common fine filaments of lime (3 percent calcium carbonate equivalent); 15 percent exchangeable sodium; strongly alkaline (pH 8.6); clear wavy boundary.

Bkn1—28 to 35 inches; yellowish brown (10YR 5/4) silty clay loam, dark brown (10YR 4/3) moist; weak fine prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; slightly effervescent disseminated lime and violently effervescent fine and medium filaments of lime (4 percent calcium carbonate equivalent); 5 percent gravel; 13 percent exchangeable sodium; strongly alkaline (pH 8.9); clear wavy boundary.

2Bkn2—35 to 42 inches; white (10YR 8/2) silt loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and slightly plastic; many fine and very fine tubular pores; violently effervescent disseminated lime (40 percent calcium carbonate equivalent); 5 percent gravel and indurated durinodes; 25 percent exchangeable sodium; strongly alkaline (pH 8.8); clear wavy boundary.

2Bkqn—42 to 46 inches; white (10YR 8/2) very gravelly loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and slightly plastic; many fine and very fine tubular pores; violently effervescent disseminated lime (80 percent calcium carbonate equivalent); 30 percent gravel and 10 percent cobbles, including basalt fragments and indurated durinodes; 23 percent exchangeable sodium; strongly alkaline (pH 8.6); abrupt wavy boundary.

2Bkqm—46 to 60 inches; white (10YR 8/2) indurated duripan, brown (10YR 5/3) moist; very thick platy structure with lenses of loamy soil material between plates; extremely hard, extremely firm; violently effervescent disseminated lime; strongly alkaline (pH 8.8).

### *Typical Pedon Location*

*Map unit in which located:* Redmore silt loam, 1 to 6 percent slopes
*Location in survey area:* About 10 miles southeast of Lewiston, in Nez Perce County; about 2,420 feet north and 900 feet east of the southwest corner of sec. 25, T. 34 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—15 to 20 inches
Depth to natric horizon—8 to 16 inches
Depth to Bkn horizon—20 to 30 inches
Depth to duripan—40 to 55 inches
Average annual soil temperature—47 to 48 degrees F

*Particle-size control section (weighted average):*
Clay content—35 to 45 percent

*A horizon:*
Chroma—1 or 2 moist
Reaction—strongly acid to slightly acid

*Btn horizon:*
Value—3 to 5 dry, 2 to 4 moist
Chroma—1 to 4 dry or moist
Texture—silty clay loam or silty clay
Clay content—30 to 45 percent
Sodium adsorption ratio—5 to 12
Exchangeable sodium percentage—8 to 20
Reaction—mildly alkaline to strongly alkaline

*Btkn horizon:*
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—26 to 35 percent
Sodium adsorption ratio—10 to 20
Exchangeable sodium percentage—15 to 30
Reaction—strongly alkaline or very strongly alkaline

*Bkn horizon:*
Value—5 to 8 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—26 to 35 percent
Gravel content—0 to 10 percent
Sodium adsorption ratio—10 to 20
Exchangeable sodium percentage—10 to 30
Reaction—strongly alkaline or very strongly alkaline

*2Bkn horizon:*
Texture—silt loam or loam
Clay content—14 to 25 percent
Gravel content—0 to 10 percent
Reaction—strongly alkaline or very strongly alkaline

*2Bkqn horizon (absent in some pedons):*
Coarse fragment content—30 to 55 percent

## Seddow Series

*Taxonomic class:* Fine-loamy, mixed, frigid Vitrandic Haploxeralfs

*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on high plateaus
*Parent material:* Volcanic ash, loess, material weathered from basalt
*Slope range:* 5 to 40 percent
*Elevation:* 4,200 to 5,300 feet
*Climatic data (average annual):*
Precipitation—26 to 28 inches
Air temperature—41 to 44 degrees F
Frost-free season (32 degrees F)—60 to 85 days

### *Typical Pedon Description*

Oi—1 inch to 0; moss, needles, and twigs.

A—0 to 4 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many fine and very fine roots; many fine and very fine irregular and tubular pores; less than 3 percent gravel; moderately acid (pH 5.8); clear smooth boundary.

E/B—4 to 8 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and medium roots and few coarse roots; common fine and very fine tubular pores; less than 5 percent gravel; strongly acid (pH 5.2); clear wavy boundary.

B/E—8 to 13 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and medium roots and few coarse roots; common fine and very fine tubular pores; 5 percent gravel; strongly acid (pH 5.2); clear wavy boundary.

2Bt1—13 to 21 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 3/4) moist, dark yellowish brown (10YR 4/4) moist and crushed; moderate medium and coarse subangular blocky structure parting to strong fine angular blocky; hard, friable, sticky and plastic; common fine and medium roots and few coarse roots; few fine and very fine tubular pores; few faint discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds; many prominent discontinuous pale brown (10YR 6/3) skeletans on faces of peds; 5 percent gravel; strongly acid (pH 5.3); clear wavy boundary.

3Bt2—21 to 29 inches; dark yellowish brown (10YR 4/4) gravelly clay loam, dark yellowish brown

(10YR 3/4) moist, yellowish brown (10YR 5/6) dry and crushed, dark yellowish brown (10YR 4/4) moist and crushed; moderate medium subangular blocky structure parting to strong fine angular blocky; hard, firm, sticky and plastic; few fine and medium roots; few fine tubular pores; many distinct continuous dark yellowish brown (10YR 4/4) clay films on faces of peds; few prominent patchy pale brown (10YR 6/3) skeletans on faces of peds; 20 percent gravel and 10 percent cobbles; moderately acid (pH 5.6); clear wavy boundary.

3Bt3—29 to 48 inches; dark yellowish brown (10YR 4/4) extremely cobbly clay loam, dark yellowish brown (10YR 4/4) moist, yellowish brown (10YR 5/6) dry and crushed; weak fine and medium subangular blocky structure; hard, firm, sticky and plastic; few fine roots matted around stones; common prominent discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds; 30 percent gravel and 40 percent cobbles; moderately acid (pH 6.0); clear wavy boundary.

3R—48 inches; fractured basalt.

### *Typical Pedon Location*

*Map unit in which located:* Seddow silt loam, 10 to 40 percent slopes

*Location in survey area:* About 1/4 mile east of Soldiers Meadow Dam, in Nez Perce County; about 550 feet north and 1,550 feet west of the southeast corner of sec. 29, T. 33 N., R. 3 W.

### *Range in Characteristics*

*Profile:*
Depth to argillic horizon—6 to 14 inches
Depth to skeletal material—28 to 36 inches
Depth to bedrock—40 to 55 inches
Average annual soil temperature—44 to 46 degrees F

*Particle-size control section (weighted average):*
Clay content—30 to 35 percent
Coarse fragment content—10 to 35 percent

*Upper 7 to 14 inches:*
Volcanic glass content—5 to 30 percent
Acid-oxalate extractable Al plus 1/2 Fe—0.4 to 1.2 percent
Sand and coarse silt content—30 to 45 percent

*A horizon:*
Hue—7.5YR or 10YR
Value—4 to 6 dry, 2 or 3 moist
Chroma—3 or 4 dry, 2 to 4 moist
Reaction—moderately acid or slightly acid

*E/B and B/E horizons:*
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Clay content—14 to 24 percent
Gravel content—0 to 10 percent
Reaction—strongly acid or moderately acid

*2Bt1 and 3Bt2 horizons:*
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—4 to 6 dry or moist
Texture—silty clay loam, gravelly clay loam, gravelly silt loam, or silt loam
Clay content—24 to 38 percent
Coarse fragment content—5 to 35 percent
Base saturation—50 to 75 percent
Reaction—strongly acid or moderately acid

*3Bt3 horizon:*
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 to 6 dry or moist
Texture—extremely cobbly clay loam, very cobbly clay loam, or extremely gravelly clay loam
Clay content—35 to 40 percent
Coarse fragment content—40 to 75 percent
Reaction—moderately acid or slightly acid

## Setters Series

*Taxonomic class:* Fine, montmorillonitic, frigid Ultic Palexerolls

*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Landform:* Hills on plateaus, canyon benches
*Parent material:* Loess
*Slope range:* 2 to 15 percent
*Elevation:* 2,300 to 4,300 feet
*Climatic data (average annual):*
Precipitation—23 to 26 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—100 to 120 days

### *Typical Pedon Description*

Ap—0 to 8 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine to medium roots; many

very fine to medium tubular pores; slightly acid (pH 6.4); clear smooth boundary.

AB—8 to 12 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine to medium roots; many fine and very fine tubular pores; slightly acid (pH 6.4); gradual smooth boundary.

Bt—12 to 17 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; few faint clay films in pores; many distinct very pale brown (10YR 7/3) skeletans on faces of peds; slightly acid (pH 6.4); gradual smooth boundary.

E—17 to 19 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (10YR 5/2) moist; many fine and medium prominent strong brown (7.5YR 5/6) mottles; weak medium platy structure; soft, very friable, nonsticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; slightly acid (pH 6.3); abrupt smooth boundary.

Btb1—19 to 29 inches; brown (10YR 5/3) silty clay, brown (10YR 4/3) moist; strong medium and coarse prismatic structure; very hard, very firm, very sticky and very plastic; few fine and very fine roots, some flattened between peds; many fine and very fine tubular pores; many prominent clay films on faces of peds and in pores; common slickensides on faces of peds; few fine rounded iron and manganese concretions; slightly acid (pH 6.2); gradual wavy boundary.

Btb2—29 to 49 inches; pale brown (10YR 6/3) silty clay, brown (10YR 4/3) moist; strong medium and coarse prismatic structure; very hard, very firm, very sticky and very plastic; few fine and very fine roots, some flattened against peds; many fine and very fine tubular pores; common slickensides on faces of peds; many prominent clay films on faces of peds and in pores; few fine rounded iron and manganese concretions; neutral (pH 7.0); gradual wavy boundary.

Btb3—49 to 61 inches; pale brown (10YR 6/3) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong medium and coarse angular blocky structure; hard, firm, very sticky and very plastic; few fine and very fine roots; common fine and very fine tubular pores; many prominent clay films on faces of peds and in pores; few fine rounded iron and manganese concretions; neutral (pH 7.2).

### *Typical Pedon Location*

*Map unit in which located:* Taney-Setters complex, 3 to 8 percent slopes

*Location in survey area:* About 2 miles south of Reubens, in Lewis County; about 50 feet north and 1,300 feet east of the southwest corner of sec. 11, T. 34 N., R. 2 W.

### *Range in Characteristics*

*Profile:*

Thickness of mollic epipedon—11 to 18 inches

Depth to seasonal perched water table—14 to 22 inches in February through April

Depth to Btb horizon—18 to 24 inches

Average annual soil temperature—44 to 47 degrees F

*Particle-size control section (weighted average):*

Clay content—40 to 45 percent

*A horizon:*

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Reaction—strongly acid to slightly acid

*Bt horizon:*

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Clay content—15 to 26 percent

Reaction—slightly acid or neutral

*E horizon:*

Value—6 or 7 dry, 5 or 6 moist

Chroma—2 dry or moist

Clay content—15 to 20 percent

Reaction—moderately acid or slightly acid

*Btb horizon:*

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—2 to 4 dry, 3 or 4 moist

Texture—silty clay or silty clay loam

Clay content—35 to 50 percent

Base saturation—65 to 75 percent in some part of the upper 20 inches

Reaction—moderately acid to neutral

### *Taxadjunct Feature*

The E horizon in the Setters soils in this survey area has chroma of 2, which is outside the range for the series. This difference, however, does not significantly affect use and management.

## Shilla Series

*Taxonomic class:* Ashy over loamy-skeletal, mixed, frigid Alfic Vitrixerands

*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on high plateaus
*Parent material:* Volcanic ash over material weathered from basalt
*Slope range:* 2 to 30 percent
*Elevation:* 4,400 to 5,300 feet
*Climatic data (average annual):*
Precipitation—26 to 28 inches
Air temperature—41 to 43 degrees F
Frost-free season (32 degrees F)—60 to 70 days

### *Typical Pedon Description*

Oi—1 inch to 0; slightly decomposed needles, moss, and twigs.

A—0 to 1 inch; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots and few medium roots; few very fine and fine tubular pores; slightly acid (pH 6.3); abrupt smooth boundary.

Bw1—1 inch to 9 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium and coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common fine and very fine roots and few medium roots; common very fine tubular pores; 5 percent fine gravel; moderately acid (pH 6.0); gradual smooth boundary.

Bw2—9 to 16 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common fine and very fine roots and few medium roots; common very fine tubular pores; 5 percent fine gravel; moderately acid (pH 5.9); abrupt irregular boundary.

2Btb1—16 to 24 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and few medium roots; many fine and very fine tubular pores; many distinct discontinuous dark yellowish brown (10YR 4/6) clay films on faces of peds; 10 percent gravel; moderately acid (pH 5.9); clear wavy boundary.

2Btb2—24 to 31 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and few medium roots; many fine and very fine tubular pores; common distinct discontinuous dark yellowish brown (10YR 4/6) clay films on faces of peds; 45 percent gravel and 15 percent cobbles; neutral (pH 6.7); gradual wavy boundary.

2Btb3—31 to 53 inches; yellowish brown (10YR 5/6) extremely cobbly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and very fine angular blocky structure; hard, friable, sticky and plastic; few fine roots matted around stones; common fine and very fine tubular pores; 35 percent gravel and 55 percent cobbles; slightly acid (pH 6.2); clear irregular boundary.

2R—53 inches; fractured basalt.

### *Typical Pedon Location*

*Map unit in which located:* Shilla silt loam, 2 to 12 percent slopes
*Location in survey area:* About 3 miles north of Zaza, in Nez Perce County; about 545 feet south and 2,600 feet east of the northwest corner of sec. 21, T. 32 N. R. 4 W.

### *Range in Characteristics*

*Profile:*
Depth to bedrock—40 to 60 inches
Average annual soil temperature—43 to 45 degrees F

*Ash mantle:*
Thickness—14 to 20 inches
Volcanic glass content (0.02- to 2.0-millimeter fraction)—25 to 45 percent
Acid-oxalate extractable Al plus $^1/_2$ Fe—0.6 to 2.0 percent
Moist bulk density—0.75 to 0.90 gram per centimeter
15-bar water retention—8 to 12 percent

*Lower part of particle-size control section (weighted average):*
Clay content—28 to 34 percent
Coarse fragment content—45 to 60 percent

*A horizon:*
Value—4 or 5 dry, 2 to 4 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid or slightly acid

*Bw horizon:*
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Gravel content (fragments dominantly 2 to 5 millimeters in diameter)—0 to 10 percent

Clay content (field estimate)—10 to 15 percent
Reaction—moderately acid or slightly acid

*2Btb horizon (upper part):*
Texture—loam, cobbly loam, clay loam, or cobbly clay loam
Coarse fragment content—10 to 25 percent
Clay content—24 to 30 percent
Reaction—moderately acid or slightly acid

*2Btb horizon (lower part):*
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—4 to 6 dry or moist
Texture—very cobbly clay loam, very gravelly clay loam, extremely gravelly clay loam, or extremely cobbly clay loam
Rock fragment content—40 to 90 percent
Clay content—28 to 38 percent
Reaction—moderately acid to neutral

## Slickpoo Series

*Taxonomic class:* Fine-loamy, mixed, mesic Calcic Pachic Argixerolls

*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus
*Parent material:* Loess, material weathered from basalt
*Slope range:* 5 to 25 percent
*Elevation:* 1,600 to 2,900 feet
*Climatic data (average annual):*
Precipitation—15 to 18 inches
Air temperature—49 to 52 degrees F
Frost-free season (32 degrees F)—140 to 180 days

### *Typical Pedon Description*

Ap—0 to 12 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine and fine tubular pores; slightly acid (pH 6.1); clear smooth boundary.
BA—12 to 17 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine and fine tubular pores; very few faint patchy clay films on faces of peds; neutral (pH 6.6); gradual wavy boundary.
Bt1—17 to 22 inches; yellowish brown (10YR 5/4) silty clay loam, dark brown (10YR 3/3) moist; weak medium angular blocky structure; hard, friable, sticky and plastic; common very fine roots; common very fine and fine tubular pores; common faint discontinuous clay films on faces of peds; neutral (pH 7.2); clear wavy boundary.
2Bt2—22 to 32 inches; yellowish brown (10YR 5/4) cobbly silty clay loam, dark yellowish brown (10YR 3/4) moist; weak medium angular blocky structure; hard, firm, sticky and plastic; common very fine roots; many very fine and fine tubular pores; many distinct discontinuous clay films on faces of peds; 10 percent gravel and 15 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.
2Btk—32 to 37 inches; yellowish brown (10YR 5/4) cobbly silty clay loam, brown (10YR 4/3) moist; weak medium angular blocky structure; hard, firm, sticky and plastic; few very fine roots; many very fine and fine tubular pores; few faint patchy clay films in pores; slightly effervescent; few fine filaments of lime; 10 percent gravel and 20 percent cobbles; mildly alkaline (pH 7.8); clear wavy boundary.
2Bk—37 to 45 inches; light gray (10YR 7/2) very cobbly silt loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine tubular pores; violently effervescent; disseminated lime; 20 percent gravel and 40 percent cobbles; moderately alkaline (pH 8.4); abrupt wavy boundary.
3R—45 inches; basalt.

### *Typical Pedon Location*

*Map unit in which located:* Slickpoo silt loam, 5 to 15 percent slopes
*Location in survey area:* About 1 mile northwest of Waha, in Nez Perce County; about 1,900 feet south and 20 feet west of the northeast corner of sec. 6, T. 33 N., R. 4 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 28 inches
Depth to secondary carbonates—28 to 35 inches
Depth to bedrock—40 to 55 inches
Average annual soil temperature—51 to 54 degrees F

*Ap horizon:*
Value—3 or 4 dry
Chroma—1 or 2 dry or moist

*Bt horizon:*
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist

Texture—silt loam or silty clay loam
Clay content—22 to 32 percent
Gravel content—0 to 10 percent
Reaction—neutral or mildly alkaline

*2Bt horizon, and 2Btk horizon (absent in some pedons):*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—28 to 36 percent
Coarse fragment content—15 to 35 percent
Reaction—neutral or mildly alkaline

*2Bk horizon:*
Value—6 to 8 dry, 5 or 6 moist
Chroma—2 to 4 dry or moist
Texture—very cobbly silt loam or very cobbly loam
Clay content—20 to 27 percent
Coarse fragment content—35 to 60 percent

## Southwick Series

*Taxonomic class:* Fine-silty, mixed, mesic Boralfic Argixerolls

*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Moderate in the upper part and very slow in the lower part
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 3 to 30 percent
*Elevation:* 2,300 to 3,400 feet
*Climatic data (average annual):*
Precipitation—23 to 25 inches
Air temperature—45 to 47 degrees F
Frost-free season (32 degrees F)—100 to 130 days

### *Typical Pedon Description*

Ap1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate very thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; many wormcasts; moderately acid (pH 5.8); clear smooth boundary.

Ap2—5 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium and coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; many wormcasts; moderately acid (pH 5.9); gradual smooth boundary.

BA—9 to 15 inches; brown (10YR 4/3) silt loam, dark brown (10YR 3/3) moist; weak medium prismatic structure; hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; few faint patchy clay films on faces of peds; many wormcasts; slightly acid (pH 6.2); gradual wavy boundary.

Bt1—15 to 20 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; common distinct discontinuous clay films on faces of peds and in pores; many wormcasts; slightly acid (pH 6.3); gradual wavy boundary.

Bt2—20 to 26 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; common distinct discontinuous clay films on faces of peds and in pores; many wormcasts; slightly acid (pH 6.3); gradual wavy boundary.

EB—26 to 28 inches; pale brown (10YR 6/3) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium and coarse subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine tubular pores; few faint patchy clay films on faces of peds; slightly acid (pH 6.3); gradual wavy boundary.

E—28 to 32 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; common fine prominent mottles that are olive yellow (2.5Y 6/8) moist; weak medium and thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; many fine and medium manganese concretions; firm, somewhat brittle layer 1 inch thick at lower boundary; slightly acid (pH 6.1); abrupt smooth boundary.

Btxb1—32 to 35 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; strong coarse prismatic structure; extremely hard, extremely firm, sticky and plastic; very dense and brittle; common very fine and fine flattened roots matted between faces of prisms; common very fine and fine tubular pores plugged with clay; many prominent clay films on faces of peds and in pores; many prominent continuous skeletans on faces of peds and in pores; many fine pockets of uncoated silt in peds; common prominent very

dark brown (10YR 2/2) organic coatings on faces of prisms; moderately acid (pH 5.9); gradual smooth boundary.

Btxb2—35 to 46 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; strong coarse prismatic structure parting to strong medium and coarse angular blocky; extremely hard, extremely firm, sticky and plastic; very dense and brittle; common very fine and fine flattened roots matted between faces of prisms; few very fine and fine tubular pores; many prominent dark brown (7.5YR 4/4) clay films on faces of peds and lining pores; many prominent continuous skeletans on faces of peds and in pores; many fine pockets of uncoated silt in peds; many fine and medium manganese concretions; moderately acid (pH 5.9); gradual wavy boundary.

Btb1—46 to 54 inches; yellowish brown (10YR 5/4) silty clay loam, brown (10YR 4/3) moist; strong coarse angular blocky structure; very hard, very firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; many prominent dark brown (7.5YR 4/4) clay films on faces of peds and lining pores; many fine and medium manganese concretions; slightly acid (pH 6.4); gradual wavy boundary.

Btb2—54 to 64 inches; yellowish brown (10YR 5/4) silty clay loam, light yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; very hard, very firm, sticky and plastic; few very fine and fine tubular pores; many prominent dark brown (7.5YR 4/4) clay films on faces of peds and lining pores; many fine and medium manganese concretions; many black coatings of manganese on faces of peds; neutral (pH 6.9).

### *Typical Pedon Location*

*Map unit in which located:* Southwick-Driscoll complex, 3 to 12 percent slopes (fig. 26)

*Location in survey area:* About 1 mile east of Gifford, in Nez Perce County; about 1,400 feet south and 600 feet east of the northwest corner of sec. 25, T. 36 N., R. 2 W.

### *Range in Characteristics*

*Profile:*

Thickness of mollic epipedon—20 to 30 inches

Depth to seasonal perched water table—20 to 36 inches in February through April

Depth to Btxb horizon—29 to 36 inches

Average annual soil temperature—47 to 49 degrees F

*Particle-size control section (weighted average):*

Clay content—28 to 34 percent

*Ap horizon:*

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Clay content—18 to 26 percent

**Figure 26.—A profile of Southwick silt loam in an area of Southwick-Driscoll complex, 3 to 12 percent slopes. In spring a water table is perched above the dense subsoil, which is at a depth of about 28 inches (numerals on tape indicate feet).**

Reaction—moderately acid to neutral

*Bt horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry
Clay content—20 to 27 percent
Base saturation—60 to 75 percent
Reaction—moderately acid or slightly acid

*E horizon:*
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 or 3 dry or moist
Clay content—12 to 20 percent
Base saturation—70 to 80 percent
Reaction—moderately acid to neutral

*Btxb horizon:*
Hue—7.5YR or 10YR
Value—5 to 7 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—27 to 34 percent
Bulk density—1.60 to 1.70 grams per centimeter
Base saturation—70 to 80 percent
Reaction—moderately acid or slightly acid

*Btb horizon:*
Hue—7.5YR or 10YR
Value—5 to 7 dry, 4 or 5 moist
Chroma—3 or 4 moist
Clay content—30 to 38 percent
Reaction—moderately acid to neutral

## Stember Series

*Taxonomic class:* Loamy-skeletal, mixed, mesic Typic Calcixerolls

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Hills on plateaus
*Parent material:* Loess, material weathered from basalt
*Slope range:* 8 to 15 percent
*Elevation:* 1,400 to 2,600 feet
*Climatic data (average annual):*
Precipitation—14 to 16 inches
Air temperature—50 to 52 degrees F
Frost-free season (32 degrees F)—160 to 180 days

### *Typical Pedon Description*

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; common very fine tubular pores; slightly effervescent (trace of calcium carbonate equivalent); disseminated lime; 5 percent gravel and 3 percent cobbles; moderately alkaline (pH 8.0); abrupt smooth boundary.

A—6 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; common very fine tubular pores; slightly effervescent (trace of calcium carbonate equivalent); disseminated lime; 5 percent gravel and 3 percent cobbles; moderately alkaline (pH 8.0); clear smooth boundary.

Bk—9 to 13 inches; brown (10YR 5/3) very gravelly silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common very fine tubular pores; strongly effervescent (23 percent calcium carbonate equivalent); disseminated lime and coatings of lime on coarse fragments; 25 percent gravel and 15 percent cobbles; moderately alkaline (pH 8.0); clear smooth boundary.

2Bkq1—13 to 18 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine tubular pores; strongly effervescent (42 percent calcium carbonate equivalent); lime is disseminated and in common fine soft masses and coatings on coarse fragments; 30 percent gravel, including less than 5 percent indurated durinodes, and 15 percent cobbles; strongly alkaline (pH 8.5); clear irregular boundary.

2Bkq2—18 to 30 inches; white (10YR 8/2) extremely cobbly loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; violently effervescent (45 percent calcium carbonate equivalent); lime is disseminated and as coatings on coarse fragments; soil material on top of coarse fragments and in narrow spaces between coarse fragments is weakly cemented, hard, and firm and very firm; 35 percent gravel, including 20 percent indurated durinodes, and 35 percent cobbles; strongly alkaline (pH 8.5); abrupt wavy boundary.

3R—30 inches; lime-coated, fractured basalt.

### *Typical Pedon Location*

*Map unit in which located:* Oliphant-Stember complex, 8 to 20 percent slopes
*Location in survey area:* About 1 mile south of the Lewiston-Nez Perce County Airport, in Nez Perce County; about 740 feet north and 310 feet west of the southeast corner of sec. 31, T. 35 N., R. 4 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—12 to 20 inches
Depth to calcic horizon—9 to 20 inches
Depth to bedrock—20 to 35 inches
Average annual soil temperature—52 to 54 degrees F

*Particle-size control section (weighted average):*
Clay content—19 to 22 percent
Coarse fragment content—35 to 65 percent

*A horizon:*
Value—4 or 5 dry

*Bk horizon:*
Texture—very gravelly silt loam or gravelly silt loam
Coarse fragment content—30 to 45 percent
Clay content—18 to 25 percent
Calcium carbonate equivalent—15 to 30 percent

*2Bkq horizon:*
Value—6 to 8 dry, 5 to 7 moist
Chroma—2 or 3 dry or moist
Texture—very gravelly loam or extremely cobbly loam
Coarse fragment content—40 to 70 percent
Clay content—18 to 23 percent
Calcium carbonate equivalent—20 to 50 percent

## Sweiting Series

*Taxonomic class:* Fine, montmorillonitic, frigid Pachic Ultic Argixerolls

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Slow
*Landform:* Hills on plateaus
*Parent material:* Loess, material weathered from basalt
*Slope range:* 4 to 20 percent
*Elevation:* 4,000 to 4,500 feet
*Climatic data (average annual):*
Precipitation—22 to 26 inches
Air temperature—42 to 44 degrees F
Frost-free season (32 degrees F)—80 to 100 days

### *Typical Pedon Description*

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; moderate fine and medium granular structure; soft, friable, slightly sticky and slightly plastic; many fine and very fine roots; many fine and very fine tubular pores; moderately acid (pH 5.8); abrupt smooth boundary.

A—8 to 12 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak coarse and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common fine and very fine roots; many very fine and fine tubular pores; slightly acid (pH 6.4); clear wavy boundary.

Bt1—12 to 17 inches; brown (10YR 5/3) silty clay loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate fine subangular blocky; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; many faint discontinuous clay films on faces of peds; common prominent discontinuous skeletans on faces of peds; 2 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt2—17 to 23 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to strong fine angular blocky; hard, firm, sticky and plastic; few very fine roots; few very fine and fine tubular pores; many faint discontinuous clay films on faces of peds; many prominent discontinuous skeletans on faces of peds; 10 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

2Bt3—23 to 31 inches; light yellowish brown (10YR 6/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium and fine subangular blocky structure; hard, firm, very sticky and very plastic; few very fine roots; common faint discontinuous clay films on faces of peds; many pressure faces; 40 percent gravel and 10 percent cobbles; neutral (pH 6.8); gradual wavy boundary.

2R—31 inches; fractured basalt.

### *Typical Pedon Location*

*Map unit in which located:* Sweiting-Joel complex, 4 to 20 percent slopes
*Location in survey area:* About 3 miles northwest of Morrow, in Lewis County; about 600 feet north and 770 feet west of the southeast corner of sec. 2, T. 32 N., R. 2 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 28 inches

Base saturation—60 to 75 percent in some part between depths of 10 and 30 inches
Depth to bedrock—20 to 40 inches
Average annual soil temperature—44 to 46 degrees F

*Particle-size control section (weighted average):*
Clay content—35 to 45 percent
Coarse fragment content—10 to 35 percent

*A horizon:*
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 or 2 moist
Reaction—moderately acid or slightly acid

*Bt horizon:*
Value—3 or 4 moist
Chroma—2 to 4 dry or moist
Gravel content—0 to 15 percent
Clay content—27 to 40 percent

*2Bt horizon:*
Value—5 or 6 dry
Texture—very gravelly clay, very gravelly silty clay, or gravelly clay
Coarse fragment content—20 to 55 percent
Clay content—40 to 50 percent
Reaction—slightly acid or neutral

## Talmaks Series

*Taxonomic class:* Fine-silty, mixed, frigid Vitrandic Haploxeralfs

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus
*Parent material:* Loess mixed with volcanic ash in the upper part
*Slope range:* 2 to 20 percent
*Elevation:* 4,200 to 4,750 feet
*Climatic data (average annual):*
Precipitation—24 to 26 inches
Air temperature—42 to 43 degrees F
Frost-free season (32 degrees F)—60 to 80 days

### *Typical Pedon Description*

A—0 to 3 inches; brown (10YR 5/3) silt loam, very dark brown (10YR 2/2) moist; strong medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots and few medium roots; common very fine tubular pores; slightly acid (pH 6.5); clear smooth boundary.

BA—3 to 7 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots and few medium roots; common very fine tubular pores; moderately acid (pH 5.9); clear wavy boundary.

EB—7 to 11 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots and few medium roots; many fine and very fine tubular pores; few faint patchy skeletans on faces of peds; moderately acid (pH 5.9); clear wavy boundary.

BE—11 to 16 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and very fine roots and few medium roots; many fine and very fine tubular pores; few faint patchy clay films on faces of peds; few faint patchy skeletans on faces of peds; few fine rounded iron and manganese concretions; moderately acid (pH 5.7); clear wavy boundary.

Bt1—16 to 26 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to strong fine and medium angular blocky; slightly hard, friable, sticky and plastic; few fine and medium roots; many fine and very fine tubular pores; few faint patchy clay films on faces of peds; few faint patchy skeletans on faces of peds; few fine rounded iron and manganese concretions; moderately acid (pH 5.9); diffuse wavy boundary.

Bt2—26 to 36 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to strong fine and medium angular blocky; slightly hard, friable, sticky and plastic; few fine and medium roots; many fine and very fine tubular pores; few faint patchy clay films on faces of peds and in pores; common faint patchy skeletans on faces of peds; few fine rounded iron and manganese concretions; moderately acid (pH 6.0); clear irregular boundary.

B/Eb—36 to 47 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, friable, sticky and plastic; few fine roots; many fine and very fine tubular pores; common distinct patchy clay films on faces of peds; common clay lamellae; many prominent continuous pale brown (10YR 6/3) skeletans on

faces of peds and in pores; few fine rounded iron and manganese concretions; moderately acid (pH 6.0); clear irregular boundary.

Btb1—47 to 57 inches; brown (7.5YR 5/4) silty clay loam, brown (7.5YR 4/4) moist; moderate fine and medium angular blocky structure; hard, friable, sticky and plastic; few fine roots; many fine and very fine tubular pores; common prominent discontinuous brownish yellow (10YR 6/6) clay films on faces of peds; common clay lamellae; common prominent discontinuous pale brown (10YR 6/3) skeletans on faces of peds and in pores; few fine rounded iron and manganese concretions; moderately acid (pH 6.0); clear wavy boundary.

2Btb2—57 to 70 inches; brown (7.5YR 5/4) silty clay loam, brown (7.5YR 4/4) moist; moderate fine and medium angular blocky structure; hard, friable, sticky and plastic; few fine roots; many fine and very fine tubular pores; many prominent discontinuous brownish yellow (10YR 6/6) clay films on faces of peds; 10 percent gravel; few fine rounded iron and manganese concretions; moderately acid (pH 5.9).

### *Typical Pedon Location*

*Map unit in which located:* Talmaks silt loam, 2 to 8 percent slopes

*Location in survey area:* About 11 miles south of Winchester, in Lewis County; about 20 feet south and 2,630 feet east of the northwest corner of sec. 34, T. 32 N., R. 2 W.

### *Range in Characteristics*

*Profile:*
Depth to argillic horizon—12 to 24 inches
Number of dry days (soil moisture control section)—45 to 60
Average annual soil temperature—44 to 45 degrees F

*Upper 7 to 14 inches:*
Volcanic glass content—5 to 15 percent
Acid-oxalate extractable Al plus $^1/_2$ Fe—0.4 to 1.2 percent

*Particle-size control section (weighted average):*
Clay content—24 to 32 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid or slightly acid

*EB and BE horizons:*
Clay content—18 to 24 percent
Reaction—moderately acid or slightly acid

*Bt horizon:*
Value—5 or 6 dry, 3 or 4 moist
Chroma—4 to 6 dry or moist
Texture—silt loam or silty clay loam
Clay content—24 to 36 percent
Base saturation—55 to 75 percent
Reaction—moderately acid or slightly acid

*Btb horizon:*
Hue—7.5YR or 10YR
Value—5 or 6 dry
Clay content—28 to 40 percent
Gravel content—0 to 10 percent
Reaction—moderately acid or slightly acid

## Tammany Series

*Taxonomic class:* Loamy-skeletal, mixed, mesic Calcic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate in the upper part and very rapid in the substratum
*Landform:* Dissected alluvial terraces
*Parent material:* Alluvium derived from mixed sources over gravelly alluvium derived from granitic rock
*Slope range:* 20 to 65 percent
*Elevation:* 750 to 1,200 feet
*Climatic data (average annual):*
Precipitation—12 to 15 inches
Air temperature—51 to 53 degrees F
Frost-free season (32 degrees F)—160 to 190 days

### *Typical Pedon Description*

A1—0 to 4 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and plastic; many fine and very fine roots; many fine and very fine tubular pores; 10 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—4 to 10 inches; brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many fine and very fine roots; many fine and very fine tubular pores; 30 percent gravel and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bw—10 to 17 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure;

slightly hard, friable, slightly sticky and plastic; common fine and very fine roots; common very fine tubular pores; 40 percent gravel and 15 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bk—17 to 29 inches; pale brown (10YR 6/3) extremely gravelly coarse sandy loam, yellowish brown (10YR 5/4) moist; weak coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine and very fine roots; few very fine tubular pores; 45 percent gravel and 25 percent cobbles; strongly effervescent (10 percent calcium carbonate equivalent); disseminated lime and coatings of lime on underside of coarse fragments; moderately alkaline (pH 8.2); clear wavy boundary.

2C—29 to 60 inches; light gray (10YR 7/2) extremely gravelly coarse sand, light brownish gray (10YR 6/2) moist; single grain; loose, nonsticky and nonplastic; many fine irregular pores; 50 percent gravel and 30 percent cobbles; slightly effervescent; disseminated lime; moderately alkaline (pH 8.0).

### *Typical Pedon Location*

*Map unit in which located:* Chard-Tammany complex, 20 to 45 percent slopes

*Location in survey area:* About 1 mile north of Lewiston, in Nez Perce County; about 600 feet south and 1,100 feet west of the northeast corner of sec. 29, T. 36 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—8 to 14 inches
Depth to secondary carbonates—15 to 30 inches
Depth to 2C horizon—25 to 40 inches
Average annual soil temperature—55 to 57 degrees F

*Particle-size control section (weighted average):*
Clay content—8 to 16 percent
Coarse fragment content—50 to 75 percent

*A horizon:*
Value—4 or 5 dry
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

*Bw horizon:*
Chroma—3 or 4 dry or moist
Texture—very gravelly loam or very gravelly sandy loam
Coarse fragment content—35 to 60 percent
Clay content—14 to 22 percent
Reaction—neutral or mildly alkaline

*Bk horizon:*
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—extremely gravelly coarse sandy loam, very gravelly loam, extremely cobbly sandy loam, or extremely cobbly loam
Coarse fragment content—50 to 85 percent
Clay content—8 to 16 percent
Calcium carbonate equivalent—5 to 15 percent

*2C horizon:*
Value—7 or 8 dry, 6 or 7 moist
Coarse fragment content—60 to 90 percent

## Taney Series

*Taxonomic class:* Fine-silty, mixed, frigid Vitrandic Argixerolls

*Depth class:* Moderately deep to a fragipan
*Drainage class:* Moderately well drained
*Permeability:* Moderate above the fragipan and very slow through the fragipan
*Landform:* Hills on plateaus, canyon benches
*Parent material:* Loess
*Slope range:* 3 to 30 percent
*Elevation:* 2,300 to 4,000 feet
*Climatic data (average annual):*
Precipitation—24 to 26 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—100 to 120 days

### *Typical Pedon Description*

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine to medium roots; few fine and very fine tubular pores; tillage pan at a depth of 3 to 7 inches; strongly acid (pH 5.2); gradual wavy boundary.

BA—7 to 14 inches; dark brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; few faint patchy clay films on faces of peds and in pores; many wormcasts; moderately acid (pH 5.8); clear smooth boundary.

Bt—14 to 18 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; hard, firm, slightly

sticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; common faint discontinuous clay films on faces of peds and in pores; many fine iron and manganese concretions; many worm channels and wormcasts; moderately acid (pH 6.0); gradual wavy boundary.

BE—18 to 23 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; common fine prominent olive yellow (2.5Y 6/6) mottles; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; few faint patchy clay films on faces of peds and in pores; many fine iron and manganese concretions; moderately acid (pH 6.0); gradual wavy boundary.

E1—23 to 27 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; common fine prominent olive yellow (2.5Y 6/6) mottles; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; common fine and very fine tubular pores; slightly acid (pH 6.1); clear smooth boundary.

E2—27 to 29 inches; white (10YR 8/2) silt loam, brown (10YR 5/3) moist; many fine prominent olive yellow (2.5Y 6/6) mottles; weak thin and medium platy structure; soft, friable, slightly sticky and slightly plastic; few fine and very fine roots; common fine and very fine tubular pores; moderately acid (pH 6.0); abrupt smooth boundary.

Btxb—29 to 36 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 4/3) moist; strong coarse and very coarse prismatic structure; very hard, very firm and brittle, sticky and plastic; common fine and very fine roots matted on faces of prisms and very few very fine roots in peds; few fine and medium tubular pores; many prominent clay films on faces of peds and in pores; many prominent very dark brown (10YR 2/2) organic coatings on faces of peds; many fine iron and manganese concretions; moderately acid (pH 5.9); clear smooth boundary.

Btb1—36 to 38 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure parting to strong thick platy; very hard, very firm and brittle, sticky and plastic; few fine and very fine roots matted on faces of prisms; few fine and very fine tubular pores; many prominent brown (7.5YR 4/4) clay films on faces of peds and in pores; common pockets of uncoated silt in peds; many fine iron and manganese concretions; moderately acid (pH 5.9); gradual wavy boundary.

Btb2—38 to 50 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong thick platy structure parting to strong medium angular blocky; very hard, very firm, sticky and plastic; few fine and very fine roots flattened on faces of peds; few fine and very fine tubular pores; many distinct brown (7.5YR 4/4) clay films on faces of peds and in pores; few prominent discontinuous skeletans on faces of peds; many fine iron and manganese concretions; moderately acid (pH 6.0); gradual irregular boundary.

Btb3—50 to 63 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong medium and coarse angular blocky structure; hard, firm, slightly sticky and plastic; few fine and very fine tubular pores; many distinct brown (7.5YR 5/4) clay films on faces of peds and in pores; many fine iron and manganese concretions; neutral (pH 6.6).

### *Typical Pedon Location*

*Map unit in which located:* Taney-Setters complex, 3 to 8 percent slopes (fig. 27)

*Location in survey area:* About 3 miles north of Reubens, in Nez Perce County; about 1,780 feet north and 800 feet east of the southwest corner of sec. 13, T. 35 N., R. 2 W.

### *Range in Characteristics*

*Profile:*

Thickness of mollic epipedon—12 to 18 inches

Depth to seasonal perched water table—23 to 30 inches in February through April

Depth to fragipan—27 to 36 inches

Average annual soil temperature—44 to 47 degrees F

*Particle-size control section (weighted average):*

Clay content—18 to 20 percent

*A horizon:*

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry, 1 to 3 moist

Reaction—strongly acid to slightly acid

*Bt horizon, and Bw horizon (present in some pedons):*

Value—4 to 6 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist

Clay content—18 to 27 percent

Base saturation—60 to 75 percent

Reaction—moderately acid or slightly acid

**Figure 27.—A profile of Taney silt loam in an area of Taney-Setters complex, 3 to 8 percent slopes. A fragipan is at a depth of about 30 inches (numerals on tape indicate feet).**

*E horizon:*
Value—7 or 8 dry, 4 to 6 moist
Chroma—2 or 3 dry or moist
Clay content—10 to 20 percent
Base saturation—65 to 80 percent
Reaction—moderately acid or slightly acid

*Btxb horizon:*
Value—3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—23 to 35 percent
Bulk density—1.60 to 1.75 grams per cubic centimeter
Base saturation—65 to 80 percent
Reaction—moderately acid or slightly acid

*Btb horizon:*
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam or silty clay
Clay content—28 to 42 percent
Bulk density—1.45 to 1.65 grams per cubic centimeter
Reaction—moderately acid to neutral

## Thatuna Series

*Taxonomic class:* Fine-silty, mixed, mesic Boralfic Argixerolls

*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 1 to 40 percent
*Elevation:* 2,000 to 3,200 feet
*Climatic data (average annual):*
Precipitation—18 to 22 inches
Air temperature—46 to 49 degrees F
Frost-free season (32 degrees F)—110 to 150 days

### *Typical Pedon Description*

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, black (10YR 2/1) moist; moderate fine subangular blocky structure parting to moderate fine and medium granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine irregular pores; neutral (pH 6.6); clear wavy boundary.

A—7 to 13 inches; very dark grayish brown (10YR 3/2) silt loam, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine irregular pores; slightly acid (pH 6.5); gradual wavy boundary.

AB—13 to 16 inches; very dark grayish brown (10YR 3/2) silt loam, very dark gray (10YR 3/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and many very fine roots; many very fine and fine irregular pores;

common vertical worm channels; slightly acid (pH 6.5); clear wavy boundary.

Bw—16 to 31 inches; brown (10YR 4/3) silt loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine and fine irregular pores and common very fine and fine tubular pores; common vertical worm channels; slightly acid (pH 6.5); clear smooth boundary.

E—31 to 37 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine irregular pores and few very fine and common fine and medium tubular pores; few fine iron and manganese concretions; slightly acid (pH 6.4); abrupt smooth boundary.

Btb1—37 to 50 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse and very coarse prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, firm, slightly sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores and common very fine and fine irregular pores; common faint and few distinct discontinuous clay films lining pores and on faces of peds; many prominent discontinuous skeletans on faces of prisms; few fine iron and manganese concretions; neutral (pH 6.8); gradual wavy boundary.

Btb2—50 to 61 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse and very coarse prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, firm, sticky and plastic; few very fine roots; common very fine and fine irregular pores and many very fine and fine tubular pores; many distinct discontinuous dark yellowish brown (10YR 4/6) clay films lining pores and on faces of peds; few distinct patchy skeletans on faces of peds; few fine iron and manganese concretions; neutral (pH 6.8).

### *Typical Pedon Location*

*Map unit in which located:* Thatuna-Naff complex, 25 to 40 percent slopes

*Location in survey area:* About 3 miles southwest of Genesee, in Nez Perce County; about 2,700 feet north and 500 feet east of the southwest corner of sec. 28, T. 37 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—24 to 36 inches
Depth to seasonal perched water table—24 to 36 inches in February through April
Depth to Btb horizon—29 to 40 inches
Average annual soil temperature—48 to 50 degrees F

*Particle-size control section (weighted average):*
Clay content—27 to 35 percent

*A horizon:*
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 or 2 moist
Reaction—slightly acid or neutral

*Bw horizon:*
Value—3 or 4 dry
Chroma—2 or 3 moist
Clay content—18 to 25 percent
Reaction—slightly acid or neutral

*E horizon:*
Value—6 or 7 dry, 3 to 5 moist
Clay content—10 to 18 percent
Reaction—slightly acid or neutral

*Btb horizon:*
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—27 to 35 percent

## Tilma Series

*Taxonomic class:* Fine, mixed, mesic Xeric Argialbolls

*Depth class:* Very deep
*Drainage class:* Moderately well drained
*Permeability:* Slow
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 10 to 15 percent
*Elevation:* 2,300 to 2,800 feet
*Climatic data (average annual):*
Precipitation—20 to 22 inches
Air temperature—47 to 50 degrees F
Frost-free season (32 degrees F)—130 to 150 days

### *Typical Pedon Description*

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak coarse subangular blocky structure parting to moderate fine granular; hard, friable, slightly sticky and plastic; common very fine and fine roots; many very fine and fine tubular pores; moderately acid (pH 6.0); abrupt smooth boundary.

BA—8 to 16 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate medium subangular blocky; hard, friable, slightly sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores; few prominent patchy black (10YR 2/1) organic coatings on faces of peds; few distinct discontinuous light brownish gray (10YR 6/2) skeletans on faces of peds; neutral (pH 7.0); clear wavy boundary.

Bt—16 to 23 inches; brown (10YR 4/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; hard, friable, sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores; many prominent discontinuous light brownish gray (10YR 6/2) skeletans on faces of peds; few distinct patchy dark yellowish brown (10YR 3/4) clay films on faces of peds; few distinct patchy black (10YR 2/1) organic coatings on faces of peds; neutral (pH 7.0); clear irregular boundary.

E—23 to 25 inches; light gray (10YR 7/2) silt loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; few remnants of Bt horizon material in some peds; neutral (pH 7.0); abrupt irregular boundary.

Btb1—25 to 42 inches; yellowish brown (10YR 5/4) silty clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; hard, firm, sticky and plastic; very few fine and very fine roots; common very fine and fine tubular pores; common prominent patchy dark yellowish brown (10YR 3/4) clay films on faces of peds; peds capped with prominent light brownish gray (10YR 6/2) skeletans at upper boundary; few fine rounded black iron and manganese concretions; neutral (pH 7.2); gradual wavy boundary.

Btb2—42 to 60 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 5/4) moist; weak coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and plastic; few very fine and fine tubular pores; few prominent patchy dark yellowish brown (10YR 3/4) clay films on faces of peds; few fine rounded black iron and manganese concretions; neutral (pH 7.2).

### *Typical Pedon Location*

*Map unit in which located:* Thatuna-Naff-Tilma complex, 10 to 25 percent slopes

*Location in survey area:* About 2 miles southeast of Genesee, in Nez Perce County; about 1,200 feet north and 2,400 feet east of the southwest corner of sec. 24, T. 37 N., R. 5 W.

### *Range in Characteristics*

*Profile:*

Thickness of mollic epipedon—16 to 23 inches

Organic matter content in mollic epipedon (weighted average)—1 to 3 percent

Depth to seasonal perched water table—16 to 28 inches in November through April

Depth to argillic horizon—18 to 26 inches

Average annual soil temperature—47 to 52 degrees F

*A horizon:*

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Reaction—moderately acid or slightly acid

*Bt horizon:*

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Reaction—moderately acid to neutral

*E horizon:*

Value—4 or 5 moist

Reaction—moderately acid to neutral

*Btb1 horizon:*

Hue—10YR or 7.5YR

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist

Clay content—40 to 50 percent

Reaction—slightly acid or neutral

*Btb2 horizon:*

Hue—10YR or 7.5YR

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist

Texture—silty clay loam or silty clay

Clay content—35 to 45 percent

Reaction—slightly acid or neutral

## Tombeall Series

*Taxonomic class:* Coarse-loamy, mixed, mesic Cumulic Haploxerolls

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Permeability:* Moderate

*Landform:* Low terraces, flood plains

*Parent material:* Alluvium derived from mixed sources over gravelly alluvium derived from basalt
*Slope range:* 0 to 4 percent
*Elevation:* 800 to 1,200 feet
*Climatic data (average annual):*
Precipitation—16 to 22 inches
Air temperature—52 to 54 degrees F
Frost-free season (32 degrees F)—160 to 190 days

### *Typical Pedon Description*

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; moderate medium and fine granular structure; hard, firm, slightly sticky and slightly plastic; many fine and very fine roots; common very fine, fine, and medium tubular pores; 5 percent gravel; neutral (pH 7.2); clear smooth boundary.

A1—7 to 17 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common very fine, fine, and medium tubular pores; 5 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—17 to 28 inches; dark grayish brown (10YR 4/2) sandy loam, very dark grayish brown (10YR 3/2) moist; common fine distinct mottles that are strong brown (7.5YR 4/6) when moist; weak coarse prismatic structure; slightly hard, friable, slightly sticky and nonplastic; common fine and very fine roots; common very fine, fine, and medium tubular pores; 5 percent gravel; neutral (pH 7.2); abrupt smooth boundary.

2C1—28 to 35 inches; brown (10YR 4/3) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; common fine distinct mottles that are strong brown (7.5YR 4/6) when moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine and fine irregular pores; 40 percent gravel and 10 percent cobbles; neutral (pH 7.2); gradual smooth boundary.

2C2—35 to 60 inches; grayish brown (10YR 5/2) extremely gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many fine and very fine irregular pores; 60 percent gravel and 20 percent cobbles; neutral (pH 7.0).

### *Typical Pedon Location*

*Map unit in which located:* Tombeall silt loam, 0 to 4 percent slopes
*Location in survey area:* About 1 mile south of Spalding, in Nez Perce County; about 1,250 feet south and 100 feet east of the northwest corner of sec. 26, T. 36 N., R. 4 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 35 inches
Depth to mottles—12 to 30 inches
Depth to seasonal high water table—12 to 30 inches in February through April
Frequency of flooding—rare or occasional for brief periods in December through June
Thickness of solum—25 to 35 inches
Average annual soil temperature—54 to 56 degrees F

*Particle-size control section (weighted average):*
Clay content—11 to 16 percent
Coarse fragment content—15 to 35 percent

*Ap horizon:*
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—neutral or mildly alkaline

*A1 and A2 horizons:*
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Texture—silt loam, sandy loam, or loam
Gravel content—0 to 15 percent
Clay content—15 to 20 percent
Reaction—neutral or mildly alkaline

*2C1 horizon:*
Value—3 or 4 dry
Chroma—2 or 3 dry or moist
Texture—very gravelly sandy loam or very gravelly loam
Coarse fragment content—40 to 60 percent
Reaction—neutral or mildly alkaline

*2C2 horizon:*
Value—3 to 5 dry
Chroma—2 or 3 dry or moist
Texture—extremely gravelly sandy loam or extremely gravelly loam
Coarse fragment content—65 to 90 percent
Reaction—neutral or mildly alkaline

## Uhlig Series

*Taxonomic class:* Coarse-loamy, mixed, mesic Pachic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Well drained

*Permeability:* Moderate
*Landform:* Dissected alluvial terraces
*Parent material:* Alluvium
*Slope range:* 2 to 35 percent
*Elevation:* 800 to 1,300 feet
*Climatic data (average annual):*
Precipitation—16 to 20 inches
Air temperature—50 to 51 degrees F
Frost-free season (32 degrees F)—150 to 175 days

### *Typical Pedon Description*

A1—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few coarse roots; many very fine and fine irregular pores; neutral (pH 7.0); clear smooth boundary.

A2—6 to 15 inches; grayish brown (10YR 5/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common coarse roots; many very fine and fine irregular pores; neutral (pH 7.0); clear wavy boundary.

Bw1—15 to 25 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and few coarse roots; many very fine irregular pores and few coarse irregular pores; neutral (pH 7.2); gradual wavy boundary.

Bw2—25 to 33 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots and common coarse roots; many very fine and fine irregular pores; neutral (pH 7.3); gradual wavy boundary.

Bw3—33 to 39 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and nonplastic; common fine and medium roots and few coarse roots; many very fine and fine irregular pores; 5 percent rounded granite and basalt gravel; neutral (pH 7.3); gradual smooth boundary.

C1—39 to 56 inches; pale brown (10YR 6/3) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common fine and medium roots; many very fine and fine irregular pores; 5 percent rounded granite and basalt gravel; mildly alkaline (pH 7.4); gradual wavy boundary.

C2—56 to 68 inches; light yellowish brown (10YR 6/4) very fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine and medium roots; many very fine and fine irregular pores; mildly alkaline (pH 7.5).

### *Typical Pedon Location*

*Map unit in which located:* Uhlig silt loam, 8 to 20 percent slopes
*Location in survey area:* About 2 miles southeast of Myrtle, in Nez Perce County; about 1,550 feet north and 1,000 feet east of the southwest corner of sec. 3, T. 36 N., R. 3 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 30 inches
Average annual soil temperature—51 to 52 degrees F

*Particle-size control section (weighted average):*
Clay content—10 to 18 percent
Gravel content—0 to 5 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 moist
Reaction—slightly acid or neutral

*Bw horizon:*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—loam, silt loam, or very fine sandy loam

*C horizon:*
Chroma—3 or 4 dry or moist
Texture—very fine sandy loam or fine sandy loam
Gravel content—0 to 15 percent
Reaction—neutral or mildly alkaline

## Uhlorn Series

*Taxonomic class:* Fine-silty, mixed, mesic Typic Argixerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus
*Parent material:* Loess
*Slope range:* 2 to 20 percent
*Elevation:* 2,600 to 4,100 feet

*Climatic data (average annual):*
Precipitation—21 to 24 inches
Air temperature—44 to 48 degrees F
Frost-free season (32 degrees F)—100 to 140 days

### *Typical Pedon Description*

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; moderate very coarse granular structure parting to moderate coarse granular; slightly hard, friable, slightly sticky and nonplastic; common very fine roots; common very fine and few fine irregular pores; moderately acid (pH 5.8); abrupt smooth boundary.

A1—7 to 12 inches; grayish brown (10YR 5/2) silt loam, very dark gray (10YR 3/1) moist; weak coarse prismatic structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and few fine tubular pores; common wormcasts and worm channels; neutral (pH 6.9); clear smooth boundary.

A2—12 to 17 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine and few fine tubular pores; neutral (pH 7.1); clear smooth boundary.

Bt1—17 to 23 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 4/3) moist; weak medium prismatic structure; hard, friable, sticky and slightly plastic; common very fine roots; many very fine and common fine tubular pores; common faint discontinuous clay films on faces of peds; common wormcasts and worm channels; few prominent light gray (10YR 7/2) skeletans on faces of peds; mildly alkaline (pH 7.6); gradual wavy boundary.

Bt2—23 to 35 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to weak fine prismatic; hard, friable, sticky and slightly plastic; common very fine roots; common very fine and fine and few medium tubular pores; common faint discontinuous clay films on faces of peds and in pores; common prominent discontinuous light gray (10YR 7/2) skeletans on faces of peds; mildly alkaline (pH 7.7); clear wavy boundary.

Bt3—35 to 44 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; hard, friable, sticky and plastic; common very fine roots; common very fine and fine and few medium tubular pores; many distinct discontinuous clay films on faces of peds and lining pores; common light gray (10YR 7/2) skeletans on faces of peds and common pockets in peds; dark yellowish brown (10YR 4/4) clay lamellae 4 to 12 millimeters thick; mildly alkaline (pH 7.7); gradual wavy boundary.

Bt4—44 to 55 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure; hard, friable, sticky and slightly plastic; common very fine roots; common very fine, fine, and medium tubular pores; many distinct discontinuous clay films on faces of peds and lining pores; dark yellowish brown (10YR 4/4) clay lamellae 5 to 12 millimeters thick; few prominent discontinuous light gray (10YR 7/2) skeletans on faces of peds and common pockets in peds; mildly alkaline (pH 7.7); gradual wavy boundary.

Btb—55 to 69 inches; brown (7.5YR 5/4) silty clay loam, dark brown (7.5YR 4/4) moist; weak medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; few very fine roots; common very fine and few fine tubular pores; distinct continuous clay films on faces of peds and lining pores; few prominent discontinuous light gray (10YR 7/2) skeletans on faces of peds; common slickensides oriented at 10 degrees from horizontal on faces of peds; mildly alkaline (pH 7.7).

### *Typical Pedon Location*

*Map unit in which located:* Uhlorn-Nez Perce complex, 2 to 10 percent slopes

*Location in survey area:* About 3 miles east of Craigmont, in Lewis County; about 2,040 feet south and 1,340 feet west of the northeast corner of sec. 2, T. 33 N., R. 1 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—14 to 20 inches
Organic matter content in mollic epipedon (weighted average)—3 to 6 percent
Base saturation—75 to 90 percent between depths of 10 and 30 inches
Average annual soil temperature—47 to 51 degrees F

*Particle-size control section (weighted average):*
Clay content—30 to 34 percent

*A horizon:*
Value (upper part)—3 or 4 dry
Value (lower part)—3 to 5 dry, 2 or 3 moist
Chroma (upper part)—1 or 2 dry

Chroma (lower part)—2 or 3 dry, 1 or 2 moist
Reaction—moderately acid to neutral

*Bt1 horizon, and BA horizon (present in some pedons):*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam or silt loam
Clay content—24 to 32 percent
Reaction—slightly acid to mildly alkaline

*Bt2, Bt3, and Bt4 horizons:*
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 to 6 dry, 3 or 4 moist
Clay content—28 to 34 percent
Reaction—neutral or mildly alkaline

*Btb horizon (absent in some pedons):*
Clay content—35 to 38 percent
Reaction—neutral or mildly alkaline

## Uptmor Series

*Taxonomic class:* Fine, montmorillonitic, frigid Ultic Argixerolls

*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Slow
*Landform:* Canyonsides, canyon benches
*Parent material:* Loess, material weathered from basalt
*Slope range:* 15 to 30 percent
*Elevation:* 2,700 to 4,100 feet
*Climatic data (average annual):*
Precipitation—24 to 26 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—80 to 110 days

### *Typical Pedon Description*

Oi—0.5 inch to 0; undecomposed moss, needles, and twigs.
A—0 to 6 inches; brown (7.5YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and common fine irregular pores; 10 percent gravel; moderately acid (pH 5.9); clear smooth boundary.
BA—6 to 15 inches; brown (10YR 4/3) clay loam, dark brown (7.5YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots and many fine, medium, and coarse roots; many very fine and common fine irregular pores; common faint discontinuous clay films on faces of peds and lining pores; 10 percent gravel; moderately acid (pH 5.6); gradual wavy boundary.
Bt1—15 to 26 inches; brown (7.5YR 4/4) clay, dark brown (7.5YR 3/4) moist; weak medium prismatic structure parting to strong fine and medium subangular blocky; hard, firm, very sticky and very plastic; common very fine, fine, and coarse roots and many medium roots; common very fine and fine tubular pores; many prominent discontinuous clay films on faces of peds and lining pores; 10 percent gravel; moderately acid (pH 5.6); clear smooth boundary.
Bt2—26 to 40 inches; brown (7.5YR 4/4) gravelly clay, dark brown (7.5YR 3/4) moist; moderate medium prismatic structure parting to strong medium subangular blocky; hard, firm, very sticky and very plastic; common very fine and fine roots and many medium and coarse roots; common very fine and fine tubular pores; many prominent discontinuous clay films on faces of peds and lining pores; 15 percent gravel and 5 percent cobbles; moderately acid (pH 5.6); gradual wavy boundary.
Bt3—40 to 47 inches; brown (7.5YR 4/4) cobbly clay, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; hard, firm, very sticky and very plastic; few very fine roots and common fine, medium, and coarse roots; common very fine and few fine tubular pores; 10 percent gravel and 15 percent cobbles; moderately acid (pH 5.7); clear wavy boundary.
R—47 inches; fractured basalt.

### *Typical Pedon Location*

*Map unit in which located:* Klickson-Uptmor complex, 15 to 45 percent slopes
*Location in survey area:* About 1 mile east of Waha, in Nez Perce County; about 850 feet north and 1,500 feet east of the southwest corner of sec. 10, T. 33 N., R. 4 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 19 inches
Base saturation—less than 75 percent in the upper 30 inches
Depth to bedrock—40 to 60 inches
Average annual soil temperature—45 to 47 degrees F

*Particle-size control section (weighted average):*
Clay content—35 to 45 percent
Coarse fragment content—10 to 15 percent

*A horizon:*
Hue—7.5YR or 10YR

Value—3 or 4 dry
Reaction—moderately acid or slightly acid

*Bt horizon:*
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist
Texture—clay, silty clay loam, silty clay, gravelly clay, cobbly clay, or cobbly silty clay loam
Clay content—35 to 60 percent
Coarse fragment content—10 to 35 percent
Reaction—moderately acid or slightly acid

## Uvi Series

*Taxonomic class:* Fine-loamy, mixed, frigid Vitrandic Xerochrepts

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Canyonsides
*Parent material:* Loess, material weathered from granite
*Slope range:* 35 to 75 percent
*Elevation:* 1,400 to 3,400 feet
*Climatic data (average annual):*
Precipitation—26 to 28 inches
Air temperature—42 to 45 degrees F
Frost-free season (32 degrees F)—100 to 120 days

### *Typical Pedon Description*

A1—0 to 4 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and nonplastic; many fine and very fine roots; many fine irregular pores; 5 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

A2—4 to 13 inches; yellowish brown (10YR 5/4) loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; many very fine tubular pores; 5 percent fine gravel; moderately acid (pH 5.6); gradual smooth boundary.

Bt1—13 to 35 inches; yellowish brown (10YR 5/4) loam, brown (10YR 4/3) moist; moderate coarse, medium, and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; many faint discontinuous clay films on faces of peds and on sand grains; 5 percent fine gravel; moderately acid (pH 5.6); clear wavy boundary.

Bt2—35 to 43 inches; brownish yellow (10YR 6/6) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, firm, slightly sticky and nonplastic; common medium roots and few fine and very fine roots; few fine tubular pores and common fine and very fine irregular pores; common faint discontinuous clay films on faces of peds and on sand grains; 10 percent fine gravel; moderately acid (pH 5.6); clear wavy boundary.

BC—43 to 55 inches; brownish yellow (10YR 6/6) loam, yellowish brown (10YR 5/4) moist; massive; hard, firm, slightly sticky and nonplastic; few fine and very fine roots; few very fine tubular pores and common fine irregular pores; common faint discontinuous clay films on faces of peds and on sand grains; 10 percent fine gravel; moderately acid (pH 5.6); gradual smooth boundary.

C—55 to 65 inches; very pale brown (10YR 8/4) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; hard, firm, slightly sticky and nonplastic; few fine and very fine roots; common very fine tubular pores; few faint discontinuous clay films on faces of peds and common distinct discontinuous clay films in pores; 40 percent fine gravel; moderately acid (pH 5.6).

### *Typical Pedon Location*

*Map unit in which located:* Uvi silt loam, 35 to 75 percent slopes
*Location in survey area:* About 10 miles north of Nezperce, in Lewis County; about 1,000 feet south and 500 feet west of the northeast corner of sec. 17, T. 35 N., R. 2 E.

### *Range in Characteristics*

*Profile:*
Average annual soil temperature—45 to 47 degrees F

*Upper 7 to 14 inches:*
Volcanic glass content—5 to 10 percent
Acid-oxalate extractable Al plus $^1/_2$ Fe—0.4 to 1.0 percent

*Particle-size control section (weighted average):*
Clay content—18 to 20 percent
Coarse fragment content—0 to 5 percent

*A horizon:*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry, 2 to 4 moist
Reaction—moderately acid or slightly acid

*Bt horizon:*
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 to 6 dry or moist

Texture—loam or sandy loam
Clay content—12 to 20 percent
Gravel content—0 to 10 percent
Base saturation—40 to 60 percent
Reaction—moderately acid or slightly acid

*C horizon:*
Texture—very gravelly loam or very gravelly sandy loam
Clay content—5 to 12 percent
Gravel content—35 to 55 percent
Reaction—moderately acid or slightly acid

## Vollmer Series

*Taxonomic class:* Fine-loamy, mixed, mesic Typic Argixerolls

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus
*Parent material:* Loess over material weathered from basalt
*Slope range:* 3 to 25 percent
*Elevation:* 2,500 to 4,100 feet
*Climatic data (average annual):*
Precipitation—21 to 24 inches
Air temperature—45 to 48 degrees F
Frost-free season (32 degrees F)—100 to 140 days

### *Typical Pedon Description*

A1—0 to 3 inches; grayish brown (10YR 5/2) silt loam, black (10YR 2/1) moist; moderate medium subangular blocky structure parting to moderate very fine granular; hard, firm, sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores and common fine irregular pores; 5 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

A2—3 to 6 inches; grayish brown (10YR 5/2) silt loam, black (10YR 2/1) moist; weak medium subangular blocky structure; hard, firm, sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; 5 percent gravel; neutral (pH 6.8); clear smooth boundary.

A3—6 to 12 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; massive, compacted by tillage; hard, firm, sticky and slightly plastic; common very fine and fine roots and few medium roots; common fine and few very fine tubular pores; common organic coatings on faces of peds; 5 percent gravel; neutral (pH 6.6); clear smooth boundary.

Bt1—12 to 28 inches; brown (10YR 5/3) silt loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores and few very fine and fine irregular pores; many faint discontinuous clay films lining pores and common faint patchy clay films on faces of peds; few clay bands 5 millimeters thick; common distinct skeletans on faces of peds; 5 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bt2—28 to 36 inches; pale brown (10YR 6/3) cobbly silt loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and few fine and medium roots; common very fine and fine tubular pores; common distinct clay films lining pores; few clay bands 5 millimeters thick; common distinct skeletans on faces of peds; 10 percent cobbles and 10 percent gravel; neutral (pH 6.6); abrupt wavy boundary.

2R—36 inches; basalt.

### *Typical Pedon Location*

*Map unit in which located:* Uhlorn-Vollmer complex, 8 to 20 percent slopes
*Location in survey area:* About 2.5 miles east of Mohler, in Lewis County; about 1,150 feet south and 1,300 feet east of the northwest corner of sec. 23, T. 34 N., R. 1 E.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 18 inches
Base saturation below a depth of 10 inches—75 to 95 percent
Depth to bedrock—20 to 40 inches
Average annual soil temperature—47 to 50 degrees F

*Particle-size control section (weighted average):*
Clay content—24 to 35 percent
Coarse fragment content—5 to 25 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma (upper part)—1 or 2 moist
Chroma (lower part)—2 or 3 dry or moist
Reaction—slightly acid or neutral

*Bt horizon:*
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist

Texture (upper part)—silt loam or silty clay loam
Texture (lower part)—cobbly silt loam, gravelly clay loam, gravelly silty clay loam, or cobbly silty clay loam
Clay content—24 to 35 percent
Coarse fragment content—0 to 35 percent
Reaction—slightly acid or neutral

## Waha Series

*Taxonomic class:* Fine-loamy, mixed, mesic Pachic Argixerolls

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Hills on plateaus, canyonsides
*Parent material:* Loess, colluvium derived from basalt
*Slope range:* 3 to 45 percent
*Elevation:* 1,000 to 2,800 feet
*Climatic data (average annual):*
Precipitation—18 to 22 inches
Air temperature—47 to 49 degrees F
Frost-free season (32 degrees F)—120 to 160 days

### *Typical Pedon Description*

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure parting to weak medium granular; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; neutral (pH 6.8); clear smooth boundary.
A—7 to 13 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; neutral (pH 7.0); clear smooth boundary.
Bt1—13 to 22 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate medium and coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine and fine tubular pores; many faint patchy clay films and common distinct discontinuous clay films on faces of peds and in pores; few faint patchy skeletans on faces of peds; few black (10YR 2/1, moist) organic coatings on faces of peds; neutral (pH 7.2); gradual wavy boundary.
Bt2—22 to 29 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; strong medium prismatic structure; hard, firm, sticky and plastic; few very fine roots; few very fine and fine tubular pores; many distinct continuous clay films on faces of peds and in pores; few black (10YR 2/1, moist) organic coatings on faces of peds; 5 percent gravel; neutral (pH 7.2); clear wavy boundary.
2Bt3—29 to 34 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium and coarse prismatic structure; very hard, very firm, sticky and plastic; few very fine roots; few very fine and fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; few black (10YR 2/1, moist) organic coatings on faces of peds; 25 percent gravel; neutral (pH 7.2); clear wavy boundary.
2R—34 inches; basalt.

### *Typical Pedon Location*

*Map unit in which located:* Naff-Waha complex, 25 to 40 percent slopes
*Location in survey area:* About 3 miles northwest of Lenore, in Nez Perce County; about 2,000 feet north and 1,800 feet west of the southeast corner of sec. 5, T. 36 N., R. 2 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 30 inches
Depth to bedrock—20 to 40 inches
Average annual soil temperature—49 to 51 degrees F

*Particle-size control section (weighted average):*
Clay content—27 to 35 percent
Coarse fragment content—5 to 15 percent

*A horizon:*
Value—3 to 5 dry
Reaction—slightly acid or neutral

*Bt horizon:*
Value—3 or 4 moist
Chroma—2 to 4 dry, 2 or 3 moist
Texture—silt loam or silty clay loam
Gravel content—0 to 10 percent
Clay content—24 to 35 percent

*2Bt horizon:*
Value—3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—gravelly clay loam, gravelly silty clay loam, or cobbly silty clay loam
Clay content—27 to 38 percent
Coarse fragment content—20 to 35 percent

## Watama Series

*Taxonomic class:* Fine-loamy, mixed, mesic Pachic Haploxerolls

*Depth class:* Moderately deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Hills, canyonsides
*Parent material:* Loess, material weathered from basalt
*Slope range:* 10 to 35 percent
*Elevation:* 1,000 to 3,500 feet
*Climatic data (average annual):*
Precipitation—14 to 22 inches
Air temperature—45 to 52 degrees F
Frost-free season (32 degrees F)—110 to 160 days

### *Typical Pedon Description*

A1—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; weak fine and very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine tubular and irregular pores; 10 percent gravel; neutral (pH 7.0); clear smooth boundary.

A2—6 to 11 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; weak medium subangular blocky structure parting to weak fine granular; soft, very friable, sticky and plastic; many very fine and fine roots; many very fine tubular pores and common fine tubular and irregular pores; 10 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bw1—11 to 19 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine prismatic structure and weak medium subangular blocky; slightly hard, friable, sticky and plastic; many fine and very fine roots; common very fine and fine tubular pores; organic stains on faces of peds; 10 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bw2—19 to 34 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak fine prismatic structure and weak medium subangular blocky; hard, firm, sticky and plastic; common very fine roots; common very fine and fine tubular pores; 10 percent gravel; neutral (pH 7.0); clear irregular boundary.

Bw3—34 to 38 inches; yellowish brown (10YR 5/4) gravelly silt loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common fine and few very fine tubular pores; 15 percent gravel and 5 percent cobbles; mildly alkaline (pH 7.8); abrupt wavy boundary.

2R—38 inches; fractured basalt; soil material in fractures.

### *Typical Pedon Location*

*Map unit in which located:* Watama-Flybow complex, 10 to 35 percent slopes
*Location in survey area:* About 7 miles southeast of Craigmont, in Lewis County; about 900 feet south and 2,600 feet west of the northeast corner of sec. 20, T. 33 N., R. 1 E.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 34 inches
Depth to bedrock—20 to 40 inches
Average annual soil temperature—47 to 54 degrees F

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 moist

*Bw horizon (upper part):*
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Clay content—18 to 27 percent
Gravel content—5 to 15 percent
Reaction—neutral or mildly alkaline

*Bw horizon (lower part):*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry
Clay content—18 to 24 percent
Coarse fragment content—15 to 30 percent
Reaction—neutral or mildly alkaline

## Webbridge Series

*Taxonomic class:* Ashy over loamy-skeletal, mixed Alfic Vitricryands

*Depth class:* Deep
*Drainage class:* Well drained
*Permeability:* Moderately slow
*Landform:* Canyonsides
*Parent material:* Volcanic ash, colluvium derived from basalt
*Slope range:* 35 to 75 percent
*Elevation:* 3,900 to 5,000 feet
*Climatic data (average annual):*
Precipitation—27 to 29 inches
Air temperature—41 to 43 degrees F
Frost-free season (32 degrees F)—60 to 70 days

### *Typical Pedon Description*

Oi—1 inch to 0; slightly decomposed twigs, moss, and needles.

A—0 to 3 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and slightly plastic; many fine and very fine roots; many fine and very fine irregular pores; less than 5 percent fine gravel; slightly acid (pH 6.1); clear smooth boundary.

Bw1—3 to 10 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 3/4) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many fine and very fine roots and few medium roots; many fine and very fine tubular pores; 10 percent fine gravel; moderately acid (pH 5.9); gradual smooth boundary.

Bw2—10 to 17 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many fine and very fine roots and few medium roots; many fine and very fine tubular pores; 10 percent fine gravel; moderately acid (pH 5.9); abrupt irregular boundary.

2Btb1—17 to 24 inches; yellowish brown (10YR 5/4) cobbly clay loam, dark brown (7.5YR 3/4) moist, yellowish brown (10YR 5/6) crushed; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and very fine roots and few medium roots; common fine and very fine tubular pores; very few faint patchy yellowish brown (10YR 5/4) clay films on faces of peds; 10 percent gravel, 15 percent cobbles, and 5 percent stones; moderately acid (pH 5.7); gradual wavy boundary.

2Btb2—24 to 34 inches; yellowish brown (10YR 5/4) very cobbly clay loam, dark brown (7.5YR 3/4) moist, yellowish brown (10YR 5/6) crushed; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and very fine roots and few medium roots; many fine and very fine tubular pores; very few faint patchy yellowish brown (10YR 5/4) clay films on faces of peds; 15 percent gravel, 25 percent cobbles, and 5 percent stones; moderately acid (pH 5.7); clear wavy boundary.

2Btb3—34 to 45 inches; yellowish brown (10YR 5/4) extremely cobbly loam, dark brown (7.5YR 3/4) moist, light yellowish brown (10YR 6/4) crushed; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine roots; many fine and very fine tubular pores; very few faint patchy yellowish brown (10YR 5/4) clay films on faces of peds; 30 percent gravel, 40 percent cobbles, and 5 percent stones; neutral (pH 6.6); clear smooth boundary.

2Btb4—45 to 53 inches; yellowish brown (10YR 5/4) extremely cobbly loam, dark yellowish brown (10YR 4/4) moist, light yellowish brown (10YR 6/4) crushed; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine roots matted around rock fragments; common fine and very fine tubular pores; 30 percent gravel, 55 percent cobbles, and 5 percent stones; slightly acid (pH 6.5); clear smooth boundary.

2R—53 inches; basalt.

### *Typical Pedon Location*

*Map unit in which located:* Webbridge-Agatha association, 35 to 75 percent slopes

*Location in survey area:* About 3 miles southeast of Waha, in Nez Perce County; about 1,300 feet south and 2,570 feet east of the northwest corner of sec. 26, T. 33 N., R. 4 W.

### *Range in Characteristics*

*Profile:*

Depth to bedrock—40 to 60 inches

Average annual soil temperature—42 to 45 degrees F

Average summer soil temperature (areas without O horizon)—52 to 54 degrees F

*Volcanic ash mantle:*

Thickness—14 to 24 inches

Volcanic glass content (0.02- to 2.0-millimeter fraction)—25 to 45 percent

Acid-oxalate extractable Al plus $^1/_2$ Fe—1 to 2 percent

Moist bulk density—0.75 to 0.90 gram per centimeter

15-bar water retention—8 to 12 percent

*Lower part of particle-size control section (weighted average):*

Clay content—25 to 32 percent

Coarse fragment content—40 to 60 percent

*A horizon:*

Hue—7.5YR or 10YR

Value—4 or 5 dry, 3 or 4 moist

Reaction—slightly acid or neutral

*Bw horizon:*

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 or 4 moist

Gravel content—5 to 25 percent, dominantly fine gravel

Reaction—moderately acid or slightly acid

*2Btb horizon (upper part):*
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Texture—cobbly clay loam, very cobbly clay loam, very gravelly loam, very gravelly clay loam, or gravelly clay loam
Rock fragment content—25 to 50 percent
Clay content—25 to 32 percent
Reaction—moderately acid or slightly acid

*2Btb horizon (lower part):*
Hue—5YR, 7.5YR, or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—4 to 6 dry or moist
Texture—extremely cobbly loam, very cobbly clay loam, very gravelly clay loam, or very gravelly loam
Rock fragment content—40 to 90 percent
Clay content—25 to 32 percent
Reaction—moderately acid to neutral

## Westlake Series

*Taxonomic class:* Fine-silty, mixed, frigid Cumulic Ultic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Permeability:* Moderately slow
*Landform:* Drainageways on plateaus
*Parent material:* Silty alluvium
*Slope range:* 0 to 3 percent
*Elevation:* 2,500 to 4,200 feet
*Climatic data (average annual):*
Precipitation—21 to 24 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—100 to 120 days

### *Typical Pedon Description*

Ap1—0 to 5 inches; dark gray (10YR 4/1) silt loam, very dark gray (10YR 3/1) moist; weak fine and medium subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; common fine and very fine tubular pores; neutral (pH 6.6); clear wavy boundary.

Ap2—5 to 10 inches; dark gray (10YR 4/1) silt loam, very dark gray (10YR 3/1) moist; moderate fine and very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; common fine and very fine tubular pores; neutral (pH 6.8); gradual wavy boundary.

A—10 to 21 inches; dark gray (10YR 4/1) silt loam, very dark gray (10YR 3/1) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; neutral (pH 6.8); clear smooth boundary.

Cg1—21 to 26 inches; gray (10YR 5/1) silt loam, dark gray (10YR 4/1) moist; few fine distinct very pale brown (10YR 7/3) mottles, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many medium, fine, and very fine tubular pores; common worm channels filled with A horizon material; neutral (pH 7.0); clear smooth boundary.

Cg2—26 to 40 inches; light gray (10YR 6/1) silt loam, very dark gray (10YR 3/1) moist; few fine distinct very pale brown (10YR 7/3) mottles, brown (10YR 5/3) moist; weak medium and coarse subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; many fine and very fine and common medium tubular pores; common worm channels filled with A horizon material; neutral (pH 7.0); gradual wavy boundary.

Cg3—40 to 49 inches; light gray (10YR 7/1) silt loam, gray (10YR 5/1) moist; few fine prominent yellow (10YR 7/6) mottles, yellowish brown (10YR 5/6) moist; weak medium and coarse subangular blocky structure; hard, friable, sticky and plastic; many fine and very fine tubular pores; common worm channels filled with A horizon material; mildly alkaline (pH 7.4); gradual wavy boundary.

Cg4—49 to 64 inches; light gray (10YR 7/1) silt loam, gray (10YR 5/1) moist; common fine and medium prominent yellow (10YR 7/6) mottles; yellowish brown (10YR 5/6) moist; massive; hard, friable, slightly sticky and slightly plastic; common very fine irregular pores; common worm channels filled with A horizon material; mildly alkaline (pH 7.4).

### *Typical Pedon Location*

*Map unit in which located:* Westlake-Latahco complex, 0 to 3 percent slopes
*Location in survey area:* About 1 mile south of Genesee, in Nez Perce County; about 1,000 feet south and 200 feet west of the northeast corner of sec. 22, T. 37 N., R. 5 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—20 to 35 inches

Base saturation—60 to 75 percent in some part between depths of 10 and 30 inches
Depth to seasonal high water table—18 to 30 inches in February through May
Frequency of flooding—occasional for brief periods in February through April
Average annual soil temperature—45 to 47 degrees F

Thin lenses of sandy loam or gravelly sandy loam are below a depth of 40 inches in some pedons.

*Particle-size control section (weighted average):*
Clay content—22 to 30 percent
Content of sand that is fine and coarser—5 to 15 percent
Coarse fragment content—0 to 5 percent

*A horizon:*
Value—3 or 4 dry, 2 or 3 moist

*Cg horizon (upper part):*
Value—5 to 7 dry, 3 to 5 moist
Texture—silt loam or silty clay loam
Clay content—25 to 34 percent
Reaction—neutral or mildly alkaline

*Cg horizon (lower part):*
Value—5 to 7 dry, 3 to 5 moist
Texture—silt loam, loam, or clay loam
Gravel content—0 to 15 percent
Clay content—20 to 32 percent
Reaction—neutral or mildly alkaline

## Wilkins Series

*Taxonomic class:* Fine, montmorillonitic, frigid Xeric Argialbolls

*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Permeability:* Very slow
*Landform:* Drainageways on plateaus
*Parent material:* Loess, alluvium
*Slope range:* 0 to 5 percent
*Elevation:* 2,800 to 4,500 feet
*Climatic data (average annual):*
Precipitation—23 to 25 inches
Air temperature—42 to 44 degrees F
Frost-free season (32 degrees F)—90 to 110 days

### *Typical Pedon Description*

A1—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium subangular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine irregular and tubular pores; moderately acid (pH 6.0); gradual smooth boundary.

A2—6 to 15 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium subangular blocky structure parting to weak medium granular; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular pores; moderately acid (pH 6.0); abrupt irregular boundary.

E—15 to 20 inches; light gray (10YR 7/1) silt loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few fine roots; few very fine tubular pores; many prominent continuous skeletans on faces of peds; few fine rounded iron and manganese concretions; moderately acid (pH 6.0); abrupt wavy boundary.

2Bt—20 to 26 inches; pale brown (10YR 6/3) and grayish brown (10YR 5/2) silty clay, dark grayish brown (10YR 4/2) and very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure; very hard, firm, very sticky and very plastic; few fine roots; many very fine and fine tubular pores; few distinct discontinuous clay films on faces of peds and in pores; few prominent patchy skeletans on faces of prisms near upper boundary; few fine rounded iron and manganese concretions; slightly acid (pH 6.4); gradual wavy boundary.

2Btg1—26 to 40 inches; light gray (2.5Y 7/2) silty clay, dark grayish brown (2.5Y 4/2) moist; many fine faint mottles that are olive brown (2.5Y 4/4) when moist; weak medium and coarse angular blocky structure; very hard, firm, very sticky and very plastic; few very fine roots; many very fine and fine tubular pores; few faint discontinuous clay films on faces of peds; few fine rounded iron and manganese concretions; neutral (pH 6.8); gradual wavy boundary.

2Btg2—40 to 52 inches; light brownish gray (2.5Y 6/2) silty clay, very dark grayish brown (2.5Y 3/2) moist; common medium prominent mottles that are yellowish brown (10YR 5/6) when moist and common fine prominent mottles that are gray (5Y 5/1) when moist; weak medium and coarse angular blocky structure; slightly hard, firm, very sticky and very plastic; few very fine tubular pores; few fine rounded iron and manganese concretions; neutral (pH 6.8); clear wavy boundary.

2BC—52 to 64 inches; light olive gray (5Y 6/2) clay loam, olive (5Y 5/3) moist; many medium prominent mottles that are yellowish brown (10YR 5/6) when moist and common fine prominent

mottles that are gray (5Y 5/1) when moist; massive; slightly hard, firm, sticky and plastic; neutral (pH 6.8).

### *Typical Pedon Location*

*Map unit in which located:* Wilkins silt loam, 0 to 5 percent slopes
*Location in survey area:* About 2 miles north of Winchester, in Lewis County; about 1,840 feet north and 700 feet east of the southwest corner of sec. 19, T. 34 N., R. 2 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 19 inches
Depth to seasonal perched water table—15 to 20 inches in February through May
Depth to 2Bt horizon—18 to 30 inches
Frequency of flooding—occasional for brief periods in March through May
Average summer soil temperature—59 to 62 degrees F

*A horizon:*
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—moderately acid to neutral

*E horizon:*
Value—6 to 8 dry, 4 to 6 moist
Chroma—1 or 2 dry or moist
Clay content—10 to 20 percent
Reaction—moderately acid to neutral

*2Bt horizon:*
Hue—2.5Y or 10YR
Value—4 to 7 dry, 3 to 6 moist
Chroma—2 to 4 dry or moist
Clay content—40 to 50 percent
Reaction—slightly acid or neutral

*2BC horizon (absent in some pedons):*
Texture—clay loam or silty clay loam
Clay content—27 to 40 percent

## Wistona Series

*Taxonomic class:* Coarse-loamy, mixed, mesic Fluventic Haploxerolls

*Depth class:* Very deep
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Low terraces, flood plains
*Parent material:* Alluvium
*Slope range:* 0 to 3 percent
*Elevation:* 720 to 1,240 feet
*Climatic data (average annual):*
Precipitation—12 to 14 inches
Air temperature—52 to 53 degrees F
Frost-free season (32 degrees F)—175 to 195 days

### *Typical Pedon Description*

A—0 to 8 inches; brown (10YR 5/3) very fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure parting to moderate medium granular; soft, friable, nonsticky and slightly plastic; many fine and very fine roots; common fine and very fine tubular pores; abundant sand-sized mica flakes; neutral (pH 7.2); clear smooth boundary.

Bw1—8 to 18 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; few fine and very fine tubular pores; less than 2 percent fine gravel; abundant sand-sized mica flakes; mildly alkaline (pH 7.4); gradual smooth boundary.

Bw2—18 to 45 inches; yellowish brown (10YR 5/4) fine sandy loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; few fine and very fine tubular pores; abundant sand-sized mica flakes; mildly alkaline (pH 7.6); clear wavy boundary.

Bk—45 to 51 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; few fine and very fine tubular pores; slightly effervescent (2 percent calcium carbonate equivalent); very few fine rounded soft masses of carbonates; less than 2 percent fine gravel; moderately alkaline (pH 8.2); clear wavy boundary.

C1—51 to 55 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, friable, nonsticky and nonplastic; few fine and very fine tubular pores; strongly effervescent (3 percent calcium carbonate equivalent); disseminated carbonates; 5 percent fine gravel; strongly alkaline (pH 8.8); clear wavy boundary.

C2—55 to 64 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and very fine tubular pores; strongly effervescent (3 percent calcium carbonate

equivalent); disseminated carbonates; less than 2 percent fine gravel; strongly alkaline (pH 8.8).

### *Typical Pedon Location*

*Map unit in which located:* Wistona very fine sandy loam, 0 to 3 percent slopes
*Location in survey area:* About 4 miles west of Spalding, in Nez Perce County; about 1,900 feet south and 2,150 feet west of the northeast corner of sec. 25, T. 36 N., R. 4 W.

### *Range in Characteristics*

*Profile:*
Thickness of mollic epipedon—10 to 20 inches
Depth to secondary carbonates—43 to 60 inches or more
Average annual soil temperature—54 to 55 degrees F
Frequency of flooding—rare

*Particle-size control section (weighted average):*
Clay content—5 to 10 percent
Gravel content—less than 5 percent

*A horizon:*
Value—4 or 5 dry, 2 or 3 moist
Reaction—neutral or mildly alkaline

*Bw horizon:*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very fine sandy loam, fine sandy loam, or sandy loam
Fine gravel content—less than 5 percent
Clay content—5 to 12 percent
Reaction—mildly alkaline or moderately alkaline

*Bk and C horizons:*
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very fine sandy loam, fine sandy loam, or sandy loam
Gravel content—less than 5 percent
Clay content—4 to 10 percent
Calcium carbonate equivalent—1 to 5 percent
Reaction—moderately alkaline or strongly alkaline

## Zaza Series

*Taxonomic class:* Loamy-skeletal, mixed, frigid Lithic Xerochrepts

*Depth class:* Shallow
*Drainage class:* Well drained
*Permeability:* Moderate
*Landform:* Hills on high plateaus
*Parent material:* Loess, material weathered from basalt
*Slope range:* 4 to 30 percent
*Elevation:* 4,200 to 5,350 feet
*Climatic data (average annual):*
Precipitation—26 to 28 inches
Air temperature—42 to 44 degrees F
Frost-free season (32 degrees F)—60 to 80 days

### *Typical Pedon Description*

A—0 to 4 inches; brown (7.5YR 4/3) very stony loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; soft, friable, nonsticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular and irregular pores; 25 percent gravel, 5 percent cobbles, and 5 percent stones; slightly acid (pH 6.1); clear smooth boundary.

Bw1—4 to 8 inches; brown (7.5YR 4/4) very cobbly loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure parting to moderate fine granular; soft, friable, nonsticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; 20 percent gravel and 30 percent cobbles; moderately acid (pH 5.9); clear wavy boundary.

Bw2—8 to 14 inches; brown (7.5YR 4/4) extremely cobbly loam, dark brown (7.5YR 3/4) moist; moderate fine subangular blocky structure; soft, friable, nonsticky and slightly plastic; common very fine and fine roots matted on coarse fragments; common very fine and fine tubular pores; 20 percent gravel and 50 percent cobbles; moderately acid (pH 5.9); abrupt wavy boundary.

R—14 inches; fractured basalt.

### *Typical Pedon Location*

*Map unit in which located:* Larabee-Zaza-Seddow complex, 10 to 40 percent slopes
*Location in survey area:* About 1 mile northeast of Zaza, in Nez Perce County; about 380 feet south and 500 feet west of the northeast corner of sec. 33, T. 32 N., R. 4 W.

### *Range in Characteristics*

*Profile:*
Depth to bedrock—10 to 20 inches
Base saturation—60 to 80 percent
Average annual soil temperature—44 to 46 degrees F

*Particle-size control section (weighted average):*
Clay content—10 to 18 percent
Coarse fragment content—50 to 85 percent

*A horizon:*
Chroma—3 or 4 dry, 2 or 3 moist
Reaction—moderately acid or slightly acid

*Bw1 horizon:*
Value—4 or 5 dry
Texture—cobbly loam or very cobbly loam
Coarse fragment content—20 to 60 percent
Clay content—10 to 18 percent
Reaction—moderately acid or slightly acid

*Bw2 horizon:*
Texture—very cobbly loam or extremely cobbly loam
Coarse fragment content—50 to 85 percent
Clay content—10 to 18 percent
Reaction—moderately acid or slightly acid

# Formation of the Soils

Soil is a natural body that covers the surface of the earth and in which plants grow. It is a fundamental part of any land ecosystem and exists in dynamic balance with the other components of the environment.

Soils are characterized by their vertical sequence of layers, or horizons, that vary in color, texture, chemistry, or structure. Horizons are continually forming, usually over long periods of time, in response to environmental forces. These forces, referred to as soil-forming factors, are parent material, climate, biological forces, relief, and time. The combined action of these forces results in soil formation, although one or two forces may be dominant in any given area. Particular combinations of the soil-forming factors produce unique soil profiles.

In this section, general information about the influence of the soil-forming factors on soil formation in this survey area is given and the formation of specific soils on major landforms is discussed.

## Parent Material

The soils in the survey area formed in loess, colluvium, alluvium, volcanic ash, and residuum that were deposited singly or, more commonly, in mixtures. The physical geology of the area has controlled the distribution of the various kinds of parent material.

Most the survey area is underlain by Miocene basalt flows of the Columbia River group. The remaining areas are underlain by other kinds of rock, including granitic rock near Winchester and in the upper Clearwater Valley, metasediment on Craig Mountain, and mixed sedimentary and metamorphic rock along the canyons of the Snake and Salmon Rivers.

The lava flows began about 17 million years ago with the Imnaha basalt and ended about 6 million years ago with the Saddle Mountains basalt *(6)*. During the middle of this period, the Nez Perce Plateau, comprising Camas Prairie and Craig Mountain, was uplifted and the Lewiston Basin subsided. Erosion has created extensive canyons in the basalt, some of which are as much as 4,000 feet deep. The resulting landscape consists of broad, flat plateaus that are deeply dissected by steep-walled canyons.

The underlying bedrock has the greatest influence on soil parent material in the canyons. Geologic erosion has been active throughout the Quaternary, producing a mantle of colluvium on the canyonsides. Soils that formed in basalt colluvium, such as those of the Kettenbach series, generally are moderately fine textured and contain abundant rock fragments. Soils that formed in colluvium derived from granitic rock, such as those of the Johnson series, tend to be sandier and contain abundant fine gravel and few coarse pebbles and cobbles. The colluvial mantle on the north- and east-facing slopes generally is deeper and commonly is influenced by loess.

In contrast to the canyonsides, the tops of the plateaus have relatively low relief and are geologically stable. Loess accumulated on these surfaces throughout the Pleistocene *(5)*. The soils that formed in the loess are silty and do not contain coarse fragments. It appears that the loess was deposited in many separate episodes, and each episode was followed by a period of stability and soil formation. In the Palouse area of nearby eastern Washington, dozens of paleosols in deep exposures of loess have been documented. Three well-developed paleosols that span the past 36,000 years have been identified. The source of the latest loess deposits is thought to be sediment from the cataclysmic Pleistocene floods. This sediment was deposited in the Columbia Basin of southeastern Washington.

Soils that formed in alluvium are in the narrow valleys along the major rivers and their tributaries. The oldest identified alluvial deposit is the Clearwater Gravel, which consists of sand and gravel from the ancestral Clearwater River deposited during the late Pliocene or early Pleistocene *(9)*. This material is exposed only in local areas where the younger overlying alluvium has been eroded. The substratum of the Tammany soils formed either in this material or in deposits of this material that have been reworked.

A younger and more extensive alluvial deposit consists of the backwater sediment from the Pleistocene Missoula Floods, which is correlated to the Touchet Beds of southeastern Washington *(24)*.

The Missoula Floods were a series of enormous floods that surged through eastern Washington periodically throughout the late Pleistocene and created the Channeled Scablands *(10)*. Some of the enormous volume of floodwater backed up the Snake River and inundated the lower Snake and Clearwater Valleys, including the Lewiston Basin. There is evidence of as many as 17 separate flood pulses that occurred 17,000 to 12,000 years ago near Lewiston. Deposits from floods during this period have been identified as “Bretz Floods” sediment to distinguish them from older deposits that have been identified as “Ancient Missoula Floods” sediment *(2)*. Because both types of sediment may be in this survey area, the general term “Missoula Floods” sediment is used.

The floodwater reached an elevation of about 1,325 feet, nearly the level of the west end of Lewiston Orchards. Sediment from the floods is medium-textured and contains a very low content of gravel. Soils of the Chard series developed mainly in Missoula Floods sediment.

Younger alluvium (less than 13,000 years old) formed the terraces below the Missoula Floods deposits and above the recent flood plain. This material is from the upstream canyons and plateaus. The coarser fractions are derived mostly from basalt, and the finer fractions are derived from loess. The soils that developed in this alluvium have sand and gravel at various depths. Soils of the Bridgewater and Lapwai series are examples.

A variable mixture of sand, gravel, cobbles, and loamy material is on the flood plains of the rivers and streams. The Joseph series and Aquents are examples of soils that formed in this recent, stratified alluvium. Alluvial material on the flood plains along drainageways on plateaus is derived from loess deposits, and it consists mostly of silty sediment. Soils of the Latahco series formed in this alluvium.

A surface mantle of volcanic ash has accumulated in some areas. The ash has been traced to the eruption of Mt. Mazama (now Crater Lake) in the Oregon Cascades about 6,600 years ago *(9)*. The mantle of ash is common at the higher elevations on Craig Mountain, particularly on the leeward north- and east-facing slopes. The mantle becomes thinner as elevation decreases, and at the lower elevations it is mixed with the underlying loess. The mantle typically is silt loam and as much as 24 inches thick. Soils of the Webbridge, Culdesac, and Shilla series are examples of those that formed in this material.

## Climate

Climate has a very strong influence on soil formation in the survey area. It affects the weathering of minerals, the activity of micro-organisms, and the amount of water movement through the soil. Climate also influences the kind and amount of vegetation, which in turn affects soil development.

The present climate affects soil formation as have different climates throughout the Quaternary. For many of the older soils on plateaus, past climatic conditions may have had more influence on soil development than the present climatic conditions. The climate in the survey area is thought to have been warmer and drier in the early and middle Holocene. It was dry enough to allow grasses to invade much of the area that is now forested. Some of the forested soils have remnant characteristics of grassland, such as a thick, dark-colored surface horizon. This relict feature may be partly a result of past climatic conditions.

The present climate of the area is characterized by warm, dry summers and cool, moist winters. The dry season is most pronounced at the lowest elevations, near Lewiston. In most years, the precipitation during the cool season is only enough to moisten a loamy soil to a depth of about 30 to 40 inches. As elevation increases, the temperatures are cooler and the precipitation is higher. The dry season is less pronounced in these areas, and precipitation is sufficient to completely leach through the soil profile. Most of the soils in the survey area have a xeric moisture regime. Some of the soils on flood plains are saturated for significant periods and have an aquic moisture regime. The soil temperature regime ranges mainly from mesic, which is the warm extreme, to frigid, which is the cool extreme. The Webbridge soils, which have a cryic temperature regime and a udic moisture regime, are on the steep, north- and east-facing slopes on Craig Mountain.

The soil temperature regime changes from mesic to frigid at an elevation of 3,400 to 4,000 feet. At the highest elevations in the frigid zone, above about 4,600 feet, the soil temperatures in summer are low enough in many years to be considered cryic. These soils have been classified as frigid, however, because the length of the growing season and the forest habitat type seem to be more typical of frigid soils. The average annual soil temperature of some soils near Craigmont is mesic, but the summer soil temperature is cool enough to qualify as cryic in some years.

Perhaps the greatest effect of the climate in the survey area is the movement of clay and dissolved

components within the soil profile as a result of the moisture received. In areas at the lower elevations that have a semiarid climate, calcium carbonate is dissolved, leached downward, and then deposited as secondary carbonate. Calcic horizons form in areas where a considerable amount of carbonate has accumulated. Depth to a calcic horizon generally increases as precipitation increases. As the amount of precipitation reaches about 18 inches, carbonates are leached out of the profile entirely. Once the carbonates have been removed, suspended clay is more prone to translocation. Argillic horizons form in areas where an appreciable amount of clay has accumulated. Argillic horizons are very common in soils at the middle to high elevations.

## Vegetation

The vegetation of the past few thousand years has influenced soil formation, particularly that of the surface layer. In this survey area, the greatest effect of the vegetation is in the content of organic matter in the A horizon.

The native vegetation is bunchgrass prairie in the drier areas, where the average annual precipitation is 12 to 20 inches. Through decomposition of its deep and extensive root systems, this vegetative type has added much organic matter to the surface layer. The dark color of the surface layer in these areas is typical of a mollic epipedon; thus, these soils are classified as Mollisols. Soils in the 12- to 15-inch precipitation zone have the lowest organic matter content, 1 to 3 percent, of the grassland soils. As the average annual rainfall increases, the plant growth also increases and the organic matter content increases to as much as 7 percent. The A horizon of the soils in these wetter areas is distinctively black when moist. Examples are soils of the Nez Perce series.

As the native vegetation changes from prairie to forest, the organic matter content remains relatively high, 2 to 4 percent, in the ponderosa pine zone and the drier part of the Douglas fir zone. As the forest type changes to one with a dense canopy, which is typical in the grand fir zone, the organic matter content decreases because the understory growth decreases and the root systems are sparse and shallow. More organic matter is added to the soil by litter accumulating on the soil surface than by decomposition of root systems within the surface layer. The surface layer is lighter colored and scant organic matter is concentrated in the upper few inches, which is typical of an ochric epipedon. Thin O horizons are common. Examples of soils that formed under this forest type are those of the Cramont series.

## Time

The effects of the soil-forming factors are tempered or accentuated by the length of time they have been acting on the soil. Time, or more specifically, geologic time, is a significant soil-forming factor.

Young soils on recent geomorphic surfaces have been subject to soil formation for only short periods of time; therefore, they have weakly expressed horizons. Examples are the Joseph and Wistona soils and Aquents, which developed in Holocene deposits. Other soils formed in older parent material, but they exhibit the characteristics of younger soils because they are on actively eroding slopes, such as steep canyonsides. Entic Haploxerolls and Crowers soils are examples.

Soils on older geomorphic surfaces develop features, such as a calcic, argillic, or natric horizon, that are characteristic of more advanced profile development. The longer the period of soil formation, the more pronounced these horizons become.

In this survey area, the oldest soils and those that have the most pronounced profiles are on plateaus. Although the plateaus have a surface mantle of late Pleistocene loess, many of the soils have a subsoil that formed in older loess deposits, much older in some areas. The subsoil commonly is older than the present geomorphic surface. Abrupt and fine-textured argillic horizons and indurated duripans are considered relict horizons that formed during a previous episode of soil formation. Soils of the Nez Perce and Endicott series are examples of soils that have relict horizons.

## Relief

Relief of the land surface affects soil development by influencing soil drainage, erosion, and microclimate.

Soils in low-lying positions commonly have features that are associated with poor soil drainage, including a high content of organic matter in the surface layer, gleyed and mottled colors, and redoximorphic features. Examples are Aquolls and soils of the Wilkins series.

Soils on steep canyonsides are strongly influenced by relief, particularly by the slope gradient and aspect. Geologic erosion is relatively rapid on the steep slopes; thus, the soils have weakly expressed

horizons. Soils on the steep slopes also are well drained. Soils on south- and west-facing slopes receive more direct sunlight and are therefore warmer and drier. Conversely, soils on north- and east-facing slopes are cooler and more moist. Also, more windblown material, such as loess or volcanic ash, tends to accumulate on these soils. Soils on the north- and east-facing slopes of plateaus, although not as steep as those on the canyonsides, have similar characteristics and they receive more moisture as a result of drifting snow.

## Soil Formation on Major Landforms

This section explains in more detail the formation and taxonomic features of representative soils. The interaction of the soil-forming factors is illustrated by a description of the sequences of soil development on major landforms.

### Flood Plains and Terraces

The flood plains of the major rivers and their tributaries are young geomorphic surfaces with soils that exhibit weak development. Aquents and Joseph soils are the youngest soils in the area. They formed in relatively unaltered parent material, and they have only an ochric epipedon. Soils of the Wistona, Lapwai, and Bridgewater series formed in older parent material on a terrace, probably of the early Holocene. The Wistona soils (Fluventic Haploxerolls) and the Lapwai soils (Cumulic Haploxerolls) have developed a mollic epipedon and a weak accumulation of secondary carbonates. The stratified parent material reflects periodic deposition of sediment by floods. The Bridgewater soils (Cumulic Haploxerolls) developed in gravelly, coarse-textured material. These soils are leached of carbonates, probably because of the low inherent level of carbonates in the parent material and because of the very rapid permeability of the substratum. The Bridgewater soils have developed a thick mollic epipedon.

Backwater deposits from the Missoula Floods have formed a terrace above the Holocene terrace. In most places this deposit mantled the pre-existing landforms; thus, it is not a typical flat and well-defined terrace. This deposit originated downstream from the survey area, and it consists of material that is unrelated to any upstream erosional surface.

Missoula Floods sediment that is mixed with small amounts of loess and has had the upper part reworked somewhat by wind is the parent material of the Chard and Uhlig soils. The Chard soils (Calcic Haploxerolls) developed a mollic epipedon and a distinct layer of carbonate accumulation. The Uhlig soils (Pachic Haploxerolls) formed in a higher precipitation zone. The increased moisture promoted greater plant growth, which contributed to the development of a thick mollic epipedon. Carbonates have been leached from the soil profile.

### Plateaus

Soil profile development on the plateaus has produced a complex pattern and sequence of soils. The kinds of soil horizons that formed commonly have been determined by the occurrence and location of paleosols within the modern profile. The variations in climate also strongly influence soil development and result in a gradual continuum in the expression of soil features.

At the low elevations, soil development is strongly influenced by the alkalinity of the loess and the lack of leaching in areas of semiarid climate. South of Lewiston, the soils are underlain by a thick, strongly cemented or indurated duripan. The duripan is believed to be a relict feature of several periods of soil formation, probably dating back to the middle Pleistocene or older. Above the duripan is loess of the late Pleistocene. The young age of the loess is exhibited by the weak development of the soil horizons. The Endicott soils (Haplic Durixerolls) have only a cambic horizon and a calcic horizon overlying the duripan. The calcic horizon has an extremely high level of carbonates (40 to 80 percent calcium carbonate equivalent), and it probably is older than the cambic horizon. Several layers of loess could have been deposited, could have added translocated carbonates to the calcic horizon, and then could have been eroded away prior to the deposition of the loess that comprises the present solum.

Sodium has affected soil development markedly at the low elevations. The sodium is presumed to be a natural component of one or more of the young loess deposits that blanketed the region. The nearby Missoula Floods sediment is a probable local source of the loess. It contains appreciable quantities of sodium salts. At two random locations, samples were collected from deep layers of this sediment. Both samples contained significant levels of sodium, indicated by the percentage of exchangeable sodium (32 and 35 percent) and the sodium adsorption ratio (19 and 21). This local deposit of Missoula Floods sediment is of small extent and could not be expected to have produced a large volume of loess. If the Missoula Floods sediment in other locations contains levels of sodium similar to those measured in this local deposit, it could be inferred that there was a more widespread and effective source of loess-borne sodium.

The influence of sodium is evident in the natric horizon of the soils of the Bryden, Hatwai, and Redmore series. These soils generally occur as small slick spots surrounded by soils that do not have a natric horizon. The genesis of the natric horizon is thought to be influenced by the lateral flow of moisture in the subsoil *(12)*. Water dissolves sodium and other constituents as it leaches into the subsoil. As the soil dries, often in irregular patterns that follow the microtopography, this moisture and its solutes move laterally from moister areas to drier areas. Evaporating moisture leaves its solutes behind, and over time, the solutes, including sodium, are concentrated in areas where evaporation is greatest and are depleted in other areas. Natric horizons form in areas where sodium has accumulated and promoted dispersion and illuviation of clay. Incipient natric horizons, because of their slower permeability, encourage this cycling by keeping the underlying subsoil drier than that of surrounding sites and maintaining the moisture gradient. The moisture gradient encourages the movement of soil moisture, along with its dissolved sodium, from moister areas to drier areas. Well developed natric horizons are presumed to form as a result of this action. As precipitation increases, the natric horizons of the soils in this survey area become more pronounced. The Bryden soils (Typic Durixerolls) and the Hatwai and Redmore soils (Typic Natrixerolls) illustrate the increasing expression of natric horizons.

At the higher elevations where rainfall also is higher, carbonates are leached from the soil profile. The surface horizons are darker and contain more organic matter, and argillic horizons form in the subsoil. Soils of the Naff, Palouse, and Thatuna series are typical of those in the hilly Palouse area. The deep loess in this area contains at least one paleosol within the modern profile. This paleosol makes up the argillic horizon of the Naff soils (Ultic Argixerolls) and the Thatuna soils (Boralfic Argixerolls). The argillic horizon of the Thatuna soils is at a greater depth than that in the Naff soils, largely because the Thatuna soils are in leeward positions on steep, north- and east-facing slopes. The paleosol of the Thatuna soils somehow developed a compactness that slows permeability. This forces percolating water to perch above the subsoil and move much faster laterally than downward. A pronounced eluvial horizon has formed. The Palouse soils (Pachic Ultic Haploxerolls) formed in similar positions, but in areas where the paleosol was buried more deeply or more gradually. Only a cambic horizon has formed in the recent loess deposit that makes up the solum of the Palouse soils.

On the Camas Prairie near Craigmont and Nezperce, the loess deposits are thinner than those in the Palouse area and the topography is more subdued. Soils containing carbonates are scattered on the landscape, and the base saturation in the soils that are entirely leached of carbonates is moderate to high. The cool, moist climate in this area is favorable for the accumulation of organic matter, and thus the surface layer of the soils is characteristically black. Soils of the Nez Perce and Uhlorn series are dominant in this area.

The Nez Perce soils (Xeric Argialbolls) formed on the summits and shoulders of hills, generally on convex slopes. These soils have a thin layer of young loess overlying a paleosol that has a strongly expressed, clayey argillic horizon. The slow permeability of the argillic horizon causes water to flow laterally along the abrupt upper boundary. An albic horizon has formed above the argillic horizon. The restricted permeability has limited leaching of the solum. Accumulations of secondary carbonates are in the lower part of the argillic horizon, generally in a noncalcareous matrix. This suggests that the carbonates were added to a pre-existing soil that was completely leached of carbonates. Furthermore, the Bk horizon commonly is strongly alkaline and has elevated levels of sodium. This suggests that a young loess deposit containing considerable amounts of sodium and probably associated with the Natrixerolls to the west could also have affected the soils of the Camas Prairie, most notably the Nez Perce soils. This is also supported by the occurrence of Nez Perce soils in a small area near Waha, where they are adjacent to and appear to be close in morphology to the Redmore soils (Typic Natrixerolls). Additions of strongly alkaline loess may have contributed to the development of the pronounced argillic horizon in the Nez Perce soils by promoting dispersion and illuviation of clay, possibly strengthening the expression of a pre-existing argillic horizon. Leaching may have prevented sodium from accumulating and forming a true natric horizon, but the dispersion and illuviation of clay that took place was perhaps similar to that needed to form a natric horizon.

The Uhlorn soils (Typic Argixerolls) are closely associated with Nez Perce soils on the landscape. The Uhlorn soils typically are on plane to concave backslopes and footslopes. The argillic horizon is at a greater depth in these soils than in the Nez Perce soils and is more weakly expressed, but it appears to have formed in the same paleosol. Because of the position of the Uhlorn soils on the landscape, more loess and admixtures of slope alluvium may have been deposited in areas of these soils. The more rapid permeability of the argillic horizon appears to have allowed carbonates to be leached out of the solum. If

sodium was added to the soil through a young deposit of loess, it had a minimal effect in the formation of the argillic horizon. The effect of the alkaline loess on increasing the base saturation in the Uhlorn soils, however, probably has been significant.

As precipitation increases in areas beyond the Palouse and Camas Prairie areas, the native vegetation becomes ponderosa pine forests. Soils of the Southwick, Driscoll, and Larkin series commonly are in these areas. The content of organic matter is higher in these soils and more carbonates have been leached from the solum, but otherwise these soils are closely related to the sequence of paleosols common in the soils on Camas Prairie.

The Southwick soils (Boralfic Argixerolls) have a sequence of horizons very similar to that in the Thatuna soils. The Southwick soils, however, have an argillic horizon with some properties of a fragipan, particularly the high bulk density and coarse prismatic structure. These soils generally are on backslopes and footslopes.

The Driscoll soils (Ultic Palexerolls) are on the summits and shoulders of hills. As in the Nez Perce soils, which are in similar positions, the Driscoll soils have a pronounced relict, clayey argillic horizon. In the Driscoll soils, however, all of the carbonates have been leached from the argillic horizon. This horizon is presumed to have formed in a paleosol similar to that in the Southwick soils. The organic matter content in the mollic epipedon of the Driscoll soils is not quite as high as that in the Nez Perce soils. This reflects the effect of the forest vegetation on the development of the Driscoll soils.

The Larkin soils (Ultic Argixerolls) formed on backslopes and footslopes in areas where each successive deposit of loess was thicker. The argillic horizon in these soils does not have characteristics of a fragipan nor does it have an abrupt boundary.

The Taney and Setters soils formed in the Douglas fir zone at higher elevations, where the soil temperature regime is frigid. The Taney soils (Vitrandic Argixerolls) are very similar to the Southwick soils and are on similar landscape positions. The Taney soils, however, have a fragipan. The Setters soils (Ultic Palexerolls) have an abrupt clay increase at the top of the argillic horizon.

The formation of a fragipan in the soils in the survey area is not well understood. The variety of characteristic features suggests a complex genesis that probably is a result of many independent processes. Some of the fragipan features, such as the thick organic coatings and clay films on the faces of prisms and the skeletans on the tops and sides of prisms, can be attributed to pedogenic processes. Other features, such as the high bulk density, the coarse prismatic structure, and the close relationship between the fragipans and horizon discontinuities, suggest a geologic influence. In this survey area, it appears that the fragipans formed in a previously compacted layer in the upper part of a paleosol. The cause of the compaction is not known, but several geologic processes are plausible, including periglacial solifluction and thawing of permafrost. Both of these processes could have produced a slurried material that could become dense when dry. The occurrence of a fragipan only in areas that support forest vegetation suggests that climate had a role in the formation of the compacted layers.

After the paleosol was buried by loess, pedogenic features could have been superimposed on the compacted layer. The low porosity of the compacted layer could have restricted soil water movement and resulted in the characteristic patterns of depletion and accumulation of clay. Illuvial clay may have filled some of the scarce pores with clay and cemented some of the larger mineral grains. The fragipans commonly have relatively low shrink-swell potential compared to adjacent soils.

Many characteristics of the Taney and Setters soils suggest a relationship with the sodium influence of the Nez Perce soils and the Natrixerolls of drier climates. The similarities include an abrupt upper boundary of the argillic horizon (fragipan), prismatic structure or in some areas columnar structure capped with albic material, and illuvial organic matter on the faces of peds. The proximity of these soils to the Nez Perce soils implies that if the young loess affecting the Nez Perce soils contained appreciable amounts of sodium then the loess affecting the Taney and Setters soils probably did as well. Both soils are downwind from areas of natric soils and Missoula Floods sediment, which are possible local sources of alkaline loess. The fragipans in this area may have been influenced by sodium, which has now been leached from the soils.

The Cramont and Talmaks soils formed in the climatic zone that is associated with grand fir plant communities. As a direct effect of this change in plant communities, these soils have an ochric epipedon instead of the mollic epipedon that is so common in the soils in the drier zones. The mantle of young loess also exhibits more influence by volcanic ash. The surface layer of the Cramont and Talmaks soils (Vitrandic Haploxeralfs) is about 5 to 30 percent volcanic glass. The argillic horizon of the soils in this precipitation zone shows the effects of more leaching—base saturation is significantly lower than in the drier zones and the clay mineralogy is

different, with smectite becoming less dominant and kaolinite and vermiculite becoming more dominant.

At the highest elevations on the plateaus, the soils are more influenced by volcanic ash and have minimal amounts of loess. Soils of the Shilla, Seddow, and Larabee series are dominant in these areas. Soils of the Shilla series (Alfic Vitrixerands) formed on landscape positions that are favorable for the accumulation of volcanic ash, commonly summits and north- and east-facing hillsides. These soils have a mantle of ash 14 to 20 inches thick. This mantle has a higher content of volcanic glass than the surface layer of the Cramont and Talmaks soils, but it also has a component of loess. Soils of the Seddow series (Vitrandic Haploxeralfs) formed in areas where the mantle of ash is thinner as a result of less deposition or more erosion, or both. Soils of the Larabee series (Vitrandic Argixerolls) formed on dry, south- and west-facing hillsides. The moderate depth to basalt and high content of rock fragments typical of these soils restrict the available water capacity and result in droughtiness. The Larabee soils support a Douglas fir plant community, which is drought tolerant, and they have developed a mollic epipedon as a result of the accumulation of organic matter in the surface layer.

### Canyons

Soils on canyonsides typically are more weakly developed than soils on plateaus. The colluvial parent material is younger, and geologic erosion is active. Aspect and climate have the greatest influence on the formation of soils on canyonsides (fig. 28).

At the lowest elevations and in the driest areas, the soils have accumulations of calcium carbonate but they do not exhibit evidence of clay movement. Soils of the Limekiln and Lickskillet series (Lithic Haploxerolls) are on the south- and west-facing slopes in these areas. These soils formed in a thin mantle of basalt colluvium. Soils of the Crowers series (Calcic Pachic Haploxerolls) are on the north- and east-facing slopes. These soils formed in a thicker colluvial deposit that has additions of loess in the upper part. Because the Crowers soils are deeper and are on the cooler, more moist aspects, they support an Idaho

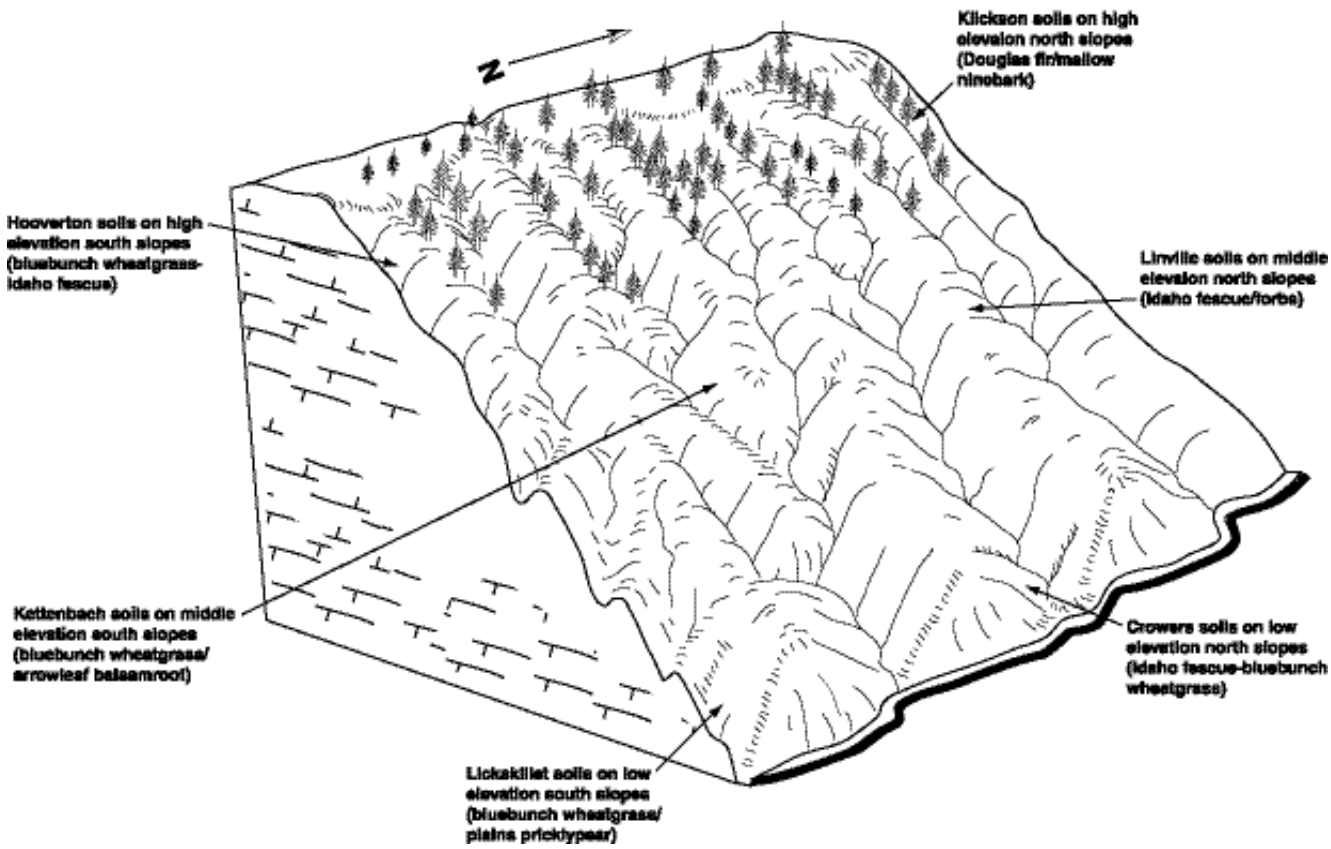


**Figure 28.—Idealized sequence of soils and vegetation types on north- and south-facing slopes of basalt canyonsides.**

fescue plant community that characteristically adds much organic matter to the surface layer and subsoil. There is a striking difference in the content of organic matter between the Limekiln and Lickskillet soils and the Crowers soils.

As precipitation increases, soils on the south- and west-facing slopes can support more productive plant communities; however, the pattern of deeper soils and more productive plant communities that occurs on the north- and east-facing slopes is still evident. On south- and west-facing slopes, increased leaching has removed carbonates from the profile but not an appreciable amount of bases. Leaching also has facilitated the movement of clay. Soils of the Kettenbach series (Pachic Argixerolls) formed under these conditions. On the north- and east-facing slopes, the accumulation of organic matter remains high but the movement of clay has not been sufficient for an argillic horizon to form. Soils of the Linville series (Pachic Haploxerolls) formed on these slopes.

As elevation increases, the Douglas fir forest type is the dominant potential plant community on the cool, moist aspects. The soils that support this plant community have a thinner mollic epipedon than do the soils on the lower canyonsides that support grassland plant communities. In the forested soils, leaching has been sufficient for the removal of bases and for the formation of an argillic horizon. Soils of the Klickson series (Vitrandic Argixerolls) are examples.

On the dry aspects at the higher elevations, available soil moisture is not limited by climate but by the depth to bedrock, high content of rock fragments, and resulting low available water capacity. The soils on these aspects can only support a grassland plant community. Leaching has not significantly removed the bases, and the mollic epipedon is thinner in these soils than in those at the lower elevations. Soils of the Hooverton series (Typic Argixerolls) are examples.

At the headwalls of canyons on Craig Mountain, a thick mantle of volcanic ash overlies the basalt colluvium on the north and east aspects. Soils of the Webbridge series (Alfic Vitricryands) formed on these aspects, and they support the grand fir forest type. These soils are light colored and thoroughly leached of bases. A weak argillic horizon has formed.

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# Glossary

**ABC soil.** A soil having an A, a B, and a C horizon.

**AC soil.** A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

**Aeration, soil.** The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

**Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

**Alkali (sodic) soil.** A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

**Alluvial fan.** The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

**Alluvium.** Material, such as sand, silt, or clay, deposited on land by streams.

**Alpha,alpha-dipyridyl.** A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

**Animal unit month (AUM).** The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

**Aquic conditions.** Current soil wetness characterized by saturation, reduction, and redoximorphic features.

**Area reclaim** (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

**Argillic horizon.** A subsoil horizon characterized by an accumulation of illuvial clay.

**Aspect.** The direction in which a slope faces.

**Association, soil.** A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

**Available water capacity (available moisture capacity).** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

| | |
|---|---|
| Very low | 0 to 3 |
| Low | 3 to 6 |
| Moderate | 6 to 9 |
| High | more than 9 |

**Backslope.** The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

**Basal area.** The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

**Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

**Base slope.** A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

**Bedding system.** A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

**Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

**Bedrock-controlled topography.** A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

**Bottom land.** The normal flood plain of a stream, subject to flooding.

**Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.

**Breaks.** The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

**Breast height.** An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

**Brush management.** Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

**Butte.** An isolated small mountain or hill with steep or precipitous sides and a top variously flat, rounded, or pointed that may be a residual mass isolated by erosion or an exposed volcanic neck.

**Cable yarding.** A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

**Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

**Canopy.** The leafy crown of trees or shrubs. (See Crown.)

**Canyon.** A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

**Capillary water.** Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

**Catena.** A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

**Cation.** An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

**Cation-exchange capacity.** The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

**Chemical treatment.** Control of unwanted vegetation through the use of chemicals.

**Chiseling.** Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

**Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

**Clay depletions.** Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

**Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

**Claypan.** A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

**Coarse fragments.** Mineral or rock fragments larger than 2 millimeters in diameter.

**Coarse textured soil.** Sand or loamy sand.

**Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

**Cobbly soil material.** Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

**Colluvium.** Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

**Complex slope.** Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

**Complex, soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping.

The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

**Compressible** (in tables). Excessive decrease in volume of soft soil under load.

**Concretions.** Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

**Conservation cropping system.** Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

**Conservation tillage.** A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

**Consistence, soil.** Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

**Contour stripcropping.** Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

**Control section.** The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

**Corrosion.** Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

**Cover crop.** A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

**Cropping system.** Growing crops according to a planned system of rotation and management practices.

**Crop residue management.** Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

**Cross fencing.** Fencing that divides a pasture into two or more areas and allows for managing the distribution of livestock.

**Cross-slope farming.** Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

**Crown.** The upper part of a tree or shrub, including the living branches and their foliage.

**Culmination of the mean annual increment (CMAI).** The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

**Cutbanks cave** (in tables). The walls of excavations tend to cave in or slough.

**Decreasers.** The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

**Deferred grazing.** Postponing grazing or resting grazing land for a prescribed period.

**Dense layer** (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

**Depth, soil.** Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

**Depth to rock** (in tables). Bedrock is too near the surface for the specified use.

**Divided-slope farming.** A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion.

This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

**Drainage class** (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

**Drainage, surface.** Runoff, or surface flow of water, from an area.

**Draw.** A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

**Duff.** A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

**Duripan.** A continuous, strongly silica-cemented or indurated soil horizon, or layer, that severely limits root and water penetration.

**Eluviation.** The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

**Endosaturation.** A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

**Eolian soil material.** Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

**Ephemeral stream.** A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

**Episaturation.** A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

**Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

*Erosion* (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

*Erosion* (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

**Escarpment.** A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

**Excess alkali** (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

**Excess fines** (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

**Excess lime** (in tables). Excess carbonates in the soil that restrict the growth of some plants.

**Excess salts** (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

**Excess sulfur** (in tables). Excessive amount of sulfur in the soil. The sulfur causes extreme acidity if the soil is drained, and the growth of most plants is restricted.

**Extrusive rock.** Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

**Fallow.** Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

**Fast intake** (in tables). The rapid movement of water into the soil.

**Fertility, soil.** The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

**Field moisture capacity.** The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

**Fine textured soil.** Sandy clay, silty clay, or clay.

**Flood plain.** A nearly level alluvial plain that borders a

stream and is subject to flooding unless protected artificially.

**Fluvial.** Of or pertaining to rivers; produced by river action, as a fluvial plain.

**Foothill.** A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

**Footslope.** The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

**Forb.** Any herbaceous plant not a grass or a sedge.

**Forest cover.** All trees and other woody plants (underbrush) covering the ground in a forest.

**Forest type.** A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

**Fragile** (in tables). A soil that is easily damaged by use or disturbance.

**Fragipan.** A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

**Frost action** (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

**Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

**Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

**Gradient terrace.** A terrace constructed to move water to a stable outlet. (See Terrace.)

**Grassed waterway.** A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

**Gravel.** Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

**Gravelly soil material.** Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

**Green manure crop** (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

**Ground water.** Water filling all the unblocked pores of the material below the water table.

**Gully.** A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

**Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

**Hardpan.** A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

**Head out.** To form a flower head.

**Head slope.** A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

**High-residue crops.** Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

**Hill.** A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

**Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

*O horizon.*—An organic layer of fresh and decaying plant residue.

*A horizon.*—The mineral horizon at or near the

surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

*E horizon.*—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

*B horizon.*—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

*C horizon.*—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

*Cr horizon.*—Soft, consolidated bedrock beneath the soil.

*R layer.*—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

**Humus.** The well decomposed, more or less stable part of the organic matter in mineral soils.

**Hydrologic soil groups.** Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

**Igneous rock.** Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

**Illuviation.** The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

**Increasers.** Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

**Infiltration.** The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

**Infiltration rate.** The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

**Interfluve.** An elevated area between two drainageways that sheds water to those drainageways.

**Intermittent stream.** A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

**Invaders.** On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

**Iron depletions.** Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

**Knoll.** A small, low, rounded hill rising above adjacent landforms.

**Lacustrine deposit.** Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

**Landslide.** The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

**Large stones** (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

**Leaching.** The removal of soluble material from soil or other material by percolating water.

**Light textured soil.** Sand and loamy sand.

**Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.

**Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

**Loess.** Fine grained material, dominantly of silt-sized particles, deposited by wind.

**Low-residue crops.** Such crops as corn used for

silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

**Low strength.** The soil is not strong enough to support loads.

**Masses.** Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

**Mechanical treatment.** Use of mechanical equipment for seeding, brush management, and other management practices.

**Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.

**Metamorphic rock.** Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

**Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

**Minimum tillage.** Only the tillage essential to crop production and prevention of soil damage.

**Miscellaneous area.** An area that has little or no natural soil and supports little or no vegetation.

**Moderately coarse textured soil.** Coarse sandy loam, sandy loam, or fine sandy loam.

**Moderately fine textured soil.** Clay loam, sandy clay loam, or silty clay loam.

**Mollic epipedon.** A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

**Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

**Mottling, soil.** Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

**Mountain.** A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

**Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

**Natric horizon.** A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

**Neutral soil.** A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

**Nodules.** Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

**Nose slope.** A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

**Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

**Organic matter.** Plant and animal residue in the soil in various stages of decomposition.

**Pan.** A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

**Parent material.** The unconsolidated organic and mineral material in which soil forms.

**Ped.** An individual natural soil aggregate, such as a granule, a prism, or a block.

**Pedisediment.** A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher lying areas of the erosion surface.

**Pedon.** The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area

ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

**Percolation.** The movement of water through the soil.

**Percs slowly** (in tables). The slow movement of water through the soil adversely affects the specified use.

**Permeability.** The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

| | |
|---|---|
| Very slow | less than 0.06 inch |
| Slow | 0.06 to 0.2 inch |
| Moderately slow | 0.2 to 0.6 inch |
| Moderate | 0.6 inch to 2.0 inches |
| Moderately rapid | 2.0 to 6.0 inches |
| Rapid | 6.0 to 20 inches |
| Very rapid | more than 20 inches |

**Phase, soil.** A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

**pH value.** A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

**Piping** (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

**Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

**Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.

**Plateau.** An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

**Plowpan.** A compacted layer formed in the soil directly below the plowed layer.

**Ponding.** Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

**Poor filter** (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

**Poor outlets** (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

**Potential native plant community.** See Climax plant community.

**Potential rooting depth (effective rooting depth).** Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

**Prescribed burning.** Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

**Productivity, soil.** The capability of a soil for producing a specified plant or sequence of plants under specific management.

**Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.

**Proper grazing use.** Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

**Pulse crop.** A crop that produces edible seeds, such as peas and lentils.

**Range condition.** The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

**Rangeland.** Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

**Range site.** An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

**Reaction, soil.** A measure of acidity or alkalinity of a

soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

| | |
|---|---|
| Extremely acid | less than 4.5 |
| Very strongly acid | 4.5 to 5.0 |
| Strongly acid | 5.1 to 5.5 |
| Moderately acid | 5.6 to 6.0 |
| Slightly acid | 6.1 to 6.5 |
| Neutral | 6.6 to 7.3 |
| Mildly alkaline | 7.4 to 7.8 |
| Moderately alkaline | 7.9 to 8.4 |
| Strongly alkaline | 8.5 to 9.0 |
| Very strongly alkaline | 9.1 and higher |

**Redoximorphic concentrations.** Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

**Redoximorphic depletions.** Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

**Redoximorphic features.** Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

**Reduced matrix.** A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

**Relief.** The elevations or inequalities of a land surface, considered collectively.

**Residuum (residual soil material).** Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

**Road cut.** A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

**Rock fragments.** Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

**Rooting depth** (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

**Root zone.** The part of the soil that can be penetrated by plant roots.

**Runoff.** The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

**Salty water** (in tables). Water that is too salty for consumption by livestock.

**Sand.** As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

**Sandstone.** Sedimentary rock containing dominantly sand-sized particles.

**Saturation.** Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

**Second bottom.** The first terrace above the normal flood plain (or first bottom) of a river.

**Sedimentary rock.** Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

**Seepage** (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

**Series, soil.** A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

**Shale.** Sedimentary rock formed by the hardening of a clay deposit.

**Sheet erosion.** The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

**Shoulder.** The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

**Shrink-swell** (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

**Side slope.** A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

**Silica.** A combination of silicon and oxygen. The mineral form is called quartz.

**Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

**Siltstone.** Sedimentary rock made up of dominantly silt-sized particles.

**Similar soils.** Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

**Site curve (50-year).** A set of related curves on a graph that shows the average height of dominant trees for the range in ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant trees that are 50 years old or are 50 years old at breast height.

**Site curve (100-year).** A set of related curves on a graph that shows the average height of dominant and codominant trees for the range in ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant and codominant trees that are 100 years old or are 100 years old at breast height.

**Site index.** A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

**Slickensides.** Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

**Slick spot.** A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

**Slippage** (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

**Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

| | |
|---|---|
| Nearly level | 0 to 2 percent |
| Gently sloping | 2 to 8 percent |
| Strongly sloping | 8 to 15 percent |
| Moderately steep | 15 to 25 percent |
| Steep | 25 to 60 percent |
| Very steep | 60 percent and higher |

**Slope** (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

**Slow intake** (in tables). The slow movement of water into the soil.

**Slow refill** (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

**Small stones** (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

**Sodic (alkali) soil.** A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

**Sodicity.** The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of $Na^{+}$ to $Ca^{++}$ + $Mg^{++}$. The degrees of sodicity and their respective ratios are:

| | |
|---|---|
| Slight | less than 13:1 |
| Moderate | 13-30:1 |
| Strong | more than 30:1 |

**Soft bedrock.** Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

**Soil.** A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

**Soil separates.** Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and

sizes, in millimeters, of separates recognized in the United States are as follows:

| | |
|---|---|
| Very coarse sand | 2.0 to 1.0 |
| Coarse sand | 1.0 to 0.5 |
| Medium sand | 0.5 to 0.25 |
| Fine sand | 0.25 to 0.10 |
| Very fine sand | 0.10 to 0.05 |
| Silt | 0.05 to 0.002 |
| Clay | less than 0.002 |

**Solum.** The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

**Stones.** Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

**Stony.** Refers to a soil containing stones in numbers that interfere with or prevent tillage.

**Stripcropping.** Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

**Structure, soil.** The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

**Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.

**Substratum.** The part of the soil below the solum.

**Subsurface layer.** Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

**Summer fallow.** The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

**Summit.** The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

**Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

**Surface soil.** The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

**Talus.** Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

**Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

**Terrace.** An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

**Terrace** (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. Some terraces are dissected by drainageways and have steep escarpments.

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

**Thin layer** (in tables). Otherwise suitable soil material that is too thin for the specified use.

**Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

**Toeslope.** The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

**Too arid** (in tables). The soil is dry most of the time, and vegetation is difficult to establish.

**Topsoil.** The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

**Toxicity** (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.

**Trace elements.** Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

**Unstable fill** (in tables). Risk of caving or sloughing on banks of fill material.

**Weathering.** All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

**Windthrow.** The uprooting and tipping over of trees by the wind.

# Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1949-92 at Lewiston, 1951-92 at Nezperce, and 1966-92 at Winchester, Idaho)

| Month | Temperature | | | | | | Precipitation | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Average daily maximum | Average daily minimum | Average daily | 2 years in 10 will have-- Maximum temperature higher than-- | 2 years in 10 will have-- Minimum temperature lower than-- | Average number of growing degree days* | Average | 2 years in 10 will have-- Less than-- | 2 years in 10 will have-- More than-- | Average number of days with 0.10 inch or more |
| | °F | °F | °F | °F | °F | Units | In | In | In | |
| LEWISTON: | | | | | | | | | | |
| January----- | 38.7 | 25.8 | 32.2 | 59 | -4 | 29 | 1.24 | 0.56 | 1.82 | 3 |
| February---- | 46.2 | 30.5 | 38.4 | 63 | 6 | 57 | 0.88 | 0.45 | 1.26 | 3 |
| March------- | 53.4 | 34.0 | 43.7 | 72 | 18 | 146 | 1.07 | 0.66 | 1.43 | 3 |
| April------- | 62.2 | 39.3 | 50.8 | 84 | 26 | 323 | 1.09 | 0.48 | 1.61 | 3 |
| May--------- | 70.7 | 46.1 | 58.4 | 93 | 32 | 573 | 1.46 | 0.82 | 2.03 | 4 |
| June-------- | 79.0 | 53.0 | 66.0 | 99 | 40 | 784 | 1.43 | 0.66 | 2.09 | 4 |
| July-------- | 89.0 | 58.6 | 73.8 | 106 | 46 | 1,050 | 0.60 | 0.17 | 0.97 | 1 |
| August------ | 87.9 | 58.0 | 72.9 | 105 | 45 | 1,019 | 0.75 | 0.14 | 1.32 | 2 |
| September--- | 77.7 | 50.0 | 63.8 | 98 | 34 | 713 | 0.76 | 0.24 | 1.22 | 2 |
| October----- | 63.1 | 40.7 | 51.9 | 84 | 25 | 373 | 0.97 | 0.40 | 1.53 | 3 |
| November---- | 48.0 | 33.4 | 40.7 | 67 | 13 | 100 | 1.16 | 0.59 | 1.67 | 4 |
| December---- | 40.8 | 28.5 | 34.6 | 59 | 1 | 32 | 1.16 | 0.52 | 1.71 | 3 |
| Yearly: | | | | | | | | | | |
| Average---- | 63.0 | 41.5 | 52.3 | --- | --- | --- | --- | --- | --- | --- |
| Extreme---- | 115 | -22 | --- | 107 | -9 | --- | --- | --- | --- | --- |
| Total------ | --- | --- | --- | --- | --- | 5,200 | 12.57 | 10.70 | 14.37 | 35 |

See footnote at end of table.

Table 1.--Temperature and Precipitation--Continued

| Month | Temperature | | | | | | Precipitation | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Average daily maximum | Average daily minimum | Average daily | 2 years in 10 will have-- Maximum temperature higher than-- | 2 years in 10 will have-- Minimum temperature lower than-- | Average number of growing degree days* | Average | 2 years in 10 will have-- Less than-- | 2 years in 10 will have-- More than-- | Average number of days with 0.10 inch or more |
| | °F | °F | °F | °F | °F | Units | In | In | In | |
| NEZPERCE: | | | | | | | | | | |
| January----- | 34.3 | 20.8 | 27.6 | 52 | -11 | 5 | 1.81 | 1.00 | 2.52 | 6 |
| February---- | 40.5 | 25.0 | 32.7 | 59 | -4 | 15 | 1.36 | 0.83 | 1.84 | 5 |
| March------- | 46.1 | 28.0 | 37.1 | 67 | 7 | 44 | 1.88 | 1.27 | 2.43 | 6 |
| April------- | 54.7 | 33.2 | 44.0 | 78 | 21 | 146 | 2.18 | 1.46 | 2.83 | 6 |
| May--------- | 63.1 | 39.2 | 51.2 | 86 | 26 | 341 | 2.94 | 1.92 | 3.87 | 7 |
| June-------- | 70.8 | 45.3 | 58.0 | 90 | 33 | 530 | 2.32 | 1.39 | 3.15 | 6 |
| July-------- | 80.6 | 49.0 | 64.8 | 96 | 35 | 750 | 1.06 | 0.34 | 1.65 | 2 |
| August------ | 80.7 | 48.9 | 64.8 | 98 | 36 | 745 | 1.28 | 0.40 | 2.12 | 3 |
| September--- | 71.0 | 42.2 | 56.6 | 91 | 23 | 492 | 1.38 | 0.44 | 2.15 | 3 |
| October----- | 58.0 | 35.1 | 46.5 | 80 | 17 | 218 | 1.69 | 0.75 | 2.64 | 4 |
| November---- | 42.9 | 27.8 | 35.3 | 62 | 2 | 36 | 1.93 | 1.15 | 2.62 | 6 |
| December---- | 35.5 | 22.6 | 29.1 | 52 | -9 | 6 | 1.70 | 0.95 | 2.36 | 5 |
| Yearly: | | | | | | | | | | |
| Average---- | 56.5 | 34.8 | 45.6 | --- | --- | --- | --- | --- | --- | --- |
| Extreme---- | 104 | -33 | --- | 99 | -18 | --- | --- | --- | --- | --- |
| Total------ | --- | --- | --- | --- | --- | 3,326 | 21.51 | 17.25 | 24.86 | 59 |

See footnote at end of table.

Table 1.--Temperature and Precipitation--Continued

| Month | Temperature | | | | | | Precipitation | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Average daily maximum | Average daily minimum | Average daily | 2 years in 10 will have-- Maximum temperature higher than-- | 2 years in 10 will have-- Minimum temperature lower than-- | Average number of growing degree days* | Average | 2 years in 10 will have-- Less than-- | 2 years in 10 will have-- More than-- | Average number of days with 0.10 inch or more |
| | °F | °F | °F | °F | °F | Units | In | In | In | |
| WINCHESTER: | | | | | | | | | | |
| January----- | 34.4 | 17.9 | 26.2 | 52 | -16 | 3 | 2.28 | 1.26 | 3.18 | 7 |
| February---- | 39.6 | 21.6 | 30.6 | 59 | -11 | 9 | 1.73 | 0.99 | 2.38 | 5 |
| March------- | 43.9 | 24.7 | 34.3 | 63 | -1 | 25 | 2.66 | 1.93 | 3.33 | 8 |
| April------- | 51.4 | 29.9 | 40.6 | 76 | 14 | 98 | 2.66 | 1.70 | 3.53 | 8 |
| May--------- | 59.7 | 35.8 | 47.7 | 83 | 23 | 245 | 3.07 | 2.06 | 4.00 | 8 |
| June-------- | 67.7 | 41.8 | 54.8 | 87 | 30 | 446 | 2.14 | 1.45 | 2.77 | 6 |
| July-------- | 77.0 | 44.9 | 60.9 | 92 | 31 | 647 | 1.21 | 0.43 | 1.86 | 3 |
| August------ | 78.0 | 44.5 | 61.3 | 95 | 31 | 629 | 1.27 | 0.21 | 2.08 | 3 |
| September--- | 68.5 | 38.4 | 53.4 | 90 | 21 | 403 | 1.54 | 0.47 | 2.42 | 4 |
| October----- | 56.6 | 31.5 | 44.1 | 80 | 11 | 168 | 1.90 | 0.93 | 2.88 | 5 |
| November---- | 41.9 | 25.2 | 33.6 | 63 | -5 | 31 | 2.46 | 1.41 | 3.40 | 8 |
| December---- | 34.8 | 18.7 | 26.7 | 52 | -18 | 5 | 2.15 | 1.13 | 3.04 | 7 |
| Yearly: | | | | | | | | | | |
| Average---- | 54.4 | 31.2 | 42.8 | --- | --- | --- | --- | --- | --- | --- |
| Extreme---- | 98 | -40 | --- | 95 | -25 | --- | --- | --- | --- | --- |
| Total------ | --- | --- | --- | --- | --- | 2,709 | 25.07 | 21.29 | 28.38 | 72 |

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1949-92 at Lewiston, 1951-92 at Nezperce, and 1966-92 at Winchester, Idaho)

| Probability | Temperature | | |
|---|---|---|---|
| | 24 °F or lower | 28 °F or lower | 32 °F or lower |
| LEWISTON: | | | |
| Last freezing temperature in spring: | | | |
| 1 year in 10 later than-- | Apr. 2 | Apr. 22 | May 9 |
| 2 years in 10 later than-- | Mar. 22 | Apr. 13 | May 2 |
| 5 years in 10 later than-- | Feb. 29 | Mar. 26 | Apr. 18 |
| First freezing temperature in fall: | | | |
| 1 year in 10 earlier than-- | Oct. 22 | Oct. 13 | Sept. 27 |
| 2 years in 10 earlier than-- | Nov. 2 | Oct. 20 | Oct. 5 |
| 5 years in 10 earlier than-- | Nov. 23 | Nov. 3 | Oct. 18 |
| NEZPERCE: | | | |
| Last freezing temperature in spring: | | | |
| 1 year in 10 later than-- | Apr. 27 | May 21 | June 13 |
| 2 years in 10 later than-- | Apr. 20 | May 15 | June 5 |
| 5 years in 10 later than-- | Apr. 8 | May 1 | May 22 |
| First freezing temperature in fall: | | | |
| 1 year in 10 earlier than-- | Sept. 29 | Sept. 11 | Sept. 3 |
| 2 years in 10 earlier than-- | Oct. 7 | Sept. 19 | Sept. 9 |
| 5 years in 10 earlier than-- | Oct. 21 | Oct. 2 | Sept. 19 |

Table 2.--Freeze Dates in Spring and Fall--Continued

| Probability | Temperature | | |
|---|---|---|---|
| | 24 °F or lower | 28 °F or lower | 32 °F or lower |
| WINCHESTER: | | | |
| Last freezing temperature in spring: | | | |
| 1 year in 10 later than-- | May 14 | June 9 | July 20 |
| 2 years in 10 later than-- | May 8 | June 1 | July 11 |
| 5 years in 10 later than-- | Apr. 25 | May 19 | June 24 |
| First freezing temperature in fall: | | | |
| 1 year in 10 earlier than-- | Sept. 15 | Sept. 4 | Aug. 13 |
| 2 years in 10 earlier than-- | Sept. 22 | Sept. 8 | Aug. 20 |
| 5 years in 10 earlier than-- | Oct. 4 | Sept. 16 | Sept. 3 |

Table 3.--Growing Season

(Recorded in the period 1949-92 at Lewiston, 1951-92 at Nezperce, and 1966-92 at Winchester, Idaho)

| Probability | Daily minimum temperature during growing season | | |
|---|---|---|---|
| | Higher than 24 °F | Higher than 28 °F | Higher than 32 °F |
| | Days | Days | Days |
| LEWISTON: | | | |
| 9 years in 10 | 218 | 177 | 148 |
| 8 years in 10 | 230 | 190 | 160 |
| 5 years in 10 | 254 | 214 | 182 |
| 2 years in 10 | 277 | 237 | 204 |
| 1 year in 10 | 289 | 250 | 216 |
| NEZPERCE: | | | |
| 9 years in 10 | 156 | 118 | 89 |
| 8 years in 10 | 164 | 128 | 99 |
| 5 years in 10 | 180 | 148 | 119 |
| 2 years in 10 | 196 | 167 | 138 |
| 1 year in 10 | 205 | 178 | 148 |
| WINCHESTER: | | | |
| 9 years in 10 | 114 | 83 | 31 |
| 8 years in 10 | 124 | 94 | 44 |
| 5 years in 10 | 144 | 113 | 69 |
| 2 years in 10 | 163 | 132 | 94 |
| 1 year in 10 | 173 | 142 | 106 |

Table 4.--Acreage and Proportionate Extent of the Soils

| Map symbol | Soil name | Lewis | Nez Perce | Total-- Area | Total-- Extent |
|---|---|---|---|---|---|
| | | Acres | Acres | Acres | Pct |
| 1 | Agatha loam, 15 to 40 percent slopes | 40 | 325 | 365 | * |
| 2 | Agatha loam, 40 to 75 percent slopes | 260 | 1,790 | 2,050 | 0.2 |
| 3 | Agatha-Rock outcrop complex, 35 to 75 percent slopes | 135 | 1,770 | 1,905 | 0.2 |
| 4 | Ahsahka silt loam, 15 to 40 percent slopes | 300 | 0 | 300 | * |
| 5 | Almota-Athena-Hatwai complex, 45 to 65 percent slopes | 0 | 485 | 485 | 0.1 |
| 6 | Almota-Linville complex, 30 to 50 percent slopes | 20 | 2,170 | 2,190 | 0.3 |
| 7 | Alpowa-Lickskillet complex, 15 to 35 percent slopes | 0 | 2,710 | 2,710 | 0.3 |
| 8 | Alpowa-Lickskillet complex, 35 to 50 percent slopes | 0 | 4,560 | 4,560 | 0.5 |
| 9 | Aquolls, nearly level | 2,385 | 1,435 | 3,820 | 0.4 |
| 10 | Athena silt loam, 20 to 45 percent slopes | 0 | 480 | 480 | 0.1 |
| 11 | Bakeoven-Watama complex, 10 to 35 percent slopes | 0 | 690 | 690 | 0.1 |
| 12 | Boles-Joel complex, 1 to 8 percent slopes | 11,750 | 0 | 11,750 | 1.4 |
| 13 | Bridgewater-Joseph complex, 1 to 3 percent slopes | 585 | 2,735 | 3,320 | 0.4 |
| 14 | Broadax silt loam, 2 to 8 percent slopes | 0 | 5,401 | 5,401 | 0.6 |
| 15 | Broadax silt loam, 8 to 20 percent slopes | 0 | 4,770 | 4,770 | 0.6 |
| 16 | Broadax-Hatwai complex, 1 to 8 percent slopes | 45 | 7,725 | 7,770 | 0.9 |
| 17 | Broadax-Hatwai complex, 8 to 15 percent slopes | 0 | 4,690 | 4,690 | 0.5 |
| 18 | Caldwell-Latah complex, 0 to 3 percent slopes | 0 | 30 | 30 | * |
| 19 | Calouse-Almota complex, 2 to 15 percent slopes | 0 | 1,501 | 1,501 | 0.2 |
| 20 | Calouse-Endicott-Bryden complex, 2 to 6 percent slopes | 0 | 3,160 | 3,160 | 0.4 |
| 21 | Carlinton silt loam, 2 to 10 percent slopes | 3,960 | 0 | 3,960 | 0.5 |
| 22 | Carlinton silt loam, 10 to 20 percent slopes | 565 | 670 | 1,235 | 0.1 |
| 23 | Carlinton-Talmaks complex, 2 to 8 percent slopes | 1,695 | 0 | 1,695 | 0.2 |
| 24 | Cavendish-Taney complex, 8 to 20 percent slopes | 1,240 | 2,500 | 3,740 | 0.4 |
| 25 | Chard silt loam, 2 to 10 percent slopes | 0 | 1,940 | 1,940 | 0.2 |
| 26 | Chard silt loam, 10 to 25 percent slopes | 165 | 5,420 | 5,585 | 0.7 |
| 27 | Chard silt loam, 25 to 45 percent slopes | 0 | 1,395 | 1,395 | 0.2 |
| 28 | Chard complex, 30 to 50 percent slopes | 0 | 1,985 | 1,985 | 0.2 |
| 29 | Chard-Tammany complex, 20 to 45 percent slopes | 0 | 695 | 695 | 0.1 |
| 30 | Chard-Urban land complex, gently sloping | 0 | 1,200 | 1,200 | 0.1 |
| 31 | Cramont silt loam, 2 to 10 percent slopes | 3,280 | 70 | 3,350 | 0.4 |
| 32 | Cramont-Culdesac complex, 2 to 20 percent slopes | 3,770 | 12,540 | 16,310 | 1.9 |
| 33 | Cramont-Seddow complex, 10 to 25 percent slopes | 4,065 | 1,270 | 5,335 | 0.6 |
| 34 | Crowers silt loam, 50 to 80 percent slopes | 0 | 2,930 | 2,930 | 0.3 |
| 35 | Driscoll silt loam, 3 to 12 percent slopes | 1,015 | 520 | 1,535 | 0.2 |
| 36 | Driscoll-Larkin complex, 2 to 10 percent slopes | 1,405 | 5,685 | 7,090 | 0.8 |
| 37 | Endicott-Bryden complex, 2 to 6 percent slopes | 0 | 4,555 | 4,555 | 0.5 |
| 38 | Endicott-Bryden complex, 6 to 12 percent slopes | 0 | 2,385 | 2,385 | 0.3 |
| 39 | Endicott-Oliphant complex, 8 to 20 percent slopes | 0 | 1,120 | 1,120 | 0.1 |
| 40 | Entic Haploxerolls, very steep | 0 | 1,975 | 1,975 | 0.2 |
| 41 | Gwin-Vollmer complex, 5 to 25 percent slopes | 2,650 | 985 | 3,635 | 0.4 |
| 42 | Haploxerolls, rolling | 0 | 230 | 230 | * |
| 43 | Hooverton stony loam, 35 to 75 percent slopes | 6,225 | 7,905 | 14,130 | 1.7 |
| 44 | Immig very stony clay loam, 40 to 80 percent slopes | 1,385 | 2,525 | 3,910 | 0.5 |
| 45 | Jacket silt loam, 3 to 12 percent slopes | 400 | 1,400 | 1,800 | 0.2 |
| 46 | Jacket silt loam, 12 to 30 percent slopes | 1,215 | 3,230 | 4,445 | 0.5 |
| 47 | Jacket-Larkin complex, 20 to 50 percent slopes | 320 | 2,316 | 2,636 | 0.3 |
| 48 | Joel silt loam, 1 to 8 percent slopes | 445 | 0 | 445 | 0.1 |
| 49 | Joel silt loam, 8 to 16 percent slopes | 4,985 | 0 | 4,985 | 0.6 |
| 50 | Joel-Setters complex, 2 to 10 percent slopes | 6,625 | 90 | 6,715 | 0.8 |
| 51 | Joel-Setters complex, 10 to 20 percent slopes | 1,450 | 340 | 1,790 | 0.2 |
| 52 | Johnson loam, 45 to 65 percent slopes | 240 | 70 | 310 | * |
| 53 | Johnson-Dragnot association, 40 to 70 percent slopes | 9,890 | 1,400 | 11,290 | 1.3 |
| 54 | Johnson-Kruse complex, 5 to 40 percent slopes | 5,570 | 0 | 5,570 | 0.7 |
| 55 | Johnson-Labuck complex, 15 to 35 percent slopes | 3,555 | 0 | 3,555 | 0.4 |
| 56 | Joseph-Tombeall complex, 0 to 2 percent slopes, occasionally flooded | 0 | 665 | 665 | 0.1 |
| 57 | Kettenbach-Gwin complex, 35 to 75 percent slopes | 13,903 | 44,268 | 58,171 | 6.8 |
| 58 | Kettenbach-Keuterville association, 35 to 75 percent slopes | 3,852 | 18,425 | 22,277 | 2.6 |
| 59 | Kettenbach-Rock outcrop complex, 45 to 90 percent slopes | 4,380 | 2,155 | 6,535 | 0.8 |
| 60 | Keuterville gravelly silt loam, 10 to 25 percent slopes | 215 | 920 | 1,135 | 0.1 |
| 61 | Keuterville gravelly silt loam, 25 to 50 percent slopes | 130 | 2,700 | 2,830 | 0.3 |

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

| Map symbol | Soil name | Lewis | Nez Perce | Total-- Area | Total-- Extent |
|---|---|---|---|---|---|
| | | Acres | Acres | Acres | Pct |
| 62 | Keuterville-Rock outcrop complex, 35 to 90 percent slopes | 875 | 1,700 | 2,575 | 0.3 |
| 63 | Klickson silt loam, 15 to 35 percent slopes | 715 | 1,005 | 1,720 | 0.2 |
| 64 | Klickson silt loam, 35 to 90 percent slopes | 4,755 | 11,485 | 16,240 | 1.9 |
| 65 | Klickson-Agatha association, 35 to 75 percent slopes | 1,470 | 3,160 | 4,630 | 0.5 |
| 66 | Klickson-Hooverton association, 35 to 90 percent slopes | 16,050 | 42,670 | 58,720 | 6.9 |
| 67 | Klickson-Rock outcrop complex, 45 to 90 percent slopes | 3,390 | 2,380 | 5,770 | 0.7 |
| 68 | Klickson-Uptmor complex, 15 to 45 percent slopes | 945 | 3,750 | 4,695 | 0.5 |
| 69 | Kruse loam, 20 to 35 percent slopes | 0 | 30 | 30 | * |
| 70 | Lapwai-Bridgewater complex, 1 to 4 percent slopes | 380 | 3,420 | 3,800 | 0.4 |
| 71 | Larabee loam, 4 to 20 percent slopes | 435 | 1,300 | 1,735 | 0.2 |
| 72 | Larabee-Gwin association, 35 to 75 percent slopes | 65 | 2,680 | 2,745 | 0.3 |
| 73 | Larabee-Zaza-Seddow complex, 10 to 40 percent slopes | 395 | 5,900 | 6,295 | 0.7 |
| 74 | Larkin-Driscoll complex, 10 to 20 percent slopes | 2,685 | 7,218 | 9,903 | 1.2 |
| 75 | Latahco-Thatuna complex, 0 to 3 percent slopes | 5 | 1,530 | 1,535 | 0.2 |
| 76 | Lauby-Southwick complex, 15 to 35 percent slopes | 2,790 | 0 | 2,790 | 0.3 |
| 77 | Lickskillet-Alpowa-Rock outcrop complex, 50 to 75 percent slopes | 0 | 14,145 | 14,145 | 1.7 |
| 78 | Limekiln very stony silt loam, 40 to 60 percent slopes | 0 | 6,255 | 6,255 | 0.7 |
| 79 | Limekiln-Crowers association, 45 to 80 percent slopes | 1,325 | 11,975 | 13,300 | 1.6 |
| 80 | Linville silt loam, 40 to 70 percent slopes | 400 | 6,525 | 6,925 | 0.8 |
| 81 | Linville-Kettenbach association, 45 to 75 percent slopes | 2,320 | 19,725 | 22,045 | 2.6 |
| 82 | Linville-Waha complex, 25 to 45 percent slopes | 160 | 9,035 | 9,195 | 1.1 |
| 83 | Mallory-Jacket complex, 10 to 40 percent slopes | 535 | 2,135 | 2,670 | 0.3 |
| 84 | Maloney-Zaza complex, 5 to 20 percent slopes | 3,310 | 2,580 | 5,890 | 0.7 |
| 85 | Meland-Jacket complex, 5 to 20 percent slopes | 735 | 3,200 | 3,935 | 0.5 |
| 86 | Meland-Keuterville complex, 10 to 35 percent slopes | 1,460 | 3,670 | 5,130 | 0.6 |
| 87 | Mohler-Nez Perce-Uhlorn complex, 2 to 10 percent slopes | 12,905 | 0 | 12,905 | 1.5 |
| 88 | Naff silt loam, 20 to 30 percent slopes | 0 | 665 | 665 | 0.1 |
| 89 | Naff-Palouse complex, 2 to 8 percent slopes | 0 | 6,527 | 6,527 | 0.8 |
| 90 | Naff-Palouse complex, 8 to 20 percent slopes | 0 | 18,265 | 18,265 | 2.1 |
| 91 | Naff, eroded-Palouse complex, 8 to 20 percent slopes | 0 | 2,945 | 2,945 | 0.3 |
| 92 | Naff-Palouse-Garfield complex, 8 to 20 percent slopes | 0 | 3,195 | 3,195 | 0.4 |
| 93 | Naff-Thatuna complex, 2 to 10 percent slopes | 25 | 2,110 | 2,135 | 0.2 |
| 94 | Naff-Waha complex, 3 to 12 percent slopes | 0 | 2,190 | 2,190 | 0.3 |
| 95 | Naff-Waha complex, 12 to 25 percent slopes | 255 | 4,355 | 4,610 | 0.5 |
| 96 | Naff-Waha complex, 25 to 40 percent slopes | 50 | 2,660 | 2,710 | 0.3 |
| 97 | Nez Perce silty clay loam, 2 to 10 percent slopes | 12,400 | 200 | 12,600 | 1.5 |
| 98 | Nez Perce silty clay loam, dry, 1 to 4 percent slopes | 0 | 1,320 | 1,320 | 0.2 |
| 99 | Nez Perce-Uhlorn complex, 8 to 15 percent slopes | 3,375 | 300 | 3,675 | 0.4 |
| 100 | Oliphant silt loam, 1 to 4 percent slopes | 0 | 5,120 | 5,120 | 0.6 |
| 101 | Oliphant silt loam, 8 to 20 percent slopes | 0 | 1,475 | 1,475 | 0.2 |
| 102 | Oliphant silt loam, gravelly substratum, 2 to 6 percent slopes | 0 | 745 | 745 | 0.1 |
| 103 | Oliphant-Alpowa complex, 20 to 40 percent slopes | 0 | 540 | 540 | 0.1 |
| 104 | Oliphant-Hatwai complex, 1 to 8 percent slopes | 0 | 550 | 550 | 0.1 |
| 105 | Oliphant-Stember complex, 8 to 20 percent slopes | 0 | 1,327 | 1,327 | 0.2 |
| 106 | Palouse-Athena complex, 2 to 8 percent slopes | 0 | 3,040 | 3,040 | 0.4 |
| 107 | Palouse-Athena complex, 8 to 20 percent slopes | 160 | 6,295 | 6,455 | 0.8 |
| 108 | Pits, gravel | 0 | 40 | 40 | * |
| 109 | Redmore silt loam, 1 to 6 percent slopes | 0 | 2,690 | 2,690 | 0.3 |
| 110 | Riverwash-Aquents complex, nearly level | 5 | 900 | 905 | 0.1 |
| 111 | Rock outcrop-Flybow complex, very steep | 215 | 5,160 | 5,375 | 0.6 |
| 112 | Seddow silt loam, 10 to 40 percent slopes | 335 | 1,145 | 1,480 | 0.2 |
| 113 | Setters silt loam, 2 to 8 percent slopes | 1,140 | 820 | 1,960 | 0.2 |
| 114 | Shilla silt loam, 2 to 12 percent slopes | 0 | 2,065 | 2,065 | 0.2 |
| 115 | Shilla-Seddow complex, 5 to 30 percent slopes | 1,770 | 10,015 | 11,785 | 1.4 |
| 116 | Slickpoo silt loam, 5 to 15 percent slopes | 200 | 2,440 | 2,640 | 0.3 |
| 117 | Slickpoo-Broadax complex, 15 to 25 percent slopes | 0 | 5,440 | 5,440 | 0.6 |
| 118 | Southwick silt loam, 3 to 12 percent slopes | 2,315 | 2,565 | 4,880 | 0.6 |
| 119 | Southwick-Bluesprin complex, 10 to 35 percent slopes | 135 | 2,375 | 2,510 | 0.3 |
| 120 | Southwick-Driscoll complex, 3 to 12 percent slopes | 10,740 | 15,575 | 26,315 | 3.1 |
| 121 | Southwick-Driscoll complex, 12 to 25 percent slopes | 3,955 | 3,535 | 7,490 | 0.9 |

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

| Map symbol | Soil name | Lewis | Nez Perce | Total-- Area | Total-- Extent |
|---|---|---|---|---|---|
| | | Acres | Acres | Acres | Pct |
| 122 | Southwick-Larkin complex, 12 to 25 percent slopes | 1,655 | 8,865 | 10,520 | 1.2 |
| 123 | Sweiting-Joel complex, 4 to 20 percent slopes | 2,990 | 0 | 2,990 | 0.3 |
| 124 | Talmaks silt loam, 2 to 8 percent slopes | 2,685 | 0 | 2,685 | 0.3 |
| 125 | Talmaks silt loam, 8 to 20 percent slopes | 5,190 | 0 | 5,190 | 0.6 |
| 126 | Talmaks-Seddow complex, 8 to 20 percent slopes | 1,735 | 0 | 1,735 | 0.2 |
| 127 | Tammany-Chard-Rock outcrop complex, 35 to 65 percent slopes | 0 | 1,605 | 1,605 | 0.2 |
| 128 | Taney silt loam, 3 to 10 percent slopes | 70 | 1,705 | 1,775 | 0.2 |
| 129 | Taney-Joel complex, 10 to 20 percent slopes | 1,785 | 6,050 | 7,835 | 0.9 |
| 130 | Taney-Joel complex, 20 to 40 percent slopes | 730 | 445 | 1,175 | 0.1 |
| 131 | Taney-Setters complex, 3 to 8 percent slopes | 13,945 | 9,055 | 23,000 | 2.7 |
| 132 | Taney-Setters complex, 8 to 20 percent slopes | 1,135 | 2,090 | 3,225 | 0.4 |
| 133 | Thatuna-Naff complex, 10 to 25 percent slopes | 30 | 2,636 | 2,666 | 0.3 |
| 134 | Thatuna-Naff, eroded complex, 10 to 25 percent slopes | 0 | 5,391 | 5,391 | 0.6 |
| 135 | Thatuna-Naff complex, 25 to 40 percent slopes | 0 | 2,260 | 2,260 | 0.3 |
| 136 | Thatuna-Naff-Tilma complex, 10 to 25 percent slopes | 0 | 5,175 | 5,175 | 0.6 |
| 137 | Tombeall silt loam, 0 to 4 percent slopes | 175 | 455 | 630 | 0.1 |
| 138 | Uhlig silt loam, 2 to 8 percent slopes | 515 | 1,265 | 1,780 | 0.2 |
| 139 | Uhlig silt loam, 8 to 20 percent slopes | 50 | 4,460 | 4,510 | 0.5 |
| 140 | Uhlig silt loam, 20 to 35 percent slopes | 65 | 1,490 | 1,555 | 0.2 |
| 141 | Uhlorn silt loam, 8 to 20 percent slopes | 6,810 | 225 | 7,035 | 0.8 |
| 142 | Uhlorn-Nez Perce complex, 2 to 10 percent slopes | 31,910 | 1,460 | 33,370 | 3.9 |
| 143 | Uhlorn-Nez Perce complex, 10 to 20 percent slopes | 7,265 | 1,125 | 8,390 | 1.0 |
| 144 | Uhlorn-Vollmer complex, 8 to 20 percent slopes | 13,680 | 2,115 | 15,795 | 1.8 |
| 145 | Urban land-Wistona complex, nearly level | 0 | 955 | 955 | 0.1 |
| 146 | Uvi silt loam, 35 to 75 percent slopes | 480 | 80 | 560 | 0.1 |
| 147 | Vollmer silt loam, 3 to 10 percent slopes | 825 | 495 | 1,320 | 0.2 |
| 148 | Vollmer silt loam, 10 to 20 percent slopes | 940 | 80 | 1,020 | 0.1 |
| 149 | Watama-Flybow complex, 10 to 35 percent slopes | 1,930 | 20 | 1,950 | 0.2 |
| 150 | Webbridge-Agatha association, 35 to 75 percent slopes | 160 | 6,950 | 7,110 | 0.8 |
| 151 | Westlake-Latahco complex, 0 to 3 percent slopes | 2,550 | 1,070 | 3,620 | 0.4 |
| 152 | Wilkins silt loam, 0 to 5 percent slopes | 5,965 | 3,600 | 9,565 | 1.1 |
| 153 | Wistona very fine sandy loam, 0 to 3 percent slopes | 0 | 1,025 | 1,025 | 0.1 |
| 154 | Zaza-Sweiting complex, 4 to 20 percent slopes | 1,990 | 395 | 2,385 | 0.3 |
| W | Water | 645 | 4,090 | 4,735 | 0.6 |
| | Total | 307,200 | 547,600 | 854,800 | 100.0 |

Table 5.--Yields Per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. Only the soils suited to crops and pasture are listed. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

| Soil name and map symbol | Wheat | Barley | Dry peas | Dry lentils | Grass-legume hay | Pasture |
|---|---|---|---|---|---|---|
| | Bu | Bu | Lbs | Lbs | Tons | AUM* |
| 4---------- Ahsahka | --- | --- | --- | --- | 2 | 5 |
| 10---------- Athena | 65 | 60 | --- | --- | --- | --- |
| 12---------- Boles-Joel | 45 | 51 | --- | --- | 2.5 | 4.4 |
| 13---------- Bridgewater-Joseph | --- | --- | --- | --- | 1.5 | 3.0 |
| 14---------- Broadax | 70 | 60 | 1,800 | --- | --- | --- |
| 15---------- Broadax | 65 | 55 | 1,600 | --- | --- | --- |
| 16---------- Broadax-Hatwai | 58 | 48 | 1,377 | --- | --- | --- |
| 17---------- Broadax-Hatwai | 54 | 44 | 1,272 | --- | --- | --- |
| 18---------- Caldwell-Latah | --- | --- | --- | --- | 3.2 | 9 |
| 19---------- Calouse-Almota | 57 | 52 | 1,665 | --- | --- | --- |
| 20---------- Calouse-Endicott-Bryden | 58 | 49 | 1,586 | --- | --- | --- |
| 21---------- Carlinton | 50 | 50 | 1,200 | --- | 2.0 | 3.5 |
| 22---------- Carlinton | 45 | 45 | 1,200 | --- | 2.0 | 3.5 |
| 23---------- Carlinton-Talmaks | 37 | 37 | --- | --- | 2.3 | 3.8 |
| 24---------- Cavendish-Taney | 58 | 45 | 1,418 | --- | 2.1 | 4.0 |
| 25---------- Chard | 55 | 50 | --- | --- | --- | --- |
| 26---------- Chard | 45 | 45 | --- | --- | --- | --- |
| 27---------- Chard | 35 | 40 | --- | --- | --- | --- |

See footnote at end of table.

Table 5.--Yields Per Acre of Crops and Pasture--Continued

| Soil name and map symbol | Wheat | Barley | Dry peas | Dry lentils | Grass-legume hay | Pasture |
|---|---|---|---|---|---|---|
| | Bu | Bu | Lbs | Lbs | Tons | AUM* |
| 28 Chard-Chard, moist | 35 | 40 | --- | --- | --- | --- |
| 29 Chard-Tammany | 37 | 43 | --- | --- | --- | --- |
| 35 Driscoll | 65 | 50 | 1,600 | 900 | --- | --- |
| 36 Driscoll-Larkin | 67 | 51 | 1,694 | 1,041 | --- | --- |
| 37 Endicott-Bryden | 47 | 40 | 1,320 | --- | --- | --- |
| 38 Endicott-Bryden | 41 | 39 | 1,272 | --- | --- | --- |
| 39 Endicott-Oliphant | 48 | 48 | 1,518 | --- | --- | --- |
| 45 Jacket | 65 | 50 | 1,800 | 1,200 | 2.5 | 4.0 |
| 46 Jacket | 55 | 45 | 1,600 | 1,200 | 2.0 | 3.5 |
| 47 Jacket-Larkin | 43 | 38 | --- | --- | --- | --- |
| 48, 49 Joel | 45 | 50 | --- | --- | 2.5 | 4.0 |
| 50 Joel-Setters | 59 | 54 | 1,504 | 1,000 | 2.9 | 3.6 |
| 51 Joel-Setters | 54 | 49 | 1,260 | 965 | 2.5 | 3.0 |
| 54 Johnson-Kruse | 46 | 37 | --- | --- | 2.0 | 3.5 |
| 55 Johnson-Labuck | 46 | 38 | --- | --- | 2.0 | 3.5 |
| 56 Joseph-Tombeall | --- | --- | --- | --- | 1.9 | 3.4 |
| 60 Keuterville | 45 | 40 | --- | --- | 2.0 | 5.0 |
| 63 Klickson | --- | --- | --- | --- | 2.0 | 3.5 |
| 68 Klickson-Uptmor | --- | --- | --- | --- | 2.0 | 3.5 |
| 69 Kruse | 40 | 35 | --- | --- | 2.0 | 3.5 |

See footnote at end of table.

Table 5.--Yields Per Acre of Crops and Pasture--Continued

| Soil name and map symbol | Wheat | Barley | Dry peas | Dry lentils | Grass-legume hay | Pasture |
|---|---|---|---|---|---|---|
| | Bu | Bu | Lbs | Lbs | Tons | AUM* |
| 70 Lapwai-Bridgewater | 65 | 56 | --- | --- | 2.9 | 4.8 |
| 71 Larabee | --- | --- | --- | --- | 2.0 | 3.5 |
| 74 Larkin-Driscoll | 60 | 42 | 1,559 | 1,077 | --- | --- |
| 75 Latahco-Thatuna | 74 | 58 | 1,735 | 1,170 | 2.5 | 4.0 |
| 76 Lauby-Southwick | 55 | 45 | --- | --- | --- | --- |
| 82 Linville-Waha | 43 | 38 | --- | --- | --- | --- |
| 83 Mallory-Jacket | --- | --- | --- | --- | 2.0 | 3.5 |
| 85 Meland-Jacket | 52 | 45 | 1,405 | --- | 2.2 | 4 |
| 86 Meland-Keuterville | 45 | 40 | --- | --- | --- | --- |
| 87 Mohler-Nez Perce-Uhlorn | 78 | 65 | 1,716 | 1,089 | --- | --- |
| 88 Naff | 65 | 55 | --- | --- | --- | --- |
| 89 Naff-Palouse | 76 | 67 | 1,742 | 1,084 | --- | --- |
| 90 Naff-Palouse | 75 | 67 | 1,744 | 1,088 | --- | --- |
| 91 Naff-Palouse | 61 | 53 | 1,352 | 808 | --- | --- |
| 92 Naff-Palouse-Garfield | 55 | 46 | 1,142 | 685 | --- | --- |
| 93 Naff-Thatuna | 77 | 67 | 1,739 | 1,117 | --- | --- |
| 94 Naff-Waha | 64 | 53 | 1,606 | 906 | --- | --- |
| 95 Naff-Waha | 65 | 55 | 1,571 | 800 | --- | --- |
| 96 Naff-Waha | 54 | 49 | --- | --- | --- | --- |
| 97 Nez Perce | 75 | 65 | 1,600 | 900 | --- | --- |

See footnote at end of table.

Table 5.--Yields Per Acre of Crops and Pasture--Continued

| Soil name and map symbol | Wheat | Barley | Dry peas | Dry lentils | Grass-legume hay | Pasture |
|---|---|---|---|---|---|---|
| | Bu | Bu | Lbs | Lbs | Tons | AUM* |
| 98 Nez Perce | 60 | 50 | 1,400 | --- | --- | --- |
| 99 Nez Perce-Uhlorn | 72 | 62 | 1,529 | 987 | --- | --- |
| 100 Oliphant | 60 | 60 | 1,600 | --- | --- | --- |
| 101 Oliphant | 55 | 55 | 1,600 | --- | --- | --- |
| 102 Oliphant, gravelly substratum | 60 | 60 | 1,600 | --- | --- | --- |
| 103 Oliphant-Alpowa | 50 | 50 | --- | --- | --- | --- |
| 104 Oliphant-Hatwai | 56 | 53 | 1,404 | --- | --- | --- |
| 105 Oliphant-Stember | 50 | 46 | --- | --- | --- | --- |
| 106 Palouse-Athena | 76 | 70 | 1,800 | 1,134 | --- | --- |
| 107 Palouse-Athena | 75 | 68 | 1,800 | 1,068 | --- | --- |
| 109 Redmore | 55 | 50 | 1,600 | --- | --- | --- |
| 113 Setters | 55 | 50 | 1,200 | 1,000 | 4.0 | 2.5 |
| 116 Slickpoo | 45 | 45 | 1,400 | --- | --- | --- |
| 117 Slickpoo-Broadax | 49 | 43 | 1,341 | --- | --- | --- |
| 118 Southwick | 70 | 60 | 1,700 | 1,000 | --- | --- |
| 119 Southwick-Bluesprin | 54 | 48 | 1,436 | 736 | --- | --- |
| 120 Southwick-Driscoll | 69 | 57 | 1,665 | 965 | --- | --- |
| 121 Southwick-Driscoll | 63 | 50 | 1,518 | 859 | --- | --- |
| 122 Southwick-Larkin | 62 | 48 | 1,600 | 1,041 | --- | --- |

See footnote at end of table.

Table 5.--Yields Per Acre of Crops and Pasture--Continued

| Soil name and map symbol | Wheat | Barley | Dry peas | Dry lentils | Grass-legume hay | Pasture |
|---|---|---|---|---|---|---|
| | Bu | Bu | Lbs | Lbs | Tons | AUM* |
| 123 Sweiting-Joel | 42 | 43 | --- | --- | 2.1 | 3.6 |
| 124 Talmaks | 35 | 35 | --- | --- | 2.5 | 4.0 |
| 125 Talmaks | 35 | 35 | --- | --- | 2.0 | 3.5 |
| 128 Taney | 60 | 50 | 1,400 | 1,000 | 2.5 | 4.0 |
| 129 Taney-Joel | 55 | 48 | 1,341 | 1,000 | 2.0 | 3.8 |
| 130 Taney-Joel | --- | --- | --- | --- | 2.0 | 3.2 |
| 131 Taney-Setters | 58 | 51 | 1,318 | 1,000 | 3.1 | 3.4 |
| 132 Taney-Setters | 54 | 45 | 1,195 | 965 | 2.5 | 3.3 |
| 133 Thatuna-Naff | 73 | 64 | 1,667 | 867 | --- | --- |
| 134 Thatuna-Naff | 64 | 54 | 1,392 | 724 | --- | --- |
| 135 Thatuna-Naff | 65 | 55 | --- | --- | --- | --- |
| 136 Thatuna-Naff-Tilma | 72 | 61 | 1,694 | 850 | --- | --- |
| 137 Tombeall | 65 | 55 | --- | --- | 2.5 | 4.0 |
| 138 Uhlig | 75 | 65 | 1,700 | --- | --- | --- |
| 139 Uhlig | 70 | 60 | 1,500 | --- | --- | --- |
| 140 Uhlig | 65 | 55 | --- | --- | --- | --- |
| 141 Uhlorn | 75 | 65 | 1,600 | 1,200 | --- | --- |
| 142 Uhlorn-Nez Perce | 79 | 68 | 1,734 | 1,101 | --- | --- |
| 143 Uhlorn-Nez Perce | 74 | 63 | 1,565 | 1,095 | --- | --- |
| 144 Uhlorn-Vollmer | 62 | 54 | 1,436 | 954 | --- | --- |

See footnote at end of table.

Table 5.--Yields Per Acre of Crops and Pasture--Continued

| Soil name and map symbol | Wheat | Barley | Dry peas | Dry lentils | Grass-legume hay | Pasture |
|---|---|---|---|---|---|---|
| | Bu | Bu | Lbs | Lbs | Tons | AUM* |
| 147, 148 Vollmer | 45 | 40 | 1,200 | 600 | 2.0 | 3.5 |
| 151 Westlake-Latahco | 65 | 50 | --- | --- | 2.5 | 4.0 |
| 152 Wilkins | 45 | 45 | 1,000 | 800 | 2.5 | 4.0 |

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Table 6.--Rangeland Productivity and Characteristic Plant Communities

(Only the soils that support rangeland vegetation suitable for grazing are listed)

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 5: | | | | | |
| Almota | Steep N Slope Loamy 15-18 Feid/forbs. | Favorable | 1,500 | Idaho fescue | 40 |
| | | Normal | 1,300 | Bluebunch wheatgrass | 10 |
| | | Unfavorable | 1,100 | Arrowleaf balsamroot | 10 |
| | | | | Geum | 10 |
| | | | | Prairie junegrass | 5 |
| | | | | Lupine | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Common snowberry | 5 |
| | | | | Indian paintbrush | 5 |
| Athena | Steep N Slope Loamy 15-18 Feid/forbs. | Favorable | 1,500 | Idaho fescue | 40 |
| | | Normal | 1,300 | Bluebunch wheatgrass | 10 |
| | | Unfavorable | 1,100 | Arrowleaf balsamroot | 10 |
| | | | | Threeflower avens | 10 |
| | | | | Prairie junegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Common snowberry | 5 |
| | | | | Indian paintbrush | 5 |
| | | | | Northwest cinquefoil | 5 |
| Hatwai | Steep S Slope Loamy 16-22 Feid-Agsp. | Favorable | 1,500 | Bluebunch wheatgrass | 35 |
| | | Normal | 1,300 | Idaho fescue | 20 |
| | | Unfavorable | 1,100 | Prairie junegrass | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | White stoneseed | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Sticky geranium | 5 |
| | | | | Tapertip hawksbeard | 5 |
| 6: | | | | | |
| Almota | Steep N Slope Loamy 15-18 Feid/forbs. | Favorable | 1,500 | Idaho fescue | 40 |
| | | Normal | 1,300 | Bluebunch wheatgrass | 10 |
| | | Unfavorable | 1,100 | Arrowleaf balsamroot | 10 |
| | | | | Geum | 10 |
| | | | | Prairie junegrass | 5 |
| | | | | Lupine | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Common snowberry | 5 |
| | | | | Indian paintbrush | 5 |
| Linville | Steep N Slope Loamy 15-18 Feid/forbs. | Favorable | 1,500 | Idaho fescue | 40 |
| | | Normal | 1,300 | Bluebunch wheatgrass | 10 |
| | | Unfavorable | 1,100 | Arrowleaf balsamroot | 10 |
| | | | | Threeflower avens | 10 |
| | | | | Prairie junegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Common snowberry | 5 |
| | | | | Indian paintbrush | 5 |

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 7, 8: | | | | | |
| Alpowa | South Slope Stony 12-15 Agsp-Pose. | Favorable | 1,000 | Bluebunch wheatgrass | 60 |
| | | Normal | 800 | Sandberg bluegrass | 5 |
| | | Unfavorable | 600 | Common yarrow | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Milkvetch | 5 |
| | | | | Broom snakeweed | 5 |
| | | | | Rabbitbrush | 5 |
| Lickskillet | Shallow South Slope 12-15 Agsp/oppo. | Favorable | 800 | Bluebunch wheatgrass | 50 |
| | | Normal | 550 | Broom snakeweed | 5 |
| | | Unfavorable | 400 | Sandberg bluegrass | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Bigseed biscuitroot | 5 |
| | | | | Bent milkvetch | 5 |
| | | | | Wyeth eriogonum | 5 |
| | | | | Varileaf phacelia | 5 |
| | | | | Plains pricklypear | 5 |
| | | | | Rabbitbrush | 5 |
| 9 Aquolls | Riparian Bottomland Deca5-Carex. | Favorable | 5,000 | Tufted hairgrass | 15 |
| | | Normal | 3,800 | Sedge | 15 |
| | | Unfavorable | 2,500 | Rush | 5 |
| | | | | Bulrush | 5 |
| | | | | Slender wheatgrass | 5 |
| | | | | Trisetum | 5 |
| | | | | Cinquefoil | 5 |
| | | | | Clover | 5 |
| | | | | Common yarrow | 5 |
| | | | | Threeflower avens | 5 |
| | | | | Common snowberry | 5 |
| | | | | Willow | 5 |
| | | | | Redosier dogwood | 5 |
| | | | | Black hawthorn | 5 |
| 11: | | | | | |
| Bakeoven | Very Shallow Stony 12-15 Arri2/pose. | Favorable | 240 | Sandberg bluegrass | 30 |
| | | Normal | 180 | Stiff sagebrush | 30 |
| | | Unfavorable | 120 | Bluebunch wheatgrass | 10 |
| | | | | Eriogonum | 5 |
| | | | | Phlox | 5 |
| | | | | Common yarrow | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Bigseed biscuitroot | 5 |
| Watama | Loamy 16-22 Feid-Agsp | Favorable | 1,800 | Idaho fescue | 45 |
| | | Normal | 1,500 | Bluebunch wheatgrass | 20 |
| | | Unfavorable | 1,200 | Prairie junegrass | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Threeflower avens | 5 |
| | | | | Common yarrow | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | Indian paintbrush | 5 |

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 13: | | | | | |
| Bridgewater | Stony Bottomland Syal/agsp | Favorable | 1,000 | Bluebunch wheatgrass | 15 |
| | | Normal | 900 | Wildrye | 10 |
| | | Unfavorable | 800 | Sedge | 10 |
| | | | | Common snowberry | 10 |
| | | | | Woods rose | 10 |
| | | | | Slender wheatgrass | 5 |
| | | | | Cinquefoil | 5 |
| | | | | Common yarrow | 5 |
| | | | | Lupine | 5 |
| | | | | Redosier dogwood | 5 |
| | | | | Black hawthorn | 5 |
| Joseph | Stony Riparian Alnus/elymu | Favorable | 900 | Bluebunch wheatgrass | 15 |
| | | Normal | 800 | Slender wheatgrass | 10 |
| | | Unfavorable | 700 | Wildrye | 10 |
| | | | | Alder | 10 |
| | | | | Common snowberry | 10 |
| | | | | Woods rose | 10 |
| | | | | Sedge | 5 |
| | | | | Cinquefoil | 5 |
| | | | | American licorice | 5 |
| | | | | Black hawthorn | 5 |
| | | | | Willow | 5 |
| 25, 26, 27 Chard | Loamy 12-15 Agsp-Pose | Favorable | 1,200 | Bluebunch wheatgrass | 50 |
| | | Normal | 1,000 | Arrowleaf balsamroot | 10 |
| | | Unfavorable | 800 | Sandberg bluegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Common yarrow | 5 |
| | | | | Penstemon | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Smooth sumac | 5 |
| 28: | | | | | |
| Chard | Loamy 12-15 Agsp-Pose | Favorable | 1,200 | Bluebunch wheatgrass | 50 |
| | | Normal | 1,000 | Arrowleaf balsamroot | 10 |
| | | Unfavorable | 800 | Sandberg bluegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Common yarrow | 5 |
| | | | | Penstemon | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Smooth sumac | 5 |
| Chard, moist | North Slope Loamy 12-15 Feid-Agsp. | Favorable | 1,500 | Idaho fescue | 50 |
| | | Normal | 1,300 | Bluebunch wheatgrass | 15 |
| | | Unfavorable | 1,100 | Arrowleaf balsamroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Common yarrow | 5 |
| | | | | Prairie junegrass | 5 |
| | | | | Rabbitbrush | 5 |

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 29: | | | | | |
| Chard | Loamy 12-15 Agsp-Pose | Favorable | 1,200 | Bluebunch wheatgrass | 50 |
| | | Normal | 1,000 | Arrowleaf balsamroot | 10 |
| | | Unfavorable | 800 | Sandberg bluegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Common yarrow | 5 |
| | | | | Penstemon | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Smooth sumac | 5 |
| Tammany | Loamy 12-15 Agsp-Pose | Favorable | 1,200 | Bluebunch wheatgrass | 50 |
| | | Normal | 1,000 | Arrowleaf balsamroot | 10 |
| | | Unfavorable | 800 | Sandberg bluegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Penstemon | 5 |
| | | | | Common yarrow | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Smooth sumac | 5 |
| 34 Crowers | North Slope Loamy 12-15 Feid-Agsp. | Favorable | 1,300 | Idaho fescue | 40 |
| | | Normal | 1,150 | Bluebunch wheatgrass | 25 |
| | | Unfavorable | 1,000 | Prairie junegrass | 10 |
| | | | | Silky lupine | 5 |
| | | | | White hawkweed | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Low fleabane | 5 |
| 40 Entic Haploxerolls | Shallow South Slope 12-15 Agsp/oppo. | Favorable | 800 | Bluebunch wheatgrass | 50 |
| | | Normal | 550 | Tall green rabbitbrush | 5 |
| | | Unfavorable | 400 | Bent milkvetch | 5 |
| | | | | Wyeth eriogonum | 5 |
| | | | | Broom snakeweed | 5 |
| | | | | Sandberg bluegrass | 5 |
| | | | | Bigseed biscuitroot | 5 |
| | | | | Varileaf phacelia | 5 |
| | | | | Plains pricklypear | 5 |
| 41: | | | | | |
| Gwin | Shallow S Slope Stony 16-22 Agsp-Pose. | Favorable | 850 | Bluebunch wheatgrass | 40 |
| | | Normal | 650 | Sandberg bluegrass | 15 |
| | | Unfavorable | 400 | Arrowleaf balsamroot | 10 |
| | | | | Cous biscuitroot | 5 |
| | | | | Wyeth eriogonum | 5 |
| | | | | Narrowleaf skullcap | 5 |
| | | | | Silky lupine | 5 |
| | | | | Bent milkvetch | 5 |
| | | | | Penstemon | 5 |
| Vollmer | Loamy 16-22 Feid-Agsp | Favorable | 1,800 | Idaho fescue | 45 |
| | | Normal | 1,500 | Bluebunch wheatgrass | 20 |
| | | Unfavorable | 1,200 | Prairie junegrass | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | Threeflower avens | 5 |
| | | | | Indian paintbrush | 5 |
| | | | | Common yarrow | 5 |
| | | | | Northwest cinquefoil | 5 |

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 42---------- Haploxerolls | Loamy 12-15 Agsp-Pose--------- | Favorable | 1,200 | Bluebunch wheatgrass---------- | 50 |
| | | Normal | 1,000 | Arrowleaf balsamroot---------- | 10 |
| | | Unfavorable | 800 | Sandberg bluegrass---------- | 5 |
| | | | | Silky lupine---------- | 5 |
| | | | | Longleaf phlox---------- | 5 |
| | | | | Penstemon---------- | 5 |
| | | | | Common yarrow---------- | 5 |
| | | | | Nineleaf biscuitroot---------- | 5 |
| | | | | Smooth sumac---------- | 5 |
| 43---------- Hooverton | S Slope Stony 22+ Agsp-Feid--- | Favorable | 1,200 | Bluebunch wheatgrass---------- | 40 |
| | | Normal | 1,000 | Idaho fescue---------- | 10 |
| | | Unfavorable | 700 | Silky lupine---------- | 10 |
| | | | | Sandberg bluegrass---------- | 5 |
| | | | | Longleaf phlox---------- | 5 |
| | | | | Arrowleaf balsamroot---------- | 5 |
| | | | | Common snowberry---------- | 5 |
| | | | | Woods rose---------- | 5 |
| | | | | Mulesear wyethia---------- | 5 |
| | | | | Wormleaf stonecrop---------- | 5 |
| 44---------- Immig | S Slope Stony 16-22 Agsp/basa3 | Favorable | 1,200 | Bluebunch wheatgrass---------- | 50 |
| | | Normal | 1,000 | Arrowleaf balsamroot---------- | 15 |
| | | Unfavorable | 800 | Sandberg bluegrass---------- | 5 |
| | | | | Milkvetch---------- | 5 |
| | | | | Nineleaf biscuitroot---------- | 5 |
| | | | | Silky lupine---------- | 5 |
| | | | | Penstemon---------- | 5 |
| 46---------- Jacket | N Slope Loamy 22+ Syal/feid--- | Favorable | 1,500 | Bluebunch wheatgrass---------- | 20 |
| | | Normal | 1,300 | Idaho fescue---------- | 10 |
| | | Unfavorable | 1,100 | Big bluegrass---------- | 10 |
| | | | | Nineleaf biscuitroot---------- | 10 |
| | | | | Silky lupine---------- | 10 |
| | | | | Penstemon---------- | 10 |
| | | | | Common snowberry---------- | 10 |
| | | | | Woods rose---------- | 10 |
| | | | | Black hawthorn---------- | 5 |
| 53: | | | | | |
| Johnson. | | | | | |
| Dragnot. | | | | | |
| Dragnot, dry------ | S Slope Loamy 22+ Syal/agsp--- | Favorable | 1,300 | Bluebunch wheatgrass---------- | 35 |
| | | Normal | 1,100 | Pine reedgrass---------- | 10 |
| | | Unfavorable | 900 | Common snowberry---------- | 10 |
| | | | | Elk sedge---------- | 5 |
| | | | | Woodland strawberry---------- | 5 |
| | | | | Arrowleaf balsamroot---------- | 5 |
| | | | | Threeflower avens---------- | 5 |
| | | | | Silky lupine---------- | 5 |
| | | | | Sticky geranium---------- | 5 |
| | | | | Northwest cinquefoil---------- | 5 |
| | | | | Woods rose---------- | 5 |

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 56: | | | | | |
| Joseph | Stony Riparian Pobat/elymu | Favorable | 900 | Bluebunch wheatgrass | 15 |
| | | Normal | 800 | Slender wheatgrass | 10 |
| | | Unfavorable | 700 | Wildrye | 10 |
| | | | | Black cottonwood | 10 |
| | | | | Common snowberry | 10 |
| | | | | Woods rose | 10 |
| | | | | Sedge | 5 |
| | | | | Cinquefoil | 5 |
| | | | | Redosier dogwood | 5 |
| | | | | Black hawthorn | 5 |
| | | | | Willow | 5 |
| Tombeall | Riparian Bottomland Deca5-Carex. | Favorable | 5,000 | Tufted hairgrass | 15 |
| | | Normal | 3,800 | Sedge | 15 |
| | | Unfavorable | 2,500 | Rush | 5 |
| | | | | Bulrush | 5 |
| | | | | Slender wheatgrass | 5 |
| | | | | Trisetum | 5 |
| | | | | Cinquefoil | 5 |
| | | | | Clover | 5 |
| | | | | Common yarrow | 5 |
| | | | | Threeflower avens | 5 |
| | | | | Common snowberry | 5 |
| | | | | Willow | 5 |
| | | | | Redosier dogwood | 5 |
| | | | | Black hawthorn | 5 |
| 57: | | | | | |
| Kettenbach | S Slope Stony 16-22 Agsp/basa3 | Favorable | 1,000 | Bluebunch wheatgrass | 55 |
| | | Normal | 800 | Arrowleaf balsamroot | 15 |
| | | Unfavorable | 600 | Sandberg bluegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Narrowleaf skullcap | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Palouse loco milkvetch | 5 |
| Kettenbach, moist | N Slope Stony 15-18 Feid-Agsp | Favorable | 1,100 | Bluebunch wheatgrass | 25 |
| | | Normal | 900 | Idaho fescue | 20 |
| | | Unfavorable | 700 | Arrowleaf balsamroot | 15 |
| | | | | Fernleaf biscuitroot | 10 |
| | | | | Sandberg bluegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Narrowleaf skullcap | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Shinyleaf spirea | 5 |
| Gwin | Shallow S Slope Stony 16-22 Agsp-Pose. | Favorable | 850 | Bluebunch wheatgrass | 40 |
| | | Normal | 650 | Sandberg bluegrass | 15 |
| | | Unfavorable | 400 | Arrowleaf balsamroot | 10 |
| | | | | Cous biscuitroot | 5 |
| | | | | Wyeth eriogonum | 5 |
| | | | | Narrowleaf skullcap | 5 |
| | | | | Silky lupine | 5 |
| | | | | Bent milkvetch | 5 |
| | | | | Penstemon | 5 |

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 58: | | | | | |
| Kettenbach | S Slope Stony 16-22 Agsp/basa3 | Favorable | 1,000 | Bluebunch wheatgrass | 55 |
| | | Normal | 800 | Arrowleaf balsamroot | 15 |
| | | Unfavorable | 600 | Sandberg bluegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Narrowleaf skullcap | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Palouse loco milkvetch | 5 |
| Keuterville. | | | | | |
| 59: | | | | | |
| Kettenbach | S Slope Stony 16-22 Agsp/basa3 | Favorable | 1,000 | Bluebunch wheatgrass | 55 |
| | | Normal | 800 | Arrowleaf balsamroot | 15 |
| | | Unfavorable | 600 | Sandberg bluegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Narrowleaf skullcap | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Palouse loco milkvetch | 5 |
| Rock outcrop. | | | | | |
| 66: | | | | | |
| Klickson. | | | | | |
| Hooverton | S Slope Stony 22+ Agsp-Feid | Favorable | 1,200 | Bluebunch wheatgrass | 40 |
| | | Normal | 1,000 | Idaho fescue | 10 |
| | | Unfavorable | 700 | Silky lupine | 10 |
| | | | | Sandberg bluegrass | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Common snowberry | 5 |
| | | | | Woods rose | 5 |
| | | | | Mulesear wyethia | 5 |
| | | | | Wormleaf stonecrop | 5 |
| 72: | | | | | |
| Larabee. | | | | | |
| Gwin | Shallow S Slope Stony 16-22 Agsp-Pose. | Favorable | 850 | Bluebunch wheatgrass | 40 |
| | | Normal | 650 | Sandberg bluegrass | 15 |
| | | Unfavorable | 400 | Arrowleaf balsamroot | 10 |
| | | | | Cous biscuitroot | 5 |
| | | | | Wyeth eriogonum | 5 |
| | | | | Narrowleaf skullcap | 5 |
| | | | | Silky lupine | 5 |
| | | | | Bent milkvetch | 5 |
| | | | | Penstemon | 5 |
| 73: | | | | | |
| Larabee. | | | | | |

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 73: | | | | | |
| Zaza | Shallow Stony 22+ Pose/forbs | Favorable | 700 | Wormleaf stonecrop | 20 |
| | | Normal | 550 | Phlox | 20 |
| | | Unfavorable | 350 | Sandberg bluegrass | 10 |
| | | | | Penstemon | 10 |
| | | | | Wyeth eriogonum | 10 |
| | | | | Bluebunch wheatgrass | 5 |
| | | | | Biscuitroot | 5 |
| | | | | Fleabane | 5 |
| | | | | Stiff sagebrush | 5 |
| | | | | Rabbitbrush | 5 |
| Seddow. | | | | | |
| 77: | | | | | |
| Lickskillet | Shallow South Slope 12-15 Agsp/oppo. | Favorable | 800 | Bluebunch wheatgrass | 50 |
| | | Normal | 550 | Broom snakeweed | 5 |
| | | Unfavorable | 400 | Sandberg bluegrass | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Bigseed biscuitroot | 5 |
| | | | | Bent milkvetch | 5 |
| | | | | Wyeth eriogonum | 5 |
| | | | | Varileaf phacelia | 5 |
| | | | | Plains pricklypear | 5 |
| | | | | Rabbitbrush | 5 |
| Alpowa | South Slope Stony 12-15 Agsp-Pose. | Favorable | 1,000 | Bluebunch wheatgrass | 60 |
| | | Normal | 800 | Sandberg bluegrass | 5 |
| | | Unfavorable | 600 | Common yarrow | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Milkvetch | 5 |
| | | | | Broom snakeweed | 5 |
| | | | | Rabbitbrush | 5 |
| Rock outcrop. | | | | | |
| 78 Limekiln | Shallow South Slope 12-15 Agsp/oppo. | Favorable | 800 | Bluebunch wheatgrass | 50 |
| | | Normal | 550 | Broom snakeweed | 5 |
| | | Unfavorable | 400 | Sandberg bluegrass | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Bigseed biscuitroot | 5 |
| | | | | Milkvetch | 5 |
| | | | | Wyeth eriogonum | 5 |
| | | | | Phacelia | 5 |
| | | | | Plains pricklypear | 5 |
| | | | | Rabbitbrush | 5 |
| 79: | | | | | |
| Limekiln | Shallow South Slope 12-15 Agsp/oppo. | Favorable | 800 | Bluebunch wheatgrass | 50 |
| | | Normal | 550 | Broom snakeweed | 5 |
| | | Unfavorable | 400 | Sandberg bluegrass | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Bigseed biscuitroot | 5 |
| | | | | Milkvetch | 5 |
| | | | | Wyeth eriogonum | 5 |
| | | | | Phacelia | 5 |
| | | | | Plains pricklypear | 5 |
| | | | | Rabbitbrush | 5 |

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 79: | | | | | |
| Crowers | North Slope Loamy 12-15 Feid-Agsp. | Favorable | 1,300 | Idaho fescue | 40 |
| | | Normal | 1,150 | Bluebunch wheatgrass | 25 |
| | | Unfavorable | 1,000 | Prairie junegrass | 10 |
| | | | | Silky lupine | 5 |
| | | | | White hawkweed | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Low fleabane | 5 |
| 80 Linville | Steep N Slope Loamy 15-18 Feid/forbs. | Favorable | 1,500 | Idaho fescue | 40 |
| | | Normal | 1,300 | Bluebunch wheatgrass | 10 |
| | | Unfavorable | 1,100 | Arrowleaf balsamroot | 10 |
| | | | | Threeflower avens | 10 |
| | | | | Prairie junegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Common snowberry | 5 |
| | | | | Indian paintbrush | 5 |
| 81: | | | | | |
| Linville | Steep N Slope Loamy 15-18 Feid/forbs. | Favorable | 1,500 | Idaho fescue | 40 |
| | | Normal | 1,300 | Bluebunch wheatgrass | 10 |
| | | Unfavorable | 1,100 | Arrowleaf balsamroot | 10 |
| | | | | Threeflower avens | 10 |
| | | | | Prairie junegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Common snowberry | 5 |
| | | | | Indian paintbrush | 5 |
| Kettenbach | S Slope Stony 16-22 Agsp/basa3 | Favorable | 1,000 | Bluebunch wheatgrass | 55 |
| | | Normal | 800 | Arrowleaf balsamroot | 15 |
| | | Unfavorable | 600 | Sandberg bluegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Narrowleaf skullcap | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Palouse loco milkvetch | 5 |
| 82: | | | | | |
| Linville | Steep S Slope Loamy 16-22 Feid-Agsp. | Favorable | 1,500 | Bluebunch wheatgrass | 35 |
| | | Normal | 1,300 | Idaho fescue | 20 |
| | | Unfavorable | 1,100 | Arrowleaf balsamroot | 5 |
| | | | | Prairie junegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | White stoneseed | 5 |
| | | | | Sticky geranium | 5 |
| | | | | Tapertip hawksbeard | 5 |
| Waha | Steep S Slope Loamy 16-22 Feid-Agsp. | Favorable | 1,500 | Bluebunch wheatgrass | 35 |
| | | Normal | 1,300 | Idaho fescue | 20 |
| | | Unfavorable | 1,100 | Prairie junegrass | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | White stoneseed | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Sticky geranium | 5 |
| | | | | Tapertip hawksbeard | 5 |

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 83: | | | | | |
| Mallory | Stony Loam 22+ Feid/forbs | Favorable | 1,400 | Idaho fescue | 30 |
| | | Normal | 1,200 | Bluebunch wheatgrass | 20 |
| | | Unfavorable | 1,000 | Prairie junegrass | 5 |
| | | | | Woods rose | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Palouse loco milkvetch | 5 |
| | | | | Fleabane | 5 |
| | | | | Silky lupine | 5 |
| | | | | Indian paintbrush | 5 |
| | | | | Threeflower avens | 5 |
| | | | | Red besseya | 5 |
| Jacket | N Slope Loamy 22+ Syal/feid | Favorable | 1,500 | Bluebunch wheatgrass | 20 |
| | | Normal | 1,300 | Idaho fescue | 10 |
| | | Unfavorable | 1,100 | Big bluegrass | 10 |
| | | | | Nineleaf biscuitroot | 10 |
| | | | | Silky lupine | 10 |
| | | | | Penstemon | 10 |
| | | | | Common snowberry | 10 |
| | | | | Woods rose | 10 |
| | | | | Black hawthorn | 5 |
| 84: | | | | | |
| Maloney. | | | | | |
| Zaza | Shallow Stony 22+ Pose/forbs | Favorable | 700 | Wormleaf stonecrop | 20 |
| | | Normal | 550 | Phlox | 20 |
| | | Unfavorable | 350 | Sandberg bluegrass | 10 |
| | | | | Penstemon | 10 |
| | | | | Wyeth eriogonum | 10 |
| | | | | Bluebunch wheatgrass | 5 |
| | | | | Biscuitroot | 5 |
| | | | | Fleabane | 5 |
| | | | | Stiff sagebrush | 5 |
| | | | | Rabbitbrush | 5 |
| 85: | | | | | |
| Meland | Loamy 16-22 Feid-Agsp | Favorable | 1,800 | Idaho fescue | 45 |
| | | Normal | 1,500 | Bluebunch wheatgrass | 20 |
| | | Unfavorable | 1,200 | Arrowleaf balsamroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | Threeflower avens | 5 |
| | | | | Indian paintbrush | 5 |
| | | | | Common yarrow | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Prairie junegrass | 5 |
| Jacket. | | | | | |
| 86: | | | | | |
| Meland | Loamy 16-22 Feid-Agsp | Favorable | 1,800 | Idaho fescue | 45 |
| | | Normal | 1,500 | Bluebunch wheatgrass | 20 |
| | | Unfavorable | 1,200 | Arrowleaf balsamroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | Threeflower avens | 5 |
| | | | | Indian paintbrush | 5 |
| | | | | Common yarrow | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Prairie junegrass | 5 |

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 86: Keuterville. | | | | | |
| 101 Oliphant | North Slope Loamy 12-15 Feid-Agsp. | Favorable | 1,500 | Idaho fescue | 50 |
| | | Normal | 1,300 | Bluebunch wheatgrass | 15 |
| | | Unfavorable | 1,100 | Arrowleaf balsamroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Common yarrow | 5 |
| | | | | Prairie junegrass | 5 |
| | | | | Rabbitbrush | 5 |
| 103: | | | | | |
| Oliphant | North Slope Loamy 12-15 Feid-Agsp. | Favorable | 1,500 | Idaho fescue | 50 |
| | | Normal | 1,300 | Bluebunch wheatgrass | 15 |
| | | Unfavorable | 1,100 | Arrowleaf balsamroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Common yarrow | 5 |
| | | | | Prairie junegrass | 5 |
| | | | | Rabbitbrush | 5 |
| Alpowa | South Slope Stony 12-15 Agsp-Pose. | Favorable | 1,000 | Bluebunch wheatgrass | 60 |
| | | Normal | 800 | Sandberg bluegrass | 5 |
| | | Unfavorable | 600 | Common yarrow | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Longleaf phlox | 5 |
| 105: | | | | | |
| Oliphant | Loamy 12-15 Agsp-Pose | Favorable | 1,200 | Bluebunch wheatgrass | 50 |
| | | Normal | 1,000 | Arrowleaf balsamroot | 10 |
| | | Unfavorable | 800 | Sandberg bluegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Penstemon | 5 |
| | | | | Common yarrow | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Smooth sumac | 5 |
| Stember | South Slope Stony 12-15 Agsp-Pose. | Favorable | 1,000 | Bluebunch wheatgrass | 60 |
| | | Normal | 800 | Sandberg bluegrass | 5 |
| | | Unfavorable | 600 | Common yarrow | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Milkvetch | 5 |
| | | | | Broom snakeweed | 5 |
| | | | | Rabbitbrush | 5 |
| 111: Rock outcrop. | | | | | |
| Flybow | Very Shallow Stony 16-22 Pose/forbs. | Favorable | 600 | Sandberg bluegrass | 20 |
| | | Normal | 450 | Cous biscuitroot | 15 |
| | | Unfavorable | 300 | Onespike danthonia | 15 |
| | | | | Wild onion | 10 |
| | | | | Bluebunch wheatgrass | 5 |
| | | | | Wormleaf stonecrop | 5 |

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 116 Slickpoo | Steep S Slope Loamy 16-22 Feid-Agsp. | Favorable | 1,500 | Bluebunch wheatgrass | 35 |
| | | Normal | 1,300 | Idaho fescue | 20 |
| | | Unfavorable | 1,100 | Prairie junegrass | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | White stoneseed | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Sticky geranium | 5 |
| | | | | Tapertip hawksbeard | 5 |
| 117: | | | | | |
| Slickpoo | Steep S Slope Loamy 16-22 Feid-Agsp. | Favorable | 1,500 | Bluebunch wheatgrass | 35 |
| | | Normal | 1,300 | Idaho fescue | 20 |
| | | Unfavorable | 1,100 | Prairie junegrass | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | White stoneseed | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Sticky geranium | 5 |
| | | | | Tapertip hawksbeard | 5 |
| Broadax | Steep S Slope Loamy 16-22 Feid-Agsp. | Favorable | 1,500 | Bluebunch wheatgrass | 35 |
| | | Normal | 1,300 | Idaho fescue | 20 |
| | | Unfavorable | 1,100 | Prairie junegrass | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | White stoneseed | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Sticky geranium | 5 |
| | | | | Tapertip hawksbeard | 5 |
| 127: | | | | | |
| Tammany | South Slope Loamy 12-15 Agsp-Pose. | Favorable | 900 | Bluebunch wheatgrass | 50 |
| | | Normal | 800 | Sandberg bluegrass | 15 |
| | | Unfavorable | 600 | Arrowleaf balsamroot | 10 |
| | | | | Silky lupine | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Common yarrow | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| Chard | Loamy 12-15 Agsp-Pose | Favorable | 1,200 | Bluebunch wheatgrass | 50 |
| | | Normal | 1,000 | Arrowleaf balsamroot | 10 |
| | | Unfavorable | 800 | Sandberg bluegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Common yarrow | 5 |
| | | | | Penstemon | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Smooth sumac | 5 |
| Rock outcrop. | | | | | |

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 137 Tombeall | Riparian Bottomland Deca5-Carex. | Favorable | 5,000 | Tufted hairgrass | 15 |
| | | Normal | 3,800 | Sedge | 15 |
| | | Unfavorable | 2,500 | Rush | 5 |
| | | | | Bulrush | 5 |
| | | | | Slender wheatgrass | 5 |
| | | | | Trisetum | 5 |
| | | | | Cinquefoil | 5 |
| | | | | Clover | 5 |
| | | | | Common yarrow | 5 |
| | | | | Threeflower avens | 5 |
| | | | | Common snowberry | 5 |
| | | | | Willow | 5 |
| | | | | Redosier dogwood | 5 |
| | | | | Black hawthorn | 5 |
| 139, 140 Uhlig | Steep N Slope Loamy 15-18 Feid/forbs. | Favorable | 1,500 | Idaho fescue | 40 |
| | | Normal | 1,300 | Bluebunch wheatgrass | 10 |
| | | Unfavorable | 1,100 | Arrowleaf balsamroot | 10 |
| | | | | Threeflower avens | 10 |
| | | | | Prairie junegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Common snowberry | 5 |
| | | | | Indian paintbrush | 5 |
| | | | | Northwest cinquefoil | 5 |
| 149: | | | | | |
| Watama | Loamy 16-22 Feid-Agsp | Favorable | 1,800 | Idaho fescue | 45 |
| | | Normal | 1,500 | Bluebunch wheatgrass | 20 |
| | | Unfavorable | 1,200 | Prairie junegrass | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Threeflower avens | 5 |
| | | | | Common yarrow | 5 |
| | | | | Arrowleaf balsamroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | Indian paintbrush | 5 |
| Flybow | Very Shallow Stony 16-22 Pose/forbs. | Favorable | 600 | Sandberg bluegrass | 20 |
| | | Normal | 450 | Cous biscuitroot | 15 |
| | | Unfavorable | 300 | Onespike danthonia | 15 |
| | | | | Wild onion | 10 |
| | | | | Bluebunch wheatgrass | 5 |
| | | | | Wormleaf stonecrop | 5 |
| 151: | | | | | |
| Westlake | Riparian Bottomland Deca5-Carex. | Favorable | 5,000 | Tufted hairgrass | 15 |
| | | Normal | 3,800 | Sedge | 15 |
| | | Unfavorable | 2,500 | Rush | 5 |
| | | | | Bulrush | 5 |
| | | | | Slender wheatgrass | 5 |
| | | | | Trisetum | 5 |
| | | | | Cinquefoil | 5 |
| | | | | Clover | 5 |
| | | | | Common yarrow | 5 |
| | | | | Threeflower avens | 5 |
| | | | | Common snowberry | 5 |
| | | | | Willow | 5 |
| | | | | Redosier dogwood | 5 |
| | | | | Black hawthorn | 5 |

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

| Soil name and map symbol | Range site | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|---|
| | | | Lb/acre | | Pct |
| 151: | | | | | |
| Latahco | Riparian Bottomland Deca5-Carex. | Favorable | 5,000 | Tufted hairgrass | 15 |
| | | Normal | 3,800 | Sedge | 15 |
| | | Unfavorable | 2,500 | Rush | 5 |
| | | | | Bulrush | 5 |
| | | | | Slender wheatgrass | 5 |
| | | | | Trisetum | 5 |
| | | | | Cinquefoil | 5 |
| | | | | Clover | 5 |
| | | | | Common yarrow | 5 |
| | | | | Threeflower avens | 5 |
| | | | | Common snowberry | 5 |
| | | | | Willow | 5 |
| | | | | Redosier dogwood | 5 |
| | | | | Black hawthorn | 5 |
| 152 Wilkins | Riparian Bottomland Deca5-Carex. | Favorable | 5,000 | Tufted hairgrass | 15 |
| | | Normal | 3,800 | Sedge | 15 |
| | | Unfavorable | 2,500 | Rush | 5 |
| | | | | Bulrush | 5 |
| | | | | Slender wheatgrass | 5 |
| | | | | Trisetum | 5 |
| | | | | Common yarrow | 5 |
| | | | | Clover | 5 |
| | | | | Common snowberry | 5 |
| | | | | Willow | 5 |
| | | | | Black hawthorn | 5 |
| | | | | Cinquefoil | 5 |
| 153 Wistona | Loamy 12-15 Agsp-Pose | Favorable | 1,200 | Bluebunch wheatgrass | 50 |
| | | Normal | 1,000 | Arrowleaf balsamroot | 10 |
| | | Unfavorable | 800 | Sandberg bluegrass | 5 |
| | | | | Silky lupine | 5 |
| | | | | Longleaf phlox | 5 |
| | | | | Penstemon | 5 |
| | | | | Common yarrow | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Smooth sumac | 5 |
| 154: | | | | | |
| Zaza | 0043ay017id | Favorable | 700 | Wormleaf stonecrop | 20 |
| | | Normal | 550 | Phlox | 20 |
| | | Unfavorable | 350 | Sandberg bluegrass | 10 |
| | | | | Penstemon | 10 |
| | | | | Wyeth eriogonum | 10 |
| | | | | Bluebunch wheatgrass | 5 |
| | | | | Biscuitroot | 5 |
| | | | | Fleabane | 5 |
| | | | | Stiff sagebrush | 5 |
| | | | | Rabbitbrush | 5 |
| Sweiting | Loamy Mounds 22+ Feid-Agsp | Favorable | 1,600 | Idaho fescue | 30 |
| | | Normal | 1,400 | Bluebunch wheatgrass | 15 |
| | | Unfavorable | 1,200 | Prairie junegrass | 10 |
| | | | | Arrowleaf balsamroot | 10 |
| | | | | Threeflower avens | 5 |
| | | | | Nineleaf biscuitroot | 5 |
| | | | | Silky lupine | 5 |
| | | | | White stoneseed | 5 |
| | | | | Northwest cinquefoil | 5 |
| | | | | Sticky geranium | 5 |

Table 7.--Woodland Understory Vegetation

(Only the soils suitable for production of commercial trees are listed)

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 1, 2 Agatha | Favorable | 350 | Mallow ninebark | 20 |
| | Normal | 300 | Creambush oceanspray | 10 |
| | Unfavorable | 250 | Common snowberry | 10 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Woodland strawberry | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |
| | | | American trailplant | 5 |
| | | | Piper anemone | 5 |
| | | | Sweetscented bedstraw | 5 |
| | | | Rocky Mountain maple | 5 |
| 3: | | | | |
| Agatha | Favorable | 350 | Mallow ninebark | 20 |
| | Normal | 300 | Creambush oceanspray | 10 |
| | Unfavorable | 250 | Common snowberry | 10 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Woodland strawberry | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |
| | | | American trailplant | 5 |
| | | | Piper anemone | 5 |
| | | | Sweetscented bedstraw | 5 |
| | | | Rocky Mountain maple | 5 |
| Rock outcrop. | | | | |
| 4 Ahsahka | Favorable | 1,100 | Idaho fescue | 30 |
| | Normal | 900 | Bluebunch wheatgrass | 15 |
| | Unfavorable | 700 | Prairie junegrass | 5 |
| | | | Common snowberry | 5 |
| | | | Pine reedgrass | 5 |
| | | | Elk sedge | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Lupine | 5 |
| | | | Sticky geranium | 5 |
| | | | Threeflower avens | 5 |
| | | | Cinquefoil | 5 |
| | | | Woods rose | 5 |
| 12: | | | | |
| Boles | Favorable | 900 | Common snowberry | 25 |
| | Normal | 700 | Elk sedge | 10 |
| | Unfavorable | 500 | Pine reedgrass | 10 |
| | | | Columbia brome | 5 |
| | | | Idaho fescue | 5 |
| | | | Woodland strawberry | 5 |
| | | | Cinquefoil | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Sticky geranium | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| | | | Threeflower avens | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 12: | | | | |
| Joel | Favorable | 600 | Elk sedge | 25 |
| | Normal | 500 | Common snowberry | 20 |
| | Unfavorable | 400 | Mallow ninebark | 15 |
| | | | Creambush oceanspray | 10 |
| | | | Baldhip rose | 5 |
| | | | Columbia brome | 5 |
| | | | Pine reedgrass | 5 |
| | | | Woodland strawberry | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Low Oregongrape | 5 |
| 21, 22 Carlinton | Favorable | 350 | Mallow ninebark | 20 |
| | Normal | 300 | Creambush oceanspray | 10 |
| | Unfavorable | 250 | Common snowberry | 10 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Heartleaf arnica | 5 |
| | | | American trailplant | 5 |
| | | | Piper anemone | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |
| | | | Woodland strawberry | 5 |
| 23: | | | | |
| Carlinton | Favorable | 450 | Common snowberry | 15 |
| | Normal | 400 | Longtube twinflower | 15 |
| | Unfavorable | 350 | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | American trailplant | 5 |
| | | | Piper anemone | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Spreading sweetroot | 5 |
| Talmaks | Favorable | 450 | Longtube twinflower | 15 |
| | Normal | 400 | Common snowberry | 15 |
| | Unfavorable | 350 | Pine reedgrass | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Piper anemone | 5 |
| | | | Common princes pine | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 24: | | | | |
| Cavendish | Favorable | 1,000 | Common snowberry | 25 |
| | Normal | 700 | Elk sedge | 10 |
| | Unfavorable | 400 | White spirea | 10 |
| | | | Heartleaf arnica | 10 |
| | | | Pine reedgrass | 5 |
| | | | Blue wildrye | 5 |
| | | | Northwest cinquefoil | 5 |
| | | | Rose | 5 |
| | | | Silky lupine | 5 |
| | | | Saskatoon serviceberry | 5 |
| Taney | Favorable | 600 | Common snowberry | 15 |
| | Normal | 500 | Elk sedge | 15 |
| | Unfavorable | 400 | Saskatoon serviceberry | 10 |
| | | | Columbia brome | 10 |
| | | | Baldhip rose | 10 |
| | | | Pine reedgrass | 5 |
| | | | Blue wildrye | 5 |
| | | | Woodland strawberry | 5 |
| | | | Sticky geranium | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Low Oregongrape | 5 |
| 31 Cramont | Favorable | 500 | Longtube twinflower | 15 |
| | Normal | 450 | Common snowberry | 10 |
| | Unfavorable | 400 | Elk sedge | 10 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Piper anemone | 5 |
| | | | Common princes pine | 5 |
| | | | Spreading sweetroot | 5 |
| | | | American trailplant | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |
| | | | Big blueberry | 5 |
| | | | Western meadowrue | 5 |
| 32: | | | | |
| Cramont | Favorable | 500 | Longtube twinflower | 15 |
| | Normal | 450 | Common snowberry | 10 |
| | Unfavorable | 400 | Elk sedge | 10 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Piper anemone | 5 |
| | | | Common princes pine | 5 |
| | | | Spreading sweetroot | 5 |
| | | | American trailplant | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |
| | | | Big blueberry | 5 |
| | | | Western meadowrue | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 32: | | | | |
| Culdesac | Favorable | 450 | Longtube twinflower | 15 |
| | Normal | 400 | Common snowberry | 15 |
| | Unfavorable | 350 | Pine reedgrass | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Piper anemone | 5 |
| | | | Common princes pine | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |
| 33: | | | | |
| Cramont | Favorable | 500 | Longtube twinflower | 15 |
| | Normal | 450 | Common snowberry | 10 |
| | Unfavorable | 400 | Elk sedge | 10 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Piper anemone | 5 |
| | | | Common princes pine | 5 |
| | | | Spreading sweetroot | 5 |
| | | | American trailplant | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |
| | | | Big blueberry | 5 |
| | | | Western meadowrue | 5 |
| Seddow | Favorable | 450 | Longtube twinflower | 15 |
| | Normal | 400 | Common snowberry | 15 |
| | Unfavorable | 350 | Elk sedge | 5 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Common princes pine | 5 |
| | | | Piper anemone | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| 35 Driscoll | Favorable | 1,100 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 700 | Saskatoon serviceberry | 10 |
| | | | White spirea | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Woods rose | 5 |
| | | | Low Oregongrape | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 36: | | | | |
| Driscoll | Favorable | 1,100 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 700 | Saskatoon serviceberry | 10 |
| | | | White spirea | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Woods rose | 5 |
| | | | Low Oregongrape | 5 |
| Larkin | Favorable | 1,050 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 750 | Saskatoon serviceberry | 10 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Rose | 5 |
| | | | Arrowleaf balsamroot | 5 |
| 47: | | | | |
| Jacket | Favorable | 1,100 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 700 | Saskatoon serviceberry | 10 |
| | | | White spirea | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Woods rose | 5 |
| | | | Low Oregongrape | 5 |
| Larkin | Favorable | 1,050 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 750 | Saskatoon serviceberry | 10 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Rose | 5 |
| | | | Arrowleaf balsamroot | 5 |
| 48, 49 Joel | Favorable | 600 | Elk sedge | 25 |
| | Normal | 500 | Common snowberry | 20 |
| | Unfavorable | 400 | Mallow ninebark | 15 |
| | | | Creambush oceanspray | 10 |
| | | | Baldhip rose | 5 |
| | | | Columbia brome | 5 |
| | | | Pine reedgrass | 5 |
| | | | Woodland strawberry | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Low Oregongrape | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 50, 51: | | | | |
| Joel | Favorable | 600 | Elk sedge | 25 |
| | Normal | 500 | Common snowberry | 20 |
| | Unfavorable | 400 | Mallow ninebark | 15 |
| | | | Creambush oceanspray | 10 |
| | | | Baldhip rose | 5 |
| | | | Columbia brome | 5 |
| | | | Pine reedgrass | 5 |
| | | | Woodland strawberry | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Low Oregongrape | 5 |
| Setters | Favorable | 600 | Common snowberry | 15 |
| | Normal | 500 | Elk sedge | 15 |
| | Unfavorable | 400 | Saskatoon serviceberry | 10 |
| | | | Columbia brome | 10 |
| | | | Baldhip rose | 10 |
| | | | Pine reedgrass | 5 |
| | | | Blue wildrye | 5 |
| | | | Woodland strawberry | 5 |
| | | | Sticky geranium | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Low Oregongrape | 5 |
| 52 Johnson | Favorable | 700 | Elk sedge | 15 |
| | Normal | 600 | Mallow ninebark | 15 |
| | Unfavorable | 500 | Common snowberry | 10 |
| | | | Creambush oceanspray | 10 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| | | | Low Oregongrape | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Woodland strawberry | 5 |
| 53: | | | | |
| Johnson | Favorable | 700 | Elk sedge | 15 |
| | Normal | 600 | Mallow ninebark | 15 |
| | Unfavorable | 500 | Common snowberry | 10 |
| | | | Creambush oceanspray | 10 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| | | | Low Oregongrape | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Woodland strawberry | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 53: | | | | |
| Dragnot | Favorable | 1,100 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 700 | Saskatoon serviceberry | 10 |
| | | | White spirea | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Woods rose | 5 |
| | | | Low Oregongrape | 5 |
| Dragnot, dry. | | | | |
| 54: | | | | |
| Johnson | Favorable | 700 | Common snowberry | 20 |
| | Normal | 600 | Elk sedge | 10 |
| | Unfavorable | 500 | White spirea | 10 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Baldhip rose | 5 |
| | | | Low Oregongrape | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Woodland strawberry | 5 |
| Kruse | Favorable | 500 | Longtube twinflower | 15 |
| | Normal | 400 | Common snowberry | 15 |
| | Unfavorable | 350 | Elk sedge | 5 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Common princes pine | 5 |
| | | | Piper anemone | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| 55: | | | | |
| Johnson | Favorable | 700 | Common snowberry | 20 |
| | Normal | 600 | Elk sedge | 10 |
| | Unfavorable | 500 | White spirea | 10 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Baldhip rose | 5 |
| | | | Low Oregongrape | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Woodland strawberry | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 55: | | | | |
| Labuck | Favorable | 500 | Elk sedge | 25 |
| | Normal | 400 | White spirea | 20 |
| | Unfavorable | 300 | Common snowberry | 15 |
| | | | Pine reedgrass | 10 |
| | | | Columbia brome | 5 |
| | | | Baldhip rose | 5 |
| | | | Woodland strawberry | 5 |
| | | | Cinquefoil | 5 |
| | | | Lupine | 5 |
| | | | Pussytoes | 5 |
| 58: | | | | |
| Kettenbach. | | | | |
| Keuterville | Favorable | 1,100 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 700 | Saskatoon serviceberry | 10 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Elk sedge | 5 |
| | | | Idaho fescue | 5 |
| | | | White spirea | 5 |
| | | | Rose | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| 60, 61 Keuterville | Favorable | 1,100 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 700 | Saskatoon serviceberry | 10 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Elk sedge | 5 |
| | | | Idaho fescue | 5 |
| | | | White spirea | 5 |
| | | | Rose | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| 62: | | | | |
| Keuterville | Favorable | 1,100 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 700 | Saskatoon serviceberry | 10 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Elk sedge | 5 |
| | | | Idaho fescue | 5 |
| | | | White spirea | 5 |
| | | | Rose | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| Rock outcrop. | | | | |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 63, 64 Klickson | Favorable | 700 | Mallow ninebark | 15 |
| | Normal | 600 | Elk sedge | 10 |
| | Unfavorable | 500 | Pine reedgrass | 10 |
| | | | Common snowberry | 10 |
| | | | Creambush oceanspray | 10 |
| | | | Columbia brome | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Heartleaf arnica | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| | | | Saskatoon serviceberry | 5 |
| 65: | | | | |
| Klickson | Favorable | 700 | Mallow ninebark | 15 |
| | Normal | 600 | Elk sedge | 10 |
| | Unfavorable | 500 | Pine reedgrass | 10 |
| | | | Common snowberry | 10 |
| | | | Creambush oceanspray | 10 |
| | | | Columbia brome | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Heartleaf arnica | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| | | | Saskatoon serviceberry | 5 |
| Agatha | Favorable | 350 | Mallow ninebark | 20 |
| | Normal | 300 | Creambush oceanspray | 10 |
| | Unfavorable | 250 | Common snowberry | 10 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Woodland strawberry | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |
| | | | American trailplant | 5 |
| | | | Piper anemone | 5 |
| | | | Sweetscented bedstraw | 5 |
| | | | Rocky Mountain maple | 5 |
| 66: | | | | |
| Klickson | Favorable | 700 | Mallow ninebark | 15 |
| | Normal | 600 | Elk sedge | 10 |
| | Unfavorable | 500 | Pine reedgrass | 10 |
| | | | Common snowberry | 10 |
| | | | Creambush oceanspray | 10 |
| | | | Columbia brome | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Heartleaf arnica | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| | | | Saskatoon serviceberry | 5 |
| Hooverton. | | | | |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 67: | | | | |
| Klickson | Favorable | 700 | Mallow ninebark | 15 |
| | Normal | 600 | Elk sedge | 10 |
| | Unfavorable | 500 | Pine reedgrass | 10 |
| | | | Common snowberry | 10 |
| | | | Creambush oceanspray | 10 |
| | | | Columbia brome | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Heartleaf arnica | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| | | | Saskatoon serviceberry | 5 |
| Rock outcrop. | | | | |
| 68: | | | | |
| Klickson | Favorable | 700 | Mallow ninebark | 15 |
| | Normal | 600 | Elk sedge | 10 |
| | Unfavorable | 500 | Pine reedgrass | 10 |
| | | | Common snowberry | 10 |
| | | | Creambush oceanspray | 10 |
| | | | Columbia brome | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Heartleaf arnica | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| | | | Saskatoon serviceberry | 5 |
| Uptmor | Favorable | 800 | Common snowberry | 25 |
| | Normal | 600 | Elk sedge | 20 |
| | Unfavorable | 400 | Saskatoon serviceberry | 10 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Biscuitroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Whorled elkweed | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| | | | Low Oregongrape | 5 |
| 69 Kruse | Favorable | 500 | Longtube twinflower | 15 |
| | Normal | 400 | Common snowberry | 15 |
| | Unfavorable | 350 | Elk sedge | 5 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Common princes pine | 5 |
| | | | Piper anemone | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 71---------- Larabee | Favorable | 800 | Elk sedge | 20 |
| | Normal | 700 | Common snowberry | 20 |
| | Unfavorable | 600 | Pine reedgrass | 10 |
| | | | Columbia brome | 10 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| | | | Idaho fescue | 5 |
| | | | Woodland strawberry | 5 |
| | | | Cinquefoil | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Sticky geranium | 5 |
| | | | Threeflower avens | 5 |
| 72: | | | | |
| Larabee---------- | Favorable | 800 | Elk sedge | 20 |
| | Normal | 700 | Common snowberry | 20 |
| | Unfavorable | 600 | Pine reedgrass | 10 |
| | | | Columbia brome | 10 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| | | | Idaho fescue | 5 |
| | | | Woodland strawberry | 5 |
| | | | Cinquefoil | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Sticky geranium | 5 |
| | | | Threeflower avens | 5 |
| Gwin. | | | | |
| 73: | | | | |
| Larabee---------- | Favorable | 800 | Elk sedge | 20 |
| | Normal | 700 | Common snowberry | 20 |
| | Unfavorable | 600 | Pine reedgrass | 10 |
| | | | Columbia brome | 10 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| | | | Idaho fescue | 5 |
| | | | Woodland strawberry | 5 |
| | | | Cinquefoil | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Sticky geranium | 5 |
| | | | Threeflower avens | 5 |
| Zaza. | | | | |
| Seddow---------- | Favorable | 450 | Longtube twinflower | 15 |
| | Normal | 400 | Common snowberry | 15 |
| | Unfavorable | 350 | Elk sedge | 5 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Common princes pine | 5 |
| | | | Piper anemone | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 74: | | | | |
| Larkin | Favorable | 1,050 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 750 | Saskatoon serviceberry | 10 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Rose | 5 |
| | | | Arrowleaf balsamroot | 5 |
| Driscoll | Favorable | 1,100 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 700 | Saskatoon serviceberry | 10 |
| | | | White spirea | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Woods rose | 5 |
| | | | Low Oregongrape | 5 |
| 76: | | | | |
| Lauby | Favorable | 1,050 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 750 | Saskatoon serviceberry | 10 |
| | | | White spirea | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Woods rose | 5 |
| | | | Low Oregongrape | 5 |
| Southwick | Favorable | 1,050 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 750 | Saskatoon serviceberry | 10 |
| | | | White spirea | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Woods rose | 5 |
| | | | Low Oregongrape | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 84: | | | | |
| Maloney | Favorable | 1,050 | Idaho fescue | 30 |
| | Normal | 900 | Bluebunch wheatgrass | 15 |
| | Unfavorable | 750 | Prairie junegrass | 5 |
| | | | Common snowberry | 5 |
| | | | Pine reedgrass | 5 |
| | | | Elk sedge | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Lupine | 5 |
| | | | Sticky geranium | 5 |
| | | | Threeflower avens | 5 |
| | | | Cinquefoil | 5 |
| | | | Woods rose | 5 |
| Zaza. | | | | |
| 85: | | | | |
| Meland. | | | | |
| Jacket | Favorable | 1,100 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 700 | Saskatoon serviceberry | 10 |
| | | | White spirea | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Woods rose | 5 |
| | | | Low Oregongrape | 5 |
| 86: | | | | |
| Meland. | | | | |
| Keuterville | Favorable | 1,100 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 700 | Saskatoon serviceberry | 10 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Elk sedge | 5 |
| | | | Idaho fescue | 5 |
| | | | White spirea | 5 |
| | | | Rose | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| 112 | Favorable | 450 | Longtube twinflower | 15 |
| Seddow | Normal | 400 | Common snowberry | 15 |
| | Unfavorable | 350 | Elk sedge | 5 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Common princes pine | 5 |
| | | | Piper anemone | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 113---------- Setters | Favorable | 600 | Common snowberry | 15 |
| | Normal | 500 | Elk sedge | 15 |
| | Unfavorable | 400 | Saskatoon serviceberry | 10 |
| | | | Columbia brome | 10 |
| | | | Baldhip rose | 10 |
| | | | Pine reedgrass | 5 |
| | | | Blue wildrye | 5 |
| | | | Woodland strawberry | 5 |
| | | | Sticky geranium | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Low Oregongrape | 5 |
| 114---------- Shilla | Favorable | 450 | Big blueberry | 15 |
| | Normal | 400 | Longtube twinflower | 15 |
| | Unfavorable | 350 | Columbia brome | 10 |
| | | | Goldthread | 10 |
| | | | Western rattlesnake plantain | 5 |
| | | | Common princes pine | 5 |
| | | | Piper anemone | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Western meadowrue | 5 |
| | | | Smallflower miterwort | 5 |
| | | | Sidebells shinleaf | 5 |
| | | | Myrtle pachystima | 5 |
| | | | Baldhip rose | 5 |
| 115: | | | | |
| Shilla---------- | Favorable | 450 | Big blueberry | 15 |
| | Normal | 400 | Longtube twinflower | 15 |
| | Unfavorable | 350 | Columbia brome | 10 |
| | | | Goldthread | 10 |
| | | | Western rattlesnake plantain | 5 |
| | | | Common princes pine | 5 |
| | | | Piper anemone | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Western meadowrue | 5 |
| | | | Smallflower miterwort | 5 |
| | | | Sidebells shinleaf | 5 |
| | | | Myrtle pachystima | 5 |
| | | | Baldhip rose | 5 |
| Seddow---------- | Favorable | 450 | Longtube twinflower | 15 |
| | Normal | 400 | Common snowberry | 15 |
| | Unfavorable | 350 | Elk sedge | 5 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Common princes pine | 5 |
| | | | Piper anemone | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 118 Southwick | Favorable | 1,050 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 750 | Saskatoon serviceberry | 10 |
| | | | White spirea | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Woods rose | 5 |
| | | | Low Oregongrape | 5 |
| 119: | | | | |
| Southwick | Favorable | 1,050 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 750 | Saskatoon serviceberry | 10 |
| | | | White spirea | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Woods rose | 5 |
| | | | Low Oregongrape | 5 |
| Bluesprin. | | | | |
| 120, 121: | | | | |
| Southwick | Favorable | 1,050 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 750 | Saskatoon serviceberry | 10 |
| | | | White spirea | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Woods rose | 5 |
| | | | Low Oregongrape | 5 |
| Driscoll | Favorable | 1,100 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 700 | Saskatoon serviceberry | 10 |
| | | | White spirea | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Woods rose | 5 |
| | | | Low Oregongrape | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 122: | | | | |
| Southwick | Favorable | 1,050 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 750 | Saskatoon serviceberry | 10 |
| | | | White spirea | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Woods rose | 5 |
| | | | Low Oregongrape | 5 |
| Larkin | Favorable | 1,050 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 750 | Saskatoon serviceberry | 10 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Idaho fescue | 5 |
| | | | Rose | 5 |
| | | | Arrowleaf balsamroot | 5 |
| 123: | | | | |
| Sweiting | Favorable | 1,100 | Common snowberry | 25 |
| | Normal | 900 | Pine reedgrass | 10 |
| | Unfavorable | 700 | Saskatoon serviceberry | 10 |
| | | | Elk sedge | 5 |
| | | | Idaho fescue | 5 |
| | | | Bluebunch wheatgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Woods rose | 5 |
| | | | Arrowleaf balsamroot | 5 |
| | | | Woodland strawberry | 5 |
| | | | Low Oregongrape | 5 |
| | | | White spirea | 5 |
| Joel | Favorable | 600 | Elk sedge | 25 |
| | Normal | 500 | Common snowberry | 20 |
| | Unfavorable | 400 | Mallow ninebark | 15 |
| | | | Creambush oceanspray | 10 |
| | | | Baldhip rose | 5 |
| | | | Columbia brome | 5 |
| | | | Pine reedgrass | 5 |
| | | | Woodland strawberry | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Low Oregongrape | 5 |
| 124, 125 Talmaks | Favorable | 450 | Longtube twinflower | 15 |
| | Normal | 400 | Common snowberry | 15 |
| | Unfavorable | 350 | Pine reedgrass | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Piper anemone | 5 |
| | | | Common princes pine | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 126: | | | | |
| Talmaks | Favorable | 450 | Longtube twinflower | 15 |
| | Normal | 400 | Common snowberry | 15 |
| | Unfavorable | 350 | Pine reedgrass | 5 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Piper anemone | 5 |
| | | | Common princes pine | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |
| Seddow | Favorable | 450 | Longtube twinflower | 15 |
| | Normal | 400 | Common snowberry | 15 |
| | Unfavorable | 350 | Elk sedge | 5 |
| | | | Pine reedgrass | 5 |
| | | | Columbia brome | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Common princes pine | 5 |
| | | | Piper anemone | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | White spirea | 5 |
| | | | Baldhip rose | 5 |
| 128 Taney | Favorable | 600 | Common snowberry | 15 |
| | Normal | 500 | Elk sedge | 15 |
| | Unfavorable | 400 | Saskatoon serviceberry | 10 |
| | | | Columbia brome | 10 |
| | | | Baldhip rose | 10 |
| | | | Pine reedgrass | 5 |
| | | | Blue wildrye | 5 |
| | | | Woodland strawberry | 5 |
| | | | Sticky geranium | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Low Oregongrape | 5 |
| 129, 130: | | | | |
| Taney | Favorable | 600 | Common snowberry | 15 |
| | Normal | 500 | Elk sedge | 15 |
| | Unfavorable | 400 | Saskatoon serviceberry | 10 |
| | | | Columbia brome | 10 |
| | | | Baldhip rose | 10 |
| | | | Pine reedgrass | 5 |
| | | | Blue wildrye | 5 |
| | | | Woodland strawberry | 5 |
| | | | Sticky geranium | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Low Oregongrape | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 129, 130: | | | | |
| Joel | Favorable | 600 | Elk sedge | 25 |
| | Normal | 500 | Common snowberry | 20 |
| | Unfavorable | 400 | Mallow ninebark | 15 |
| | | | Creambush oceanspray | 10 |
| | | | Baldhip rose | 5 |
| | | | Columbia brome | 5 |
| | | | Pine reedgrass | 5 |
| | | | Woodland strawberry | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Low Oregongrape | 5 |
| 131, 132: | | | | |
| Taney | Favorable | 600 | Common snowberry | 15 |
| | Normal | 500 | Elk sedge | 15 |
| | Unfavorable | 400 | Saskatoon serviceberry | 10 |
| | | | Columbia brome | 10 |
| | | | Baldhip rose | 10 |
| | | | Pine reedgrass | 5 |
| | | | Blue wildrye | 5 |
| | | | Woodland strawberry | 5 |
| | | | Sticky geranium | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Low Oregongrape | 5 |
| Setters | Favorable | 600 | Common snowberry | 15 |
| | Normal | 500 | Elk sedge | 15 |
| | Unfavorable | 400 | Saskatoon serviceberry | 10 |
| | | | Columbia brome | 10 |
| | | | Baldhip rose | 10 |
| | | | Pine reedgrass | 5 |
| | | | Blue wildrye | 5 |
| | | | Woodland strawberry | 5 |
| | | | Sticky geranium | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Low Oregongrape | 5 |
| 146 Uvi | Favorable | 400 | Mallow ninebark | 20 |
| | Normal | 300 | Creambush oceanspray | 10 |
| | Unfavorable | 200 | Common snowberry | 10 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Woodland strawberry | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |
| | | | American trailplant | 5 |
| | | | Piper anemone | 5 |
| | | | Sweetscented bedstraw | 5 |
| | | | Rocky Mountain maple | 5 |

Table 7.--Woodland Understory Vegetation--Continued

| Soil name and map symbol | Total production: Kind of year | Total production: Dry weight | Characteristic vegetation | Composition |
|---|---|---|---|---|
| | | Lb/acre | | Pct |
| 150: | | | | |
| Webbridge | Favorable | 300 | Longtube twinflower | 20 |
| | Normal | 250 | Big blueberry | 10 |
| | Unfavorable | 200 | Common snowberry | 5 |
| | | | Goldthread | 5 |
| | | | Western rattlesnake plantain | 5 |
| | | | Spreading sweetroot | 5 |
| | | | Queencup beadlily | 5 |
| | | | Sidebells shinleaf | 5 |
| | | | Smallflower miterwort | 5 |
| | | | Saskatoon serviceberry | 5 |
| | | | Baldhip rose | 5 |
| Agatha | Favorable | 350 | Mallow ninebark | 20 |
| | Normal | 300 | Creambush oceanspray | 10 |
| | Unfavorable | 250 | Common snowberry | 10 |
| | | | Elk sedge | 5 |
| | | | Columbia brome | 5 |
| | | | Heartleaf arnica | 5 |
| | | | Woodland strawberry | 5 |
| | | | Baldhip rose | 5 |
| | | | White spirea | 5 |
| | | | American trailplant | 5 |
| | | | Piper anemone | 5 |
| | | | Sweetscented bedstraw | 5 |
| | | | Rocky Mountain maple | 5 |

Table 8.--Woodland Management and Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Windthrow hazard | Plant competition | Potential productivity: Common trees | Site index | Productivity class | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 Agatha | 6A | Moderate | Moderate | Slight | Slight | Severe | Grand fir | 65 | 6 | Douglas fir. |
| | | | | | | | Douglas fir | 69 | 4 | |
| | | | | | | | Western larch | --- | --- | |
| 2 Agatha | 6R | Severe | Severe | Slight | Slight | Severe | Grand fir | 65 | 6 | Douglas fir. |
| | | | | | | | Douglas fir | 69 | 4 | |
| | | | | | | | Western larch | --- | --- | |
| 3: | | | | | | | | | | |
| Agatha | 6R | Severe | Severe | Slight | Slight | Severe | Grand fir | 65 | 6 | Douglas fir. |
| | | | | | | | Douglas fir | 69 | 4 | |
| | | | | | | | Western larch | --- | --- | |
| Rock outcrop. | | | | | | | | | | |
| 4 Ahsahka | 9A | Moderate | Moderate | Severe | Slight | Moderate | Ponderosa pine | 110 | 9 | Ponderosa pine. |
| 12: | | | | | | | | | | |
| Boles | 8A | Moderate | Slight | Moderate | Severe | Moderate | Ponderosa pine | 108 | 9 | Ponderosa pine. |
| Joel | 8A | Slight | Slight | Slight | Slight | Moderate | Ponderosa pine | 110 | 8 | Ponderosa pine, |
| | | | | | | | Douglas fir | 75 | 6 | Douglas fir. |
| 21 Carlinton | 6D | Moderate | Slight | Slight | Moderate | Severe | Grand fir | 65 | 6 | Ponderosa pine, |
| | | | | | | | Douglas fir | 70 | 4 | Douglas fir. |
| | | | | | | | Ponderosa pine | 100 | 7 | |
| 22 Carlinton | 6D | Severe | Moderate | Slight | Moderate | Severe | Grand fir | 65 | 6 | Ponderosa pine, |
| | | | | | | | Douglas fir | 70 | 4 | Douglas fir. |
| | | | | | | | Ponderosa pine | 100 | 7 | |
| 23: | | | | | | | | | | |
| Carlinton | 7D | Moderate | Slight | Slight | Moderate | Moderate | Grand fir | 72 | 7 | Ponderosa pine, |
| | | | | | | | Douglas fir | 72 | 5 | Douglas fir. |
| | | | | | | | Ponderosa pine | 107 | 8 | |
| | | | | | | | Western larch | --- | --- | |
| | | | | | | | Lodgepole pine | --- | --- | |

Table 8.--Woodland Management and Productivity--Continued

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Windthrow hazard | Plant competition | Potential productivity: Common trees | Site index | Productivity class | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|---|
| 23: | | | | | | | | | | |
| Talmaks | 9A | Slight | Slight | Slight | Slight | Moderate | Grand fir | 84 | 9 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 78 | 5 | |
| | | | | | | | Ponderosa pine | 102 | 7 | |
| | | | | | | | Western larch | --- | --- | |
| | | | | | | | Lodgepole pine | --- | --- | |
| 24: | | | | | | | | | | |
| Cavendish | 5A | Slight | Slight | Slight | Slight | Severe | Douglas fir | 76 | 5 | Douglas fir, ponderosa pine. |
| | | | | | | | Ponderosa pine | 100 | 7 | |
| Taney | 7D | Moderate | Slight | Slight | Moderate | Moderate | Ponderosa pine | 101 | 7 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 75 | 5 | |
| 31 Cramont | 7A | Moderate | Slight | Slight | Slight | Moderate | Grand fir | 73 | 7 | Ponderosa pine, Douglas fir, western larch. |
| | | | | | | | Douglas fir | 71 | 4 | |
| | | | | | | | Western larch | 55 | 5 | |
| | | | | | | | Ponderosa pine | 94 | 6 | |
| | | | | | | | Lodgepole pine | --- | --- | |
| 32: | | | | | | | | | | |
| Cramont | 7A | Moderate | Slight | Slight | Slight | Moderate | Grand fir | 73 | 7 | Ponderosa pine, Douglas fir, western larch. |
| | | | | | | | Douglas fir | 71 | 4 | |
| | | | | | | | Western larch | 55 | 5 | |
| | | | | | | | Ponderosa pine | 94 | 6 | |
| | | | | | | | Lodgepole pine | --- | --- | |
| Culdesac | 6A | Slight | Moderate | Slight | Slight | Moderate | Grand fir | 66 | 6 | Douglas fir, western larch. |
| | | | | | | | Western larch | 60 | 6 | |
| | | | | | | | Douglas fir | 64 | 4 | |
| | | | | | | | Lodgepole pine | --- | --- | |
| | | | | | | | Ponderosa pine | --- | --- | |
| 33: | | | | | | | | | | |
| Cramont | 7A | Moderate | Slight | Slight | Slight | Moderate | Grand fir | 73 | 7 | Ponderosa pine, Douglas fir, western larch. |
| | | | | | | | Douglas fir | 71 | 4 | |
| | | | | | | | Western larch | 55 | 5 | |
| | | | | | | | Ponderosa pine | 94 | 6 | |
| | | | | | | | Lodgepole pine | --- | --- | |

Table 8.--Woodland Management and Productivity--Continued

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Windthrow hazard | Plant competition | Potential productivity: Common trees | Site index | Productivity class | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|---|
| 33: | | | | | | | | | | |
| Seddow | 6D | Severe | Moderate | Moderate | Moderate | Moderate | Grand fir | 64 | 6 | Ponderosa pine, Douglas fir, western larch. |
| | | | | | | | Douglas fir | 64 | 4 | |
| | | | | | | | Ponderosa pine | 85 | 5 | |
| | | | | | | | Western larch | --- | --- | |
| | | | | | | | Lodgepole pine | --- | --- | |
| 35 Driscoll | 9A | Moderate | Slight | Slight | Moderate | Moderate | Ponderosa pine | 115 | 9 | Ponderosa pine. |
| 36: | | | | | | | | | | |
| Driscoll | 9A | Moderate | Slight | Slight | Moderate | Moderate | Ponderosa pine | 115 | 9 | Ponderosa pine. |
| Larkin | 6A | Slight | Slight | Slight | Slight | Moderate | Ponderosa pine | 90 | 6 | Ponderosa pine. |
| 47: | | | | | | | | | | |
| Jacket | 9R | Severe | Severe | Slight | Slight | Moderate | Ponderosa pine | 113 | 9 | Ponderosa pine. |
| Larkin | 6R | Severe | Severe | Moderate | Slight | Moderate | Ponderosa pine | 90 | 6 | Ponderosa pine. |
| 48, 49 Joel | 8A | Slight | Slight | Slight | Slight | Moderate | Ponderosa pine | 110 | 8 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 75 | 6 | |
| 50, 51: | | | | | | | | | | |
| Joel | 8A | Slight | Slight | Slight | Slight | Moderate | Ponderosa pine | 104 | 8 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 70 | 4 | |
| Setters | 7D | Moderate | Slight | Slight | Moderate | Moderate | Ponderosa pine | 99 | 7 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 74 | 5 | |
| 52 Johnson | 8R | Severe | Severe | Slight | Slight | Severe | Ponderosa pine | 106 | 8 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 67 | 4 | |
| 53: | | | | | | | | | | |
| Johnson | 8R | Severe | Severe | Slight | Slight | Severe | Ponderosa pine | 106 | 8 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 67 | 4 | |
| Dragnot | 4R | Severe | Severe | Severe | Moderate | Moderate | Ponderosa pine | 90 | 4 | Ponderosa pine. |
| Dragnot, dry. | | | | | | | | | | |

Table 8.--Woodland Management and Productivity--Continued

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Windthrow hazard | Plant competition | Potential productivity: Common trees | Site index | Productivity class | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|---|
| 54: | | | | | | | | | | |
| Johnson | 8A | Slight | Slight | Slight | Slight | Moderate | Ponderosa pine | 106 | 8 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 67 | 4 | |
| Kruse | 7R | Severe | Severe | Moderate | Slight | Moderate | Grand fir | 76 | 7 | Douglas fir, ponderosa pine, western larch. |
| | | | | | | | Ponderosa pine | 108 | 8 | |
| | | | | | | | Douglas fir | 70 | 4 | |
| | | | | | | | Western larch | --- | --- | |
| 55: | | | | | | | | | | |
| Johnson | 8A | Moderate | Moderate | Slight | Slight | Moderate | Ponderosa pine | 106 | 8 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 67 | 4 | |
| Labuck | 7D | Moderate | Moderate | Severe | Moderate | Moderate | Ponderosa pine | 95 | 7 | Ponderosa pine. |
| | | | | | | | Douglas fir | 65 | 4 | |
| 58: | | | | | | | | | | |
| Kettenbach. | | | | | | | | | | |
| Keuterville | 6R | Severe | Severe | Severe | Slight | Moderate | Ponderosa pine | 93 | 6 | Ponderosa pine. |
| 60 Keuterville | 6F | Slight | Slight | Moderate | Slight | Moderate | Ponderosa pine | 93 | 6 | Ponderosa pine. |
| 61 Keuterville | 6R | Moderate | Severe | Severe | Slight | Moderate | Ponderosa pine | 93 | 6 | Ponderosa pine. |
| 62: | | | | | | | | | | |
| Keuterville | 6R | Severe | Severe | Severe | Slight | Moderate | Ponderosa pine | 93 | 6 | Ponderosa pine. |
| Rock outcrop. | | | | | | | | | | |
| 63 Klickson | 7A | Moderate | Moderate | Slight | Slight | Severe | Ponderosa pine | 98 | 7 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 73 | 5 | |
| 64 Klickson | 7R | Severe | Severe | Slight | Slight | Severe | Ponderosa pine | 98 | 7 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 73 | 5 | |
| 65: | | | | | | | | | | |
| Klickson | 7R | Severe | Severe | Slight | Slight | Severe | Ponderosa pine | 98 | 7 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 73 | 5 | |

Table 8.--Woodland Management and Productivity--Continued

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Windthrow hazard | Plant competition | Potential productivity: Common trees | Site index | Productivity class | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|---|
| 65: | | | | | | | | | | |
| Agatha | 6R | Severe | Severe | Slight | Slight | Severe | Grand fir | 65 | 6 | Douglas fir. |
| | | | | | | | Douglas fir | 69 | 4 | |
| | | | | | | | Western larch | --- | --- | |
| 66: | | | | | | | | | | |
| Klickson | 7R | Severe | Severe | Slight | Slight | Severe | Ponderosa pine | 98 | 7 | Ponderosa pine, |
| | | | | | | | Douglas fir | 73 | 5 | Douglas fir. |
| Hooverton. | | | | | | | | | | |
| 67: | | | | | | | | | | |
| Klickson | 7R | Severe | Severe | Slight | Slight | Severe | Ponderosa pine | 98 | 7 | Ponderosa pine, |
| | | | | | | | Douglas fir | 73 | 5 | Douglas fir. |
| Rock outcrop. | | | | | | | | | | |
| 68: | | | | | | | | | | |
| Klickson | 7R | Moderate | Severe | Slight | Slight | Severe | Ponderosa pine | 98 | 7 | Ponderosa pine, |
| | | | | | | | Douglas fir | 73 | 5 | Douglas fir. |
| Uptmor | 5A | Moderate | Moderate | Slight | Slight | Moderate | Ponderosa pine | 85 | 5 | Ponderosa pine, |
| | | | | | | | Douglas fir | 62 | 3 | Douglas fir. |
| 69 Kruse | 7R | Severe | Severe | Moderate | Slight | Moderate | Grand fir | 76 | 7 | Douglas fir, ponderosa |
| | | | | | | | Ponderosa pine | 108 | 8 | pine, western larch. |
| | | | | | | | Douglas fir | 70 | 4 | |
| | | | | | | | Western larch | --- | --- | |
| 71 Larabee | 5D | Slight | Slight | Moderate | Moderate | Moderate | Ponderosa pine | 82 | 5 | Ponderosa pine, |
| | | | | | | | Douglas fir | 55 | 2 | Douglas fir. |
| 72: | | | | | | | | | | |
| Larabee | 5R | Severe | Severe | Severe | Slight | Moderate | Ponderosa pine | 82 | 5 | Ponderosa pine, |
| | | | | | | | Douglas fir | 55 | 2 | Douglas fir. |
| Gwin. | | | | | | | | | | |
| 73: | | | | | | | | | | |
| Larabee | 5D | Moderate | Moderate | Moderate | Slight | Moderate | Ponderosa pine | 82 | 5 | Ponderosa pine, |
| | | | | | | | Douglas fir | 55 | 2 | Douglas fir. |
| Zaza. | | | | | | | | | | |

Table 8.--Woodland Management and Productivity--Continued

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Windthrow hazard | Plant competition | Potential productivity: Common trees | Site index | Productivity class | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|---|
| 73: | | | | | | | | | | |
| Seddow | 6D | Severe | Moderate | Moderate | Moderate | Moderate | Grand fir | 64 | 6 | Ponderosa pine, Douglas fir, western larch. |
| | | | | | | | Douglas fir | 64 | 4 | |
| | | | | | | | Ponderosa pine | 85 | 5 | |
| | | | | | | | Western larch | --- | --- | |
| | | | | | | | Lodgepole pine | --- | --- | |
| 74: | | | | | | | | | | |
| Larkin | 6A | Moderate | Moderate | Slight | Slight | Moderate | Ponderosa pine | 90 | 6 | Ponderosa pine. |
| Driscoll | 9A | Moderate | Slight | Slight | Moderate | Moderate | Ponderosa pine | 115 | 9 | Ponderosa pine. |
| 76: | | | | | | | | | | |
| Lauby | 7A | Moderate | Moderate | Slight | Slight | Moderate | Ponderosa pine | 95 | 7 | Ponderosa pine. |
| Southwick | 7D | Moderate | Moderate | Slight | Moderate | Moderate | Ponderosa pine | 105 | 7 | Ponderosa pine. |
| 84: | | | | | | | | | | |
| Maloney | 3D | Moderate | Slight | Severe | Severe | Slight | Ponderosa pine | 57 | 3 | Ponderosa pine. |
| | | | | | | | Lodgepole pine | --- | --- | |
| Zaza. | | | | | | | | | | |
| 85: | | | | | | | | | | |
| Meland. | | | | | | | | | | |
| Jacket | 9A | Slight | Slight | Slight | Slight | Moderate | Ponderosa pine | 113 | 9 | Ponderosa pine. |
| 86: | | | | | | | | | | |
| Meland. | | | | | | | | | | |
| Keuterville | 6F | Moderate | Moderate | Moderate | Slight | Moderate | Ponderosa pine | 93 | 6 | Ponderosa pine. |
| 112 Seddow | 6D | Severe | Moderate | Moderate | Moderate | Moderate | Grand fir | 64 | 6 | Ponderosa pine, Douglas fir, western larch. |
| | | | | | | | Douglas fir | 64 | 4 | |
| | | | | | | | Ponderosa pine | 85 | 5 | |
| | | | | | | | Western larch | --- | --- | |
| | | | | | | | Lodgepole pine | --- | --- | |
| 113 Setters | 7D | Moderate | Slight | Slight | Moderate | Moderate | Ponderosa pine | 99 | 7 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 74 | 5 | |

Table 8.--Woodland Management and Productivity--Continued

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Windthrow hazard | Plant competition | Potential productivity: Common trees | Site index | Productivity class | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|---|
| 114 Shilla | 7A | Slight | Slight | Slight | Slight | Moderate | Grand fir | 69 | 7 | Douglas fir, western larch. |
| | | | | | | | Douglas fir | 69 | 4 | |
| | | | | | | | Western larch | --- | --- | |
| | | | | | | | Engelmann spruce | 94 | 7 | |
| | | | | | | | Lodgepole pine | --- | --- | |
| 115: | | | | | | | | | | |
| Shilla | 7A | Slight | Slight | Slight | Slight | Moderate | Grand fir | 69 | 7 | Douglas fir, western larch. |
| | | | | | | | Douglas fir | 69 | 4 | |
| | | | | | | | Western larch | --- | --- | |
| | | | | | | | Engelmann spruce | 94 | 7 | |
| | | | | | | | Lodgepole pine | --- | --- | |
| Seddow | 6D | Moderate | Slight | Moderate | Moderate | Moderate | Grand fir | 64 | 6 | Ponderosa pine, Douglas fir, western larch. |
| | | | | | | | Douglas fir | 64 | 4 | |
| | | | | | | | Ponderosa pine | 85 | 5 | |
| | | | | | | | Western larch | --- | --- | |
| | | | | | | | Lodgepole pine | --- | --- | |
| 118 Southwick | 7D | Slight | Slight | Slight | Moderate | Moderate | Ponderosa pine | 105 | 7 | Ponderosa pine. |
| 119: | | | | | | | | | | |
| Southwick | 7D | Slight | Moderate | Slight | Moderate | Moderate | Ponderosa pine | 105 | 7 | Ponderosa pine. |
| Bluesprin. | | | | | | | | | | |
| 120: | | | | | | | | | | |
| Southwick | 7D | Slight | Slight | Slight | Moderate | Moderate | Ponderosa pine | 105 | 7 | Ponderosa pine. |
| Driscoll | 9A | Moderate | Slight | Slight | Moderate | Moderate | Ponderosa pine | 115 | 9 | Ponderosa pine. |
| 121: | | | | | | | | | | |
| Southwick | 7D | Slight | Moderate | Slight | Moderate | Moderate | Ponderosa pine | 105 | 7 | Ponderosa pine. |
| Driscoll | 9A | Moderate | Slight | Slight | Moderate | Moderate | Ponderosa pine | 115 | 9 | Ponderosa pine. |
| 122: | | | | | | | | | | |
| Southwick | 7D | Slight | Moderate | Slight | Moderate | Moderate | Ponderosa pine | 105 | 7 | Ponderosa pine. |
| Larkin | 6A | Moderate | Moderate | Slight | Slight | Moderate | Ponderosa pine | 90 | 6 | Ponderosa pine. |
| 123: | | | | | | | | | | |
| Sweiting | 5D | Moderate | Slight | Moderate | Moderate | Moderate | Ponderosa pine | 83 | 5 | Ponderosa pine. |

Table 8.--Woodland Management and Productivity--Continued

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Windthrow hazard | Plant competition | Potential productivity: Common trees | Site index | Productivity class | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|---|
| 123: | | | | | | | | | | |
| Joel | 8A | Slight | Slight | Slight | Slight | Moderate | Ponderosa pine | 110 | 8 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 75 | 6 | |
| 124 Talmaks | 9A | Slight | Slight | Slight | Slight | Moderate | Grand fir | 84 | 9 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 78 | 5 | |
| | | | | | | | Ponderosa pine | 102 | 7 | |
| | | | | | | | Western larch | --- | --- | |
| | | | | | | | Lodgepole pine | --- | --- | |
| 125 Talmaks | 9A | Moderate | Slight | Slight | Slight | Moderate | Grand fir | 84 | 9 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 78 | 5 | |
| | | | | | | | Ponderosa pine | 102 | 7 | |
| | | | | | | | Western larch | --- | --- | |
| | | | | | | | Lodgepole pine | --- | --- | |
| 126: | | | | | | | | | | |
| Talmaks | 9A | Moderate | Slight | Slight | Slight | Moderate | Grand fir | 84 | 9 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 78 | 5 | |
| | | | | | | | Ponderosa pine | 102 | 7 | |
| | | | | | | | Western larch | --- | --- | |
| | | | | | | | Lodgepole pine | --- | --- | |
| Seddow | 6D | Moderate | Slight | Moderate | Moderate | Moderate | Grand fir | 64 | 6 | Ponderosa pine, Douglas fir, western larch. |
| | | | | | | | Douglas fir | 64 | 4 | |
| | | | | | | | Ponderosa pine | 85 | 5 | |
| | | | | | | | Western larch | --- | --- | |
| | | | | | | | Lodgepole pine | --- | --- | |
| 128 Taney | 7D | Slight | Slight | Slight | Moderate | Moderate | Ponderosa pine | 101 | 7 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 75 | 5 | |
| 129: | | | | | | | | | | |
| Taney | 7D | Severe | Moderate | Slight | Moderate | Moderate | Ponderosa pine | 101 | 7 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 75 | 5 | |
| Joel | 8A | Slight | Slight | Slight | Slight | Moderate | Ponderosa pine | 104 | 8 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 70 | 4 | |
| 130: | | | | | | | | | | |
| Taney | 7D | Severe | Moderate | Slight | Moderate | Moderate | Ponderosa pine | 101 | 7 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 75 | 5 | |

Table 8.--Woodland Management and Productivity--Continued

| Soil name and map symbol | Ordination symbol | Management concerns: Erosion hazard | Equipment limitation | Seedling mortality | Windthrow hazard | Plant competition | Potential productivity: Common trees | Site index | Productivity class | Trees to plant |
|---|---|---|---|---|---|---|---|---|---|---|
| 130: | | | | | | | | | | |
| Joel | 8A | Moderate | Moderate | Slight | Slight | Moderate | Ponderosa pine | 104 | 8 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 70 | 4 | |
| 131: | | | | | | | | | | |
| Taney | 7D | Slight | Slight | Slight | Moderate | Moderate | Ponderosa pine | 101 | 7 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 75 | 5 | |
| Setters | 7D | Moderate | Slight | Slight | Moderate | Moderate | Ponderosa pine | 99 | 7 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 74 | 5 | |
| 132: | | | | | | | | | | |
| Taney | 7D | Moderate | Slight | Slight | Moderate | Moderate | Ponderosa pine | 101 | 7 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 75 | 5 | |
| Setters | 7D | Moderate | Slight | Slight | Moderate | Moderate | Ponderosa pine | 99 | 7 | Ponderosa pine, Douglas fir. |
| | | | | | | | Douglas fir | 74 | 5 | |
| 146 Uvi | 6R | Severe | Severe | Moderate | Slight | Severe | Grand fir | 55 | 6 | Douglas fir, ponderosa pine. |
| | | | | | | | Douglas fir | 80 | 7 | |
| | | | | | | | Ponderosa pine | --- | --- | |
| 150: | | | | | | | | | | |
| Webbridge | 4R | Slight | Severe | Slight | Slight | Moderate | Grand fir | 51 | 4 | Douglas fir, Engelmann spruce. |
| | | | | | | | Engelmann spruce | 89 | 6 | |
| | | | | | | | Douglas fir | 55 | 3 | |
| Agatha | 6R | Severe | Severe | Slight | Slight | Severe | Grand fir | 65 | 6 | Douglas fir. |
| | | | | | | | Douglas fir | 69 | 4 | |
| | | | | | | | Western larch | --- | --- | |

Table 9.--Windbreaks and Environmental Plantings

(The symbol < means less than; > means more than. Only the soils suited to windbreaks and environmental plantings are listed. Absence of an entry indicates that trees generally do not grow to the given height on that soil)

| Soil name and map symbol | Trees having predicted 20-year average height, in feet, of-- | | | | |
|---|---|---|---|---|---|
| | <8 | 8-15 | 16-25 | 26-35 | >35 |
| 12: | | | | | |
| Boles | --- | Lilac, Austrian pine, Siberian peashrub, Russian olive. | Siberian elm, Douglas fir, black locust, ponderosa pine. | --- | --- |
| Joel | Peking cotoneaster | Siberian peashrub, honeysuckle, lilac. | Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine. | Golden willow, Siberian elm, Lombardy poplar. | --- |
| 13: | | | | | |
| Bridgewater | Peking cotoneaster, Nanking cherry. | Siberian peashrub, Rocky Mountain juniper. | Russian olive, Manchurian crabapple. | Siberian crabapple, green ash. | Black locust, ponderosa pine. |
| Joseph. | | | | | |
| 14, 15 | | | | | |
| Broadax | Peking cotoneaster, skunkbush sumac. | Siberian peashrub | Russian olive, common chokecherry. | Siberian crabapple | Green ash, Siberian elm, plains cottonwood. |
| 16, 17: | | | | | |
| Broadax | Peking cotoneaster, skunkbush sumac. | Siberian peashrub | Russian olive, common chokecherry. | Siberian crabapple | Green ash, Siberian elm, plains cottonwood. |
| Hatwai | Tatarian honeysuckle. | Siberian peashrub, lilac, Rocky Mountain juniper, Russian olive. | Green ash, Siberian elm. | Norway spruce, black locust. | --- |
| 18: | | | | | |
| Caldwell | Peking cotoneaster, redosier dogwood. | Siberian peashrub, lilac. | Rocky Mountain juniper, Russian olive. | Austrian pine, ponderosa pine. | Green ash, Scotch pine, black locust, Lombardy poplar. |
| Latah | Redosier dogwood, Peking cotoneaster. | Tatarian honeysuckle, Siberian peashrub, lilac. | Rocky Mountain juniper, Russian olive. | Green ash, Austrian pine, Scotch pine. | Siberian elm, black locust. |
| 19: | | | | | |
| Calouse | Peking cotoneaster, skunkbush sumac. | American plum, Siberian peashrub. | Russian olive, common chokecherry. | --- | Green ash, hackberry, golden willow, Siberian elm. |
| Almota | Peking cotoneaster, skunkbush sumac. | Lilac, Siberian peashrub. | Russian olive, common chokecherry. | Green ash, black locust. | Ponderosa pine, Siberian elm. |

Table 9.--Windbreaks and Environmental Plantings--Continued

| Soil name and map symbol | Trees having predicted 20-year average height, in feet, of-- <8 | 8-15 | 16-25 | 26-35 | >35 |
|---|---|---|---|---|---|
| 20: | | | | | |
| Calouse | Peking cotoneaster, skunkbush sumac. | American plum, Siberian peashrub. | Russian olive, common chokecherry. | --- | Green ash, hackberry, golden willow, Siberian elm. |
| Endicott | Nanking cherry, Peking cotoneaster. | Siberian peashrub, lilac, Tatarian honeysuckle. | Common chokecherry | Norway spruce, green ash. | Black locust, golden willow. |
| Bryden | Peking cotoneaster, skunkbush sumac. | Siberian peashrub, lilac, Tatarian honeysuckle. | --- | Norway spruce, green ash. | Black locust, golden willow. |
| 21, 22 Carlinton | Peking cotoneaster, Nanking cherry. | Saskatoon serviceberry, American plum. | Amur maple | --- | Ponderosa pine, silver maple. |
| 23: | | | | | |
| Carlinton | Peking cotoneaster, Nanking cherry. | Saskatoon serviceberry, American plum. | Amur maple | --- | Ponderosa pine, silver maple. |
| Talmaks | Nanking cherry, Peking cotoneaster. | Saskatoon serviceberry, Tatarian honeysuckle. | Amur maple, common chokecherry. | Siberian crabapple | Scotch pine, ponderosa pine, white spruce. |
| 24: | | | | | |
| Cavendish | --- | Tatarian honeysuckle, Russian olive, lilac, Rocky Mountain juniper. | Golden willow, blue spruce. | Douglas fir, ponderosa pine, black locust. | --- |
| Taney | Peking cotoneaster, Nanking cherry. | American plum | Common chokecherry, Amur maple. | Black locust | Ponderosa pine, white spruce. |
| 25, 26, 27 Chard | Peking cotoneaster | Tatarian honeysuckle, Rocky Mountain juniper. | Russian olive, green ash, Siberian elm. | Ponderosa pine, black locust, blue spruce. | Austrian pine. |
| 28: | | | | | |
| Chard | Peking cotoneaster | Tatarian honeysuckle, Rocky Mountain juniper. | Russian olive, green ash, Siberian elm. | Ponderosa pine, black locust, blue spruce. | Austrian pine. |
| Chard, moist | Peking cotoneaster | Tatarian honeysuckle, Rocky Mountain juniper. | Russian olive, green ash, Siberian elm. | Ponderosa pine, black locust, blue spruce. | Austrian pine. |
| 29: | | | | | |
| Chard | Peking cotoneaster | Tatarian honeysuckle, Rocky Mountain juniper. | Russian olive, green ash, Siberian elm. | Ponderosa pine, black locust, blue spruce. | Austrian pine. |
| Tammany. | | | | | |

Table 9.--Windbreaks and Environmental Plantings--Continued

| Soil name and map symbol | Trees having predicted 20-year average height, in feet, of-- | | | | |
|---|---|---|---|---|---|
| | <8 | 8-15 | 16-25 | 26-35 | >35 |
| 30: | | | | | |
| Chard | Peking cotoneaster | Tatarian honeysuckle, Rocky Mountain juniper. | Russian olive, green ash, Siberian elm. | Ponderosa pine, black locust, blue spruce. | Austrian pine. |
| Urban land. | | | | | |
| 35 Driscoll | Peking cotoneaster | Siberian peashrub, lilac, honeysuckle. | Rocky Mountain juniper, Douglas fir, green ash, blue spruce, ponderosa pine. | Siberian elm, Lombardy poplar, golden willow. | --- |
| 36: | | | | | |
| Driscoll | Peking cotoneaster | Siberian peashrub, lilac, honeysuckle. | Rocky Mountain juniper, Douglas fir, green ash, blue spruce, ponderosa pine. | Siberian elm, Lombardy poplar, golden willow. | --- |
| Larkin | Peking cotoneaster | Siberian peashrub, lilac, honeysuckle. | Green ash, Douglas fir, blue spruce, Rocky Mountain juniper, Norway spruce, ponderosa pine. | Golden willow, Siberian elm. | --- |
| 37, 38: | | | | | |
| Endicott | Nanking cherry, Peking cotoneaster. | Siberian peashrub, lilac, Tatarian honeysuckle. | Common chokecherry | Norway spruce, green ash. | Black locust, golden willow. |
| Bryden | Peking cotoneaster, skunkbush sumac. | Siberian peashrub, lilac, Tatarian honeysuckle. | --- | Norway spruce, green ash. | Black locust, golden willow. |
| 39: | | | | | |
| Endicott | Nanking cherry, Peking cotoneaster. | Siberian peashrub, lilac, Tatarian honeysuckle. | Common chokecherry | Norway spruce, green ash. | Black locust, golden willow. |
| Oliphant | Nanking cherry, Peking cotoneaster. | Siberian peashrub, Tatarian honeysuckle. | Common chokecherry | Norway spruce, green ash. | Black locust, golden willow. |
| 41: | | | | | |
| Gwin. | | | | | |
| Vollmer | --- | Siberian peashrub, Russian olive, lilac, Amur honeysuckle. | Ponderosa pine, Austrian pine, black locust, Siberian elm. | --- | --- |
| 42 Haploxerolls | --- | Siberian peashrub, lilac, Tatarian honeysuckle. | --- | Norway spruce, green ash. | Black locust. |

Table 9.--Windbreaks and Environmental Plantings--Continued

| Soil name and map symbol | Trees having predicted 20-year average height, in feet, of-- <8 | 8-15 | 16-25 | 26-35 | >35 |
|---|---|---|---|---|---|
| 45, 46 Jacket | --- | Siberian peashrub, Russian olive, Austrian pine, Amur honeysuckle, lilac, Rocky Mountain juniper. | Siberian elm, black locust, ponderosa pine. | --- | --- |
| 47: | | | | | |
| Jacket. | | | | | |
| Larkin | Peking cotoneaster | Siberian peashrub, lilac, honeysuckle. | Green ash, Douglas fir, blue spruce, Rocky Mountain juniper, Norway spruce, ponderosa pine. | Golden willow, Siberian elm. | --- |
| 48, 49 Joel | Peking cotoneaster | Siberian peashrub, honeysuckle, lilac. | Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine. | Golden willow, Siberian elm, Lombardy poplar. | --- |
| 50, 51: | | | | | |
| Joel | Peking cotoneaster | Siberian peashrub, honeysuckle, lilac. | Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine. | Golden willow, Siberian elm, Lombardy poplar. | --- |
| Setters | Peking cotoneaster | Siberian peashrub, honeysuckle, lilac. | Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine. | Golden willow, Siberian elm, Lombardy poplar. | --- |
| 54: | | | | | |
| Johnson | Peking cotoneaster, Nanking cherry. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Manchurian crabapple. | --- | Ponderosa pine, black locust. |
| Kruse | --- | Lilac, Tatarian honeysuckle, Siberian peashrub. | Russian olive, Norway spruce, blue spruce, Austrian pine. | Ponderosa pine, Douglas fir. | --- |
| 55: | | | | | |
| Johnson | Peking cotoneaster, Nanking cherry. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Manchurian crabapple. | --- | Ponderosa pine, black locust. |
| Labuck | Peking cotoneaster, Nanking cherry. | Lilac, Saskatoon serviceberry. | Manchurian crabapple, common chokecherry. | Siberian crabapple, black locust. | Ponderosa pine, blue spruce. |
| 56: | | | | | |
| Joseph. | | | | | |

Table 9.--Windbreaks and Environmental Plantings--Continued

| Soil name and map symbol | Trees having predicted 20-year average height, in feet, of-- <8 | 8-15 | 16-25 | 26-35 | >35 |
|---|---|---|---|---|---|
| 56: | | | | | |
| Tombeall | Nanking cherry | Siberian peashrub, Saskatoon serviceberry. | Common chokecherry, Russian olive. | --- | Golden willow, plains cottonwood. |
| 58: | | | | | |
| Kettenbach. | | | | | |
| Keuterville | --- | Siberian peashrub, lilac, Rocky Mountain juniper. | Russian olive, Siberian elm, black locust, ponderosa pine, Austrian pine. | --- | --- |
| 60, 61 Keuterville | --- | Siberian peashrub, lilac, Rocky Mountain juniper. | Russian olive, Siberian elm, black locust, ponderosa pine, Austrian pine. | --- | --- |
| 62: | | | | | |
| Keuterville | --- | Siberian peashrub, lilac, Rocky Mountain juniper. | Russian olive, Siberian elm, black locust, ponderosa pine, Austrian pine. | --- | --- |
| Rock outcrop. | | | | | |
| 69 Kruse | --- | Lilac, Tatarian honeysuckle, Siberian peashrub. | Russian olive, Norway spruce, blue spruce, Austrian pine. | Ponderosa pine, Douglas fir. | --- |
| 70: | | | | | |
| Lapwai | Nanking cherry, skunkbush sumac. | Siberian peashrub, American plum. | Manchurian crabapple, common chokecherry. | --- | Black locust, hackberry, Siberian elm, ponderosa pine. |
| Bridgewater | Peking cotoneaster, Nanking cherry. | Siberian peashrub, Rocky Mountain juniper. | Russian olive, Manchurian crabapple. | Siberian crabapple, green ash. | Black locust, ponderosa pine. |
| 74: | | | | | |
| Larkin | Peking cotoneaster | Siberian peashrub, lilac, honeysuckle. | Green ash, Douglas fir, blue spruce, Rocky Mountain juniper, Norway spruce, ponderosa pine. | Golden willow, Siberian elm. | --- |
| Driscoll | Peking cotoneaster | Siberian peashrub, lilac, honeysuckle. | Rocky Mountain juniper, Douglas fir, green ash, blue spruce, ponderosa pine. | Siberian elm, Lombardy poplar, golden willow. | --- |

Table 9.--Windbreaks and Environmental Plantings--Continued

| Soil name and map symbol | Trees having predicted 20-year average height, in feet, of-- | | | | |
|---|---|---|---|---|---|
| | <8 | 8-15 | 16-25 | 26-35 | >35 |
| 75: | | | | | |
| Latahco---------- | --- | Siberian peashrub, Tatarian honeysuckle, lilac, Russian olive, golden willow. | --- | Siberian elm, ponderosa pine. | Cottonwood. |
| Thatuna---------- | --- | Green ash, Douglas fir, Siberian peashrub, Russian olive, blue spruce, Rocky Mountain juniper, lilac, Nanking cherry. | Norway spruce, Austrian pine, ponderosa pine. | Black locust------ | --- |
| 76: | | | | | |
| Lauby. | | | | | |
| Southwick-------- | --- | Siberian peashrub, Rocky Mountain juniper, Tatarian honeysuckle, lilac. | Russian olive, golden willow. | Black locust, Scotch pine, Douglas fir, ponderosa pine, Austrian pine. | Cottonwood. |
| 83: | | | | | |
| Mallory. | | | | | |
| Jacket---------- | --- | Siberian peashrub, Russian olive, Austrian pine, Amur honeysuckle, lilac, Rocky Mountain juniper. | Siberian elm, black locust, ponderosa pine. | --- | --- |
| 85: | | | | | |
| Meland---------- | --- | Siberian peashrub, Russian olive, Austrian pine. | Siberian elm, black locust, ponderosa pine. | --- | --- |
| Jacket---------- | --- | Siberian peashrub, Russian olive, Austrian pine, Amur honeysuckle, lilac, Rocky Mountain juniper. | Siberian elm, black locust, ponderosa pine. | --- | --- |
| 86: | | | | | |
| Meland---------- | --- | Siberian peashrub, Russian olive, Austrian pine. | Siberian elm, black locust, ponderosa pine. | --- | --- |
| Keuterville------ | --- | Siberian peashrub, lilac, Rocky Mountain juniper. | Russian olive, Siberian elm, black locust, ponderosa pine, Austrian pine. | --- | --- |

Table 9.--Windbreaks and Environmental Plantings--Continued

| Soil name and map symbol | Trees having predicted 20-year average height, in feet, of-- | | | | |
|---|---|---|---|---|---|
| | <8 | 8-15 | 16-25 | 26-35 | >35 |
| 87: | | | | | |
| Mohler | Peking cotoneaster, Nanking cherry. | Siberian peashrub, Saskatoon serviceberry. | Manchurian crabapple, common chokecherry. | Siberian crabapple | Black locust, green ash, ponderosa pine. |
| Nez Perce | --- | Siberian peashrub, Russian olive, lilac, Amur honeysuckle. | Siberian elm, black locust, ponderosa pine, Austrian pine. | --- | --- |
| Uhlorn | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| 89, 90: | | | | | |
| Naff | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| Palouse | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| 91: | | | | | |
| Naff | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| Palouse | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| 92: | | | | | |
| Naff | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| Palouse | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| Garfield | --- | Green ash, Nanking cherry, blue spruce, lilac, Siberian peashrub. | Russian olive, Rocky Mountain juniper. | Norway spruce, Austrian pine, black locust, ponderosa pine, Douglas fir. | --- |
| 93: | | | | | |
| Naff | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |

Table 9.--Windbreaks and Environmental Plantings--Continued

| Soil name and map symbol | Trees having predicted 20-year average height, in feet, of-- <8 | 8-15 | 16-25 | 26-35 | >35 |
|---|---|---|---|---|---|
| 93: | | | | | |
| Thatuna | --- | Green ash, Douglas fir, Siberian peashrub, Russian olive, blue spruce, Rocky Mountain juniper, lilac, Nanking cherry. | Norway spruce, Austrian pine, ponderosa pine. | Black locust | --- |
| 94, 95: | | | | | |
| Naff | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| Waha | Peking cotoneaster, Nanking cherry. | American plum, Saskatoon serviceberry. | Manchurian crabapple, common chokecherry. | --- | Black locust, ponderosa pine. |
| 97, 98 Nez Perce | --- | Siberian peashrub, Russian olive, lilac, Amur honeysuckle. | Siberian elm, black locust, ponderosa pine, Austrian pine. | --- | --- |
| 99: | | | | | |
| Nez Perce | --- | Siberian peashrub, Russian olive, lilac, Amur honeysuckle. | Siberian elm, black locust, ponderosa pine, Austrian pine. | --- | --- |
| Uhlorn | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| 100, 101 Oliphant | Nanking cherry, Peking cotoneaster. | Siberian peashrub, Tatarian honeysuckle. | Common chokecherry | Norway spruce, green ash. | Black locust, golden willow. |
| 102 Oliphant, gravelly substratum | Peking cotoneaster, skunkbush sumac. | Rocky Mountain juniper, Tatarian honeysuckle. | Russian olive, Austrian pine, green ash. | Black locust, hackberry, ponderosa pine. | --- |
| 103: | | | | | |
| Oliphant. | | | | | |
| Alpowa | Skunkbush sumac, Siberian peashrub, lilac, Tatarian honeysuckle. | Rocky Mountain juniper, Russian olive, green ash, Siberian elm. | Austrian pine, ponderosa pine, Scotch pine, black locust. | --- | --- |
| 104: | | | | | |
| Oliphant | Nanking cherry, Peking cotoneaster. | Siberian peashrub, Tatarian honeysuckle. | Common chokecherry | Norway spruce, green ash. | Black locust, golden willow. |

Table 9.--Windbreaks and Environmental Plantings--Continued

| Soil name and map symbol | Trees having predicted 20-year average height, in feet, of-- <8 | 8-15 | 16-25 | 26-35 | >35 |
|---|---|---|---|---|---|
| 104: | | | | | |
| Hatwai | Tatarian honeysuckle. | Siberian peashrub, lilac, Rocky Mountain juniper, Russian olive. | Green ash, Siberian elm. | Norway spruce, black locust. | --- |
| 105: | | | | | |
| Oliphant | Peking cotoneaster, skunkbush sumac. | Rocky Mountain juniper, Tatarian honeysuckle. | Russian olive, Austrian pine, green ash. | Black locust, hackberry, ponderosa pine. | --- |
| Stember | Peking cotoneaster, skunkbush sumac. | Lilac, Siberian peashrub, eastern redcedar. | Hackberry, Russian olive, green ash. | Siberian elm, plains cottonwood. | --- |
| 106, 107: | | | | | |
| Palouse | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| Athena | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| 109 Redmore | Skunkbush sumac, Peking cotoneaster. | Siberian peashrub, Rocky Mountain juniper. | Russian olive, green ash. | Hackberry, black locust. | Siberian elm, honeylocust. |
| 113 Setters | Peking cotoneaster | Siberian peashrub, honeysuckle, lilac. | Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine. | Golden willow, Siberian elm, Lombardy poplar. | --- |
| 116 Slickpoo | Skunkbush sumac | Peking cotoneaster, lilac, Tatarian honeysuckle, Siberian peashrub. | Rocky Mountain juniper, common chokecherry. | --- | Russian olive, black locust, Siberian elm. |
| 117: | | | | | |
| Slickpoo | Skunkbush sumac | Peking cotoneaster, lilac, Tatarian honeysuckle, Siberian peashrub. | Rocky Mountain juniper, common chokecherry. | --- | Russian olive, black locust, Siberian elm. |
| Broadax | Peking cotoneaster, skunkbush sumac. | Siberian peashrub | Russian olive, common chokecherry. | Siberian crabapple | Green ash, Siberian elm, plains cottonwood. |
| 118 Southwick | --- | Siberian peashrub, Rocky Mountain juniper, Tatarian honeysuckle, lilac. | Russian olive, golden willow. | Black locust, Scotch pine, Douglas fir, ponderosa pine, Austrian pine. | Cottonwood. |

Table 9.--Windbreaks and Environmental Plantings--Continued

| Soil name and map symbol | Trees having predicted 20-year average height, in feet, of-- | | | | |
|---|---|---|---|---|---|
| | <8 | 8-15 | 16-25 | 26-35 | >35 |
| 119: | | | | | |
| Southwick | --- | Siberian peashrub, Rocky Mountain juniper, Tatarian honeysuckle, lilac. | Russian olive, golden willow. | Black locust, Scotch pine, Douglas fir, ponderosa pine, Austrian pine. | Cottonwood. |
| Bluesprin | Peking cotoneaster, Nanking cherry. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Manchurian crabapple. | --- | Ponderosa pine, black locust. |
| 120, 121: | | | | | |
| Southwick | --- | Siberian peashrub, Rocky Mountain juniper, Tatarian honeysuckle, lilac. | Russian olive, golden willow. | Black locust, Scotch pine, Douglas fir, ponderosa pine, Austrian pine. | Cottonwood. |
| Driscoll | Peking cotoneaster | Siberian peashrub, lilac, honeysuckle. | Rocky Mountain juniper, Douglas fir, green ash, blue spruce, ponderosa pine. | Siberian elm, Lombardy poplar, golden willow. | --- |
| 122: | | | | | |
| Southwick | --- | Siberian peashrub, Rocky Mountain juniper, Tatarian honeysuckle, lilac. | Russian olive, golden willow. | Black locust, Scotch pine, Douglas fir, ponderosa pine, Austrian pine. | Cottonwood. |
| Larkin | Peking cotoneaster | Siberian peashrub, lilac, honeysuckle. | Green ash, Douglas fir, blue spruce, Rocky Mountain juniper, Norway spruce, ponderosa pine. | Golden willow, Siberian elm. | --- |
| 123: | | | | | |
| Sweiting | --- | Lilac, Austrian pine, Siberian peashrub, Russian olive. | Siberian elm, Douglas fir, black locust, ponderosa pine. | --- | --- |
| Joel | Peking cotoneaster | Siberian peashrub, honeysuckle, lilac. | Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine. | Golden willow, Siberian elm, Lombardy poplar. | --- |
| 124, 125 Talmaks | Nanking cherry, Peking cotoneaster. | Saskatoon serviceberry, Tatarian honeysuckle. | Amur maple, common chokecherry. | Siberian crabapple | Scotch pine, ponderosa pine, white spruce. |
| 126: | | | | | |
| Talmaks | Nanking cherry, Peking cotoneaster. | Saskatoon serviceberry, Tatarian honeysuckle. | Amur maple, common chokecherry. | Siberian crabapple | Scotch pine, ponderosa pine, white spruce. |

Table 9.--Windbreaks and Environmental Plantings--Continued

| Soil name and map symbol | Trees having predicted 20-year average height, in feet, of-- <8 | 8-15 | 16-25 | 26-35 | >35 |
|---|---|---|---|---|---|
| 126: Seddow. | | | | | |
| 127: Tammany. | | | | | |
| Chard | Peking cotoneaster | Tatarian honeysuckle, Rocky Mountain juniper. | Russian olive, green ash, Siberian elm. | Ponderosa pine, black locust, blue spruce. | Austrian pine. |
| Rock outcrop. | | | | | |
| 128 Taney | Peking cotoneaster, Nanking cherry. | American plum | Common chokecherry, Amur maple. | Black locust | Ponderosa pine, white spruce. |
| 129: Taney | Peking cotoneaster, Nanking cherry. | American plum | Common chokecherry, Amur maple. | Black locust | Ponderosa pine, white spruce. |
| Joel | Peking cotoneaster | Siberian peashrub, honeysuckle, lilac. | Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine. | Golden willow, Siberian elm, Lombardy poplar. | --- |
| 130: Taney. | | | | | |
| Joel | Peking cotoneaster | Siberian peashrub, honeysuckle, lilac. | Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine. | Golden willow, Siberian elm, Lombardy poplar. | --- |
| 131, 132: Taney | Peking cotoneaster, Nanking cherry. | American plum | Common chokecherry, Amur maple. | Black locust | Ponderosa pine, white spruce. |
| Setters | Peking cotoneaster | Siberian peashrub, honeysuckle, lilac. | Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine. | Golden willow, Siberian elm, Lombardy poplar. | --- |
| 133, 134: Thatuna | --- | Green ash, Douglas fir, Siberian peashrub, Russian olive, blue spruce, Rocky Mountain juniper, lilac, Nanking cherry. | Norway spruce, Austrian pine, ponderosa pine. | Black locust | --- |

Table 9.--Windbreaks and Environmental Plantings--Continued

| Soil name and map symbol | Trees having predicted 20-year average height, in feet, of-- <8 | 8-15 | 16-25 | 26-35 | >35 |
|---|---|---|---|---|---|
| 133, 134: | | | | | |
| Naff | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| 135: | | | | | |
| Thatuna | --- | Green ash, Douglas fir, Siberian peashrub, Russian olive, blue spruce, Rocky Mountain juniper, lilac, Nanking cherry. | Norway spruce, Austrian pine, ponderosa pine. | Black locust | --- |
| Naff. | | | | | |
| 136: | | | | | |
| Thatuna | --- | Green ash, Douglas fir, Siberian peashrub, Russian olive, blue spruce, Rocky Mountain juniper, lilac, Nanking cherry. | Norway spruce, Austrian pine, ponderosa pine. | Black locust | --- |
| Naff | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| Tilma | --- | Green ash, Douglas fir, Rocky Mountain juniper, Siberian peashrub, Russian olive, lilac, Nanking cherry. | Austrian pine, ponderosa pine, Norway spruce, blue spruce. | Black locust | --- |
| 137 Tombeall | Nanking cherry | Siberian peashrub, Saskatoon serviceberry. | Common chokecherry, Russian olive. | --- | Golden willow, plains cottonwood. |
| 138, 139, 140 Uhlig | Peking cotoneaster, redosier dogwood. | Siberian peashrub, lilac. | Rocky Mountain juniper, Russian olive. | Austrian pine, ponderosa pine, green ash, Scotch pine. | Siberian elm, black locust. |
| 141 Uhlorn | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |

Table 9.--Windbreaks and Environmental Plantings--Continued

| Soil name and map symbol | Trees having predicted 20-year average height, in feet, of-- <8 | 8-15 | 16-25 | 26-35 | >35 |
|---|---|---|---|---|---|
| 142, 143: | | | | | |
| Uhlorn | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| Nez Perce | --- | Siberian peashrub, Russian olive, lilac, Amur honeysuckle. | Siberian elm, black locust, ponderosa pine, Austrian pine. | --- | --- |
| 144: | | | | | |
| Uhlorn | Nanking cherry, Peking cotoneaster. | Tatarian honeysuckle, Saskatoon serviceberry. | Common chokecherry, Russian olive. | Siberian crabapple, ponderosa pine. | Green ash, black locust. |
| Vollmer | --- | Siberian peashrub, Russian olive, lilac, Amur honeysuckle. | Ponderosa pine, Austrian pine, black locust, Siberian elm. | --- | --- |
| 145: | | | | | |
| Urban land. | | | | | |
| Wistona | Peking cotoneaster, skunkbush sumac. | Siberian peashrub, Rocky Mountain juniper. | Russian olive, Manchurian crabapple. | --- | Black locust, hackberry, Siberian elm. |
| 147, 148 Vollmer | --- | Siberian peashrub, Russian olive, lilac, Amur honeysuckle. | Ponderosa pine, Austrian pine, black locust, Siberian elm. | --- | --- |
| 151: | | | | | |
| Westlake | --- | Siberian peashrub, lilac, Russian olive, golden willow. | --- | Siberian elm, ponderosa pine. | Cottonwood. |
| Latahco | --- | Siberian peashrub, Tatarian honeysuckle, lilac, Russian olive, golden willow. | --- | Siberian elm, ponderosa pine. | Cottonwood. |
| 153 Wistona | Peking cotoneaster, skunkbush sumac. | Siberian peashrub, Rocky Mountain juniper. | Russian olive, Manchurian crabapple. | --- | Black locust, hackberry, Siberian elm. |

Table 10.--Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 1, 2 Agatha | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 3: | | | | | |
| Agatha | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Rock outcrop. | | | | | |
| 4 Ahsahka | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 5: | | | | | |
| Almota | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| Athena | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| Hatwai | Severe: slope, excess sodium. | Severe: slope, excess sodium. | Severe: slope, excess sodium. | Severe: slope, erodes easily. | Severe: excess sodium, slope. |
| 6: | | | | | |
| Almota | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| Linville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 7, 8: | | | | | |
| Alpowa | Severe: slope. | Severe: slope. | Severe: large stones, slope. | Severe: slope. | Severe: slope. |
| Lickskillet | Severe: slope, depth to rock. | Severe: slope, depth to rock. | Severe: slope, small stones, depth to rock. | Severe: slope. | Severe: slope, depth to rock. |
| 9 Aquolls | Severe: flooding, ponding. | Severe: ponding. | Severe: ponding. | Severe: ponding. | Severe: ponding. |
| 10 Athena | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 11: | | | | | |
| Bakeoven | Severe: slope, depth to rock. | Severe: slope, depth to rock. | Severe: large stones, slope, small stones. | Moderate: slope, dusty. | Severe: depth to rock. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 11: | | | | | |
| Watama | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, dusty. | Severe: slope. |
| 12: | | | | | |
| Boles | Severe: wetness. | Moderate: wetness, dusty. | Severe: wetness. | Moderate: wetness, dusty. | Moderate: wetness. |
| Joel | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Moderate: dusty. | Slight. |
| 13: | | | | | |
| Bridgewater | Severe: flooding, small stones. | Severe: small stones. | Severe: small stones. | Severe: small stones. | Severe: small stones, large stones, droughty. |
| Joseph | Severe: flooding, large stones, small stones. | Severe: large stones, small stones. | Severe: large stones, small stones, flooding. | Severe: large stones, small stones. | Severe: small stones, large stones, droughty. |
| 14 Broadax | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Severe: erodes easily. | Slight. |
| 15 Broadax | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| 16: | | | | | |
| Broadax | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Severe: erodes easily. | Slight. |
| Hatwai | Severe: excess sodium. | Severe: excess sodium. | Severe: excess sodium. | Severe: erodes easily. | Severe: excess sodium. |
| 17: | | | | | |
| Broadax | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| Hatwai | Severe: excess sodium. | Severe: excess sodium. | Severe: slope, excess sodium. | Severe: erodes easily. | Severe: excess sodium. |
| 18: | | | | | |
| Caldwell | Severe: flooding. | Moderate: dusty. | Moderate: flooding. | Moderate: dusty. | Moderate: flooding. |
| Latah | Severe: flooding, wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |
| 19: | | | | | |
| Calouse | Severe: excess sodium. | Severe: excess sodium. | Severe: slope, excess sodium. | Severe: erodes easily. | Severe: excess sodium. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 19: | | | | | |
| Almota | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope, depth to rock. |
| 20: | | | | | |
| Calouse | Severe: excess sodium. | Severe: excess sodium. | Severe: excess sodium. | Severe: erodes easily. | Severe: excess sodium. |
| Endicott | Moderate: dusty. | Moderate: dusty. | Moderate: slope, cemented pan, dusty. | Severe: erodes easily. | Moderate: cemented pan. |
| Bryden | Moderate: dusty. | Moderate: dusty. | Moderate: slope, cemented pan, dusty. | Severe: erodes easily. | Moderate: cemented pan. |
| 21 Carlinton | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Severe: slope. | Severe: erodes easily. | Moderate: wetness. |
| 22 Carlinton | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| 23: | | | | | |
| Carlinton | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Moderate: slope, wetness, percs slowly. | Severe: erodes easily. | Moderate: wetness. |
| Talmaks | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Severe: erodes easily. | Slight. |
| 24: | | | | | |
| Cavendish | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| Taney | Moderate: slope, wetness, percs slowly. | Moderate: slope, wetness, percs slowly. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| 25 Chard | Moderate: dusty. | Moderate: dusty. | Severe: slope. | Severe: erodes easily. | Slight. |
| 26 Chard | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| 27 Chard | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 28: | | | | | |
| Chard | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 28: | | | | | |
| Chard, moist | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 29: | | | | | |
| Chard | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| Tammany | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 30: | | | | | |
| Chard | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Severe: erodes easily. | Slight. |
| Urban land. | | | | | |
| 31 Cramont | Moderate: dusty. | Moderate: dusty. | Severe: slope. | Severe: erodes easily. | Slight. |
| 32: | | | | | |
| Cramont | Moderate: dusty. | Moderate: dusty. | Severe: slope. | Severe: erodes easily. | Slight. |
| Culdesac | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, dusty. | Severe: slope. |
| 33: | | | | | |
| Cramont | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| Seddow | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| 34 Crowers | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 35 Driscoll | Moderate: wetness, dusty. | Moderate: wetness, dusty. | Severe: slope. | Moderate: wetness, dusty. | Moderate: wetness. |
| 36: | | | | | |
| Driscoll | Moderate: wetness, dusty. | Moderate: wetness, dusty. | Moderate: slope, wetness, dusty. | Moderate: wetness, dusty. | Moderate: wetness. |
| Larkin | Moderate: dusty. | Moderate: dusty. | Severe: slope. | Moderate: dusty. | Slight. |
| 37: | | | | | |
| Endicott | Moderate: dusty. | Moderate: dusty. | Moderate: slope, cemented pan, dusty. | Severe: erodes easily. | Moderate: cemented pan. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 37: | | | | | |
| Bryden | Moderate: dusty. | Moderate: dusty. | Moderate: slope, cemented pan, dusty. | Severe: erodes easily. | Moderate: cemented pan. |
| 38: | | | | | |
| Endicott | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope, cemented pan. |
| Bryden | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope, cemented pan. |
| 39: | | | | | |
| Endicott | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope, cemented pan. |
| Oliphant | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| 40 Entic Haploxerolls | Severe: slope, depth to rock. | Severe: slope, depth to rock. | Severe: slope, small stones, depth to rock. | Severe: slope, erodes easily. | Severe: slope, depth to rock. |
| 41: | | | | | |
| Gwin | Severe: slope, small stones, depth to rock. | Severe: slope, small stones, depth to rock. | Severe: large stones, slope, small stones. | Moderate: slope, dusty. | Severe: small stones, slope, depth to rock. |
| Vollmer | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| 42 Haploxerolls | Moderate: slope. | Moderate: slope. | Severe: slope. | Slight | Moderate: slope, depth to rock. |
| 43 Hooverton | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Severe: slope. |
| 44 Immig | Severe: slope. | Severe: slope. | Severe: large stones, slope, small stones. | Severe: slope. | Severe: droughty, slope. |
| 45 Jacket | Moderate: dusty. | Moderate: dusty. | Severe: slope. | Moderate: dusty. | Slight. |
| 46 Jacket | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, dusty. | Severe: slope. |
| 47: | | | | | |
| Jacket | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Larkin | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 48 Joel | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Moderate: dusty. | Slight. |
| 49 Joel | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Moderate: dusty. | Moderate: slope. |
| 50: | | | | | |
| Joel | Moderate: dusty. | Moderate: dusty. | Severe: slope. | Moderate: dusty. | Slight. |
| Setters | Severe: wetness. | Moderate: wetness, dusty. | Severe: wetness. | Severe: erodes easily. | Moderate: wetness. |
| 51: | | | | | |
| Joel | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, dusty. | Severe: slope. |
| Setters | Severe: wetness. | Moderate: slope, wetness, dusty. | Severe: slope, wetness. | Severe: erodes easily. | Moderate: wetness, slope. |
| 52 Johnson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 53: | | | | | |
| Johnson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Dragnot | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Severe: slope. |
| Dragnot, dry | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Severe: slope. |
| 54: | | | | | |
| Johnson | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, dusty. | Severe: slope. |
| Kruse | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 55: | | | | | |
| Johnson | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, dusty. | Severe: slope. |
| Labuck | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 56: | | | | | |
| Joseph | Severe: flooding, large stones, small stones. | Severe: large stones, small stones. | Severe: large stones, small stones. | Severe: large stones, small stones. | Severe: small stones, large stones, droughty. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 56: | | | | | |
| Tombeall | Severe: flooding, wetness. | Moderate: wetness, dusty. | Severe: wetness. | Moderate: wetness, dusty. | Moderate: wetness, flooding. |
| 57: | | | | | |
| Kettenbach | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Severe: slope. |
| Kettenbach, moist | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Severe: slope. |
| Gwin | Severe: slope, small stones, depth to rock. | Severe: slope, small stones, depth to rock. | Severe: large stones, slope, small stones. | Severe: slope. | Severe: small stones, slope, depth to rock. |
| 58: | | | | | |
| Kettenbach | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Severe: slope. |
| Keuterville | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Moderate: small stones, droughty. |
| 59: | | | | | |
| Kettenbach | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Severe: slope. |
| Rock outcrop. | | | | | |
| 60 Keuterville | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Moderate: slope, dusty. | Moderate: small stones, droughty. |
| 61 Keuterville | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Moderate: small stones, droughty. |
| 62: | | | | | |
| Keuterville | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Moderate: small stones, droughty. |
| Rock outcrop. | | | | | |
| 63, 64 Klickson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 65: | | | | | |
| Klickson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| Agatha | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 66: | | | | | |
| Klickson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| Hooverton | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Severe: slope. |
| 67: | | | | | |
| Klickson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| Rock outcrop. | | | | | |
| 68: | | | | | |
| Klickson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| Uptmor | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| 69 Kruse | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 70: | | | | | |
| Lapwai | Severe: flooding. | Moderate: dusty. | Moderate: slope, small stones, dusty. | Moderate: dusty. | Slight. |
| Bridgewater | Severe: flooding, small stones. | Severe: small stones. | Severe: small stones. | Severe: small stones. | Severe: small stones, large stones, droughty. |
| 71 Larabee | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Moderate: dusty. | Moderate: droughty, slope, depth to rock. |
| 72: | | | | | |
| Larabee | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Gwin | Severe: slope, small stones, depth to rock. | Severe: slope, small stones, depth to rock. | Severe: large stones, slope, small stones. | Severe: slope. | Severe: small stones, slope, depth to rock. |
| 73: | | | | | |
| Larabee | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Zaza | Severe: slope, depth to rock. | Severe: slope, depth to rock. | Severe: large stones, slope, small stones. | Moderate: slope. | Severe: slope, depth to rock. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 73: | | | | | |
| Seddow | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 74: | | | | | |
| Larkin | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, dusty. | Severe: slope. |
| Driscoll | Moderate: slope, wetness, dusty. | Moderate: slope, wetness, dusty. | Severe: slope. | Moderate: wetness, dusty. | Moderate: wetness, slope. |
| 75: | | | | | |
| Latahco | Severe: flooding. | Moderate: wetness, dusty. | Moderate: wetness, flooding. | Moderate: wetness, dusty. | Moderate: wetness, flooding. |
| Thatuna | Moderate: wetness, dusty. | Moderate: wetness, dusty. | Moderate: slope, wetness, dusty. | Moderate: dusty. | Slight. |
| 76: | | | | | |
| Lauby | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Southwick | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: wetness, slope, dusty. | Severe: slope. |
| 77: | | | | | |
| Lickskillet | Severe: slope, depth to rock. | Severe: slope, depth to rock. | Severe: slope, small stones, depth to rock. | Severe: slope. | Severe: slope, depth to rock. |
| Alpowa | Severe: slope. | Severe: slope. | Severe: large stones, slope. | Severe: slope. | Severe: slope. |
| Rock outcrop. | | | | | |
| 78 Limekiln | Severe: slope, small stones, depth to rock. | Severe: slope, small stones, depth to rock. | Severe: large stones, slope, small stones. | Severe: slope. | Severe: small stones, slope, depth to rock. |
| 79: | | | | | |
| Limekiln | Severe: slope, small stones, depth to rock. | Severe: slope, small stones, depth to rock. | Severe: large stones, slope, small stones. | Severe: slope. | Severe: small stones, slope, depth to rock. |
| Crowers | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 80 Linville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 81: | | | | | |
| Linville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| Kettenbach | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Severe: slope. |
| 82: | | | | | |
| Linville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| Waha | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 83: | | | | | |
| Mallory | Severe: slope. | Severe: slope. | Severe: large stones, slope, small stones. | Severe: slope. | Severe: slope. |
| Jacket | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, dusty. | Severe: slope. |
| 84: | | | | | |
| Maloney | Moderate: slope, small stones, dusty. | Moderate: slope, small stones, dusty. | Severe: slope, small stones. | Moderate: dusty. | Moderate: small stones, slope, depth to rock. |
| Zaza | Severe: depth to rock. | Severe: depth to rock. | Severe: large stones, slope, small stones. | Slight | Severe: depth to rock. |
| 85: | | | | | |
| Meland | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope, depth to rock. |
| Jacket | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Moderate: dusty. | Moderate: slope. |
| 86: | | | | | |
| Meland | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| Keuterville | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Moderate: small stones, droughty. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 87: | | | | | |
| Mohler | Slight | Slight | Severe: slope. | Slight | Slight. |
| Nez Perce | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness. | Moderate: wetness. |
| Uhlorn | Moderate: dusty. | Moderate: dusty. | Severe: slope. | Severe: erodes easily. | Slight. |
| 88 Naff | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 89: | | | | | |
| Naff | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Severe: erodes easily. | Slight. |
| Palouse | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Moderate: dusty. | Slight. |
| 90: | | | | | |
| Naff | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| Palouse | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Moderate: dusty. | Moderate: slope. |
| 91: | | | | | |
| Naff | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| Palouse | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Moderate: dusty. | Moderate: slope. |
| 92: | | | | | |
| Naff | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| Palouse | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Moderate: dusty. | Moderate: slope. |
| Garfield | Moderate: slope. | Moderate: slope. | Severe: slope. | Slight | Moderate: slope. |
| 93: | | | | | |
| Naff | Moderate: dusty. | Moderate: dusty. | Severe: slope. | Severe: erodes easily. | Slight. |
| Thatuna | Moderate: wetness, dusty. | Moderate: wetness, dusty. | Moderate: slope, wetness, dusty. | Moderate: dusty. | Slight. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 94: | | | | | |
| Naff | Moderate: dusty. | Moderate: dusty. | Severe: slope. | Severe: erodes easily. | Slight. |
| Waha | Moderate: dusty. | Moderate: dusty. | Severe: slope. | Severe: erodes easily. | Moderate: depth to rock. |
| 95: | | | | | |
| Naff | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| Waha | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| 96: | | | | | |
| Naff | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| Waha | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 97 Nez Perce | Severe: wetness. | Moderate: wetness. | Severe: slope, wetness. | Moderate: wetness. | Moderate: wetness. |
| 98 Nez Perce | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness. | Moderate: wetness. |
| 99: | | | | | |
| Nez Perce | Severe: wetness. | Moderate: slope, wetness. | Severe: slope, wetness. | Moderate: wetness. | Moderate: wetness, slope. |
| Uhlorn | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| 100 Oliphant | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Severe: erodes easily. | Slight. |
| 101 Oliphant | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| 102 Oliphant, gravelly substratum | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Severe: erodes easily. | Slight. |
| 103: | | | | | |
| Oliphant | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| Alpowa | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Moderate: droughty. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 104: | | | | | |
| Oliphant | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Severe: erodes easily. | Slight. |
| Hatwai | Severe: excess sodium. | Severe: excess sodium. | Severe: excess sodium. | Severe: erodes easily. | Severe: excess sodium. |
| 105: | | | | | |
| Oliphant | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| Stember | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: large stones, droughty, slope. |
| 106: | | | | | |
| Palouse | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Moderate: dusty. | Slight. |
| Athena | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Severe: erodes easily. | Slight. |
| 107: | | | | | |
| Palouse | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Moderate: dusty. | Moderate: slope. |
| Athena | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| 108. | | | | | |
| Pits, gravel | | | | | |
| 109 | Severe: excess sodium. | Severe: excess sodium. | Severe: excess sodium. | Moderate: dusty. | Severe: excess sodium. |
| 110: | | | | | |
| Riverwash. | | | | | |
| Aquents | Severe: flooding, large stones, wetness. | Severe: wetness, large stones. | Severe: large stones, small stones, wetness. | Severe: large stones, wetness. | Severe: large stones, wetness, droughty. |
| 111: | | | | | |
| Rock outcrop. | | | | | |
| Flybow | Severe: slope, small stones. | Severe: slope, small stones. | Severe: slope, small stones. | Severe: slope. | Severe: small stones, slope. |
| 112 | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 113 Setters | Severe: wetness. | Moderate: wetness, dusty. | Severe: wetness. | Severe: erodes easily. | Moderate: wetness. |
| 114 Shilla | Moderate: small stones, dusty. | Moderate: small stones, dusty. | Severe: slope, small stones. | Moderate: dusty. | Moderate: small stones. |
| 115: | | | | | |
| Shilla | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Moderate: slope, dusty. | Severe: slope. |
| Seddow | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| 116 Slickpoo | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| 117: | | | | | |
| Slickpoo | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| Broadax | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| 118 Southwick | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Severe: slope. | Moderate: wetness, dusty. | Moderate: wetness. |
| 119: | | | | | |
| Southwick | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: wetness, slope, dusty. | Severe: slope. |
| Bluesprin | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| 120: | | | | | |
| Southwick | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Severe: slope. | Moderate: wetness, dusty. | Moderate: wetness. |
| Driscoll | Moderate: wetness, dusty. | Moderate: wetness, dusty. | Severe: slope. | Moderate: wetness, dusty. | Moderate: wetness. |
| 121: | | | | | |
| Southwick | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: wetness, slope, dusty. | Severe: slope. |
| Driscoll | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: wetness, slope, dusty. | Severe: slope. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 122: | | | | | |
| Southwick | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: wetness, slope, dusty. | Severe: slope. |
| Larkin | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, dusty. | Severe: slope. |
| 123: | | | | | |
| Sweiting | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope, depth to rock. |
| Joel | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Moderate: dusty. | Moderate: slope. |
| 124 Talmaks | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Severe: erodes easily. | Slight. |
| 125 Talmaks | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| 126: | | | | | |
| Talmaks | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| Seddow | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| 127: | | | | | |
| Tammany | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Chard | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| Rock outcrop. | | | | | |
| 128 Taney | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Severe: slope. | Severe: erodes easily. | Slight. |
| 129: | | | | | |
| Taney | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| Joel | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, dusty. | Severe: slope. |
| 130: | | | | | |
| Taney | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 130: | | | | | |
| Joel | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 131: | | | | | |
| Taney | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Moderate: slope, wetness, percs slowly. | Severe: erodes easily. | Slight. |
| Setters | Severe: wetness. | Moderate: wetness, dusty. | Severe: wetness. | Severe: erodes easily. | Moderate: wetness. |
| 132: | | | | | |
| Taney | Moderate: slope, wetness, percs slowly. | Moderate: slope, wetness, percs slowly. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| Setters | Severe: wetness. | Moderate: slope, wetness, dusty. | Severe: slope, wetness. | Severe: erodes easily. | Moderate: wetness, slope. |
| 133, 134: | | | | | |
| Thatuna | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, dusty. | Severe: slope. |
| Naff | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| 135: | | | | | |
| Thatuna | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Naff | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 136: | | | | | |
| Thatuna | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, dusty. | Severe: slope. |
| Naff | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| Tilma | Moderate: slope, wetness, dusty. | Moderate: slope, wetness, dusty. | Severe: slope. | Moderate: wetness, dusty. | Moderate: wetness, slope. |
| 137 Tombeall | Severe: flooding, wetness. | Moderate: wetness, dusty. | Severe: wetness. | Moderate: wetness, dusty. | Moderate: wetness. |
| 138 Uhlig | Moderate: dusty. | Moderate: dusty. | Moderate: slope, dusty. | Severe: erodes easily. | Slight. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 139 Uhlig | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| 140 Uhlig | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 141 Uhlorn | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| 142: | | | | | |
| Uhlorn | Moderate: dusty. | Moderate: dusty. | Severe: slope. | Severe: erodes easily. | Slight. |
| Nez Perce | Severe: wetness. | Moderate: wetness. | Severe: slope, wetness. | Moderate: wetness. | Moderate: wetness. |
| 143: | | | | | |
| Uhlorn | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| Nez Perce | Severe: slope, wetness. | Severe: slope. | Severe: slope, wetness. | Moderate: wetness, slope. | Severe: slope. |
| 144: | | | | | |
| Uhlorn | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope. |
| Vollmer | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope, depth to rock. |
| 145: | | | | | |
| Urban land. | | | | | |
| Wistona | Severe: flooding. | Moderate: dusty. | Moderate: dusty. | Moderate: dusty. | Slight. |
| 146 Uvi | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, erodes easily. | Severe: slope. |
| 147 Vollmer | Moderate: dusty. | Moderate: dusty. | Severe: slope. | Severe: erodes easily. | Moderate: depth to rock. |
| 148 Vollmer | Severe: slope. | Severe: slope. | Severe: slope. | Severe: erodes easily. | Severe: slope. |
| 149: | | | | | |
| Watama | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, dusty. | Severe: slope. |
| Flybow | Severe: slope, small stones. | Severe: slope, small stones. | Severe: slope, small stones. | Moderate: slope, dusty. | Severe: small stones, slope. |

Table 10.--Recreational Development--Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|---|---|---|---|---|---|
| 150: | | | | | |
| Webbridge | Severe: slope. | Severe: slope. | Severe: slope, small stones. | Severe: slope. | Severe: slope. |
| Agatha | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 151: | | | | | |
| Westlake | Severe: flooding. | Moderate: wetness, dusty. | Moderate: wetness, flooding. | Moderate: wetness, dusty. | Moderate: wetness, flooding. |
| Latahco | Severe: flooding. | Moderate: wetness, dusty. | Moderate: wetness, flooding. | Moderate: wetness, dusty. | Moderate: wetness, flooding. |
| 152 Wilkins | Severe: flooding, wetness. | Moderate: wetness, percs slowly, dusty. | Severe: wetness. | Moderate: wetness, dusty. | Moderate: wetness, flooding. |
| 153 Wistona | Severe: flooding. | Moderate: dusty. | Moderate: dusty. | Moderate: dusty. | Slight. |
| 154: | | | | | |
| Zaza | Severe: depth to rock. | Severe: depth to rock. | Severe: large stones, slope, small stones. | Slight | Severe: depth to rock. |
| Sweiting | Moderate: slope, dusty. | Moderate: slope, dusty. | Severe: slope. | Severe: erodes easily. | Moderate: slope, depth to rock. |

Table 11.--Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 1, 2---------- Agatha | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 3: | | | | | | |
| Agatha---------- | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Rock outcrop. | | | | | | |
| 4---------- Ahsahka | Severe: slope. | Severe: slope. | Severe: slope, shrink-swell. | Severe: slope. | Severe: slope. | Severe: slope. |
| 5: | | | | | | |
| Almota---------- | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| Athena---------- | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| Hatwai---------- | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: excess sodium, slope. |
| 6: | | | | | | |
| Almota---------- | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| Linville--------- | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 7, 8: | | | | | | |
| Alpowa---------- | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| Lickskillet------ | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. |
| 9---------- Aquolls | Severe: ponding. | Severe: flooding, ponding, shrink-swell. | Severe: flooding, ponding, shrink-swell. | Severe: flooding, ponding, shrink-swell. | Severe: shrink-swell, low strength, ponding. | Severe: ponding. |
| 10---------- Athena | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 11: | | | | | | |
| Bakeoven | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: depth to rock. |
| Watama | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 12: | | | | | | |
| Boles | Severe: wetness. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: shrink-swell, low strength, frost action. | Moderate: wetness. |
| Joel | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| 13: | | | | | | |
| Bridgewater | Severe: cutbanks cave, large stones. | Severe: flooding, large stones. | Severe: flooding, large stones. | Severe: flooding, large stones. | Severe: large stones. | Severe: small stones, large stones, droughty. |
| Joseph | Severe: cutbanks cave, large stones. | Severe: flooding, large stones. | Severe: flooding, large stones. | Severe: flooding, large stones. | Severe: flooding, large stones. | Severe: small stones, large stones, droughty. |
| 14 Broadax | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| 15 Broadax | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| 16: | | | | | | |
| Broadax | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| Hatwai | Slight | Moderate: shrink-swell. | Slight | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Severe: excess sodium. |
| 17: | | | | | | |
| Broadax | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| Hatwai | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope. | Severe: slope. | Severe: low strength, frost action. | Severe: excess sodium. |
| 18: | | | | | | |
| Caldwell | Moderate: wetness, flooding. | Severe: flooding. | Severe: flooding. | Severe: flooding. | Severe: low strength, flooding, frost action. | Moderate: flooding. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 18: | | | | | | |
| Latah | Severe: wetness. | Severe: flooding, wetness. | Severe: flooding, wetness, shrink-swell. | Severe: flooding, wetness. | Severe: wetness, flooding, frost action. | Severe: wetness. |
| 19: | | | | | | |
| Calouse | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Severe: excess sodium. |
| Almota | Severe: depth to rock. | Moderate: slope, depth to rock. | Severe: depth to rock. | Severe: slope. | Severe: frost action. | Moderate: slope, depth to rock. |
| 20: | | | | | | |
| Calouse | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Severe: excess sodium. |
| Endicott | Severe: cemented pan. | Moderate: cemented pan. | Severe: cemented pan. | Moderate: slope, cemented pan. | Severe: low strength, frost action. | Moderate: cemented pan. |
| Bryden | Severe: cemented pan. | Moderate: shrink-swell, cemented pan. | Severe: cemented pan. | Moderate: shrink-swell, slope, cemented pan. | Severe: low strength, frost action. | Moderate: cemented pan. |
| 21 Carlinton | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness, slope. | Severe: low strength, frost action. | Moderate: wetness. |
| 22 Carlinton | Severe: wetness, slope. | Severe: slope. | Severe: wetness, slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 23: | | | | | | |
| Carlinton | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness, slope. | Severe: low strength, frost action. | Moderate: wetness. |
| Talmaks | Slight | Slight | Slight | Moderate: slope. | Severe: low strength, frost action. | Slight. |
| 24: | | | | | | |
| Cavendish | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Moderate: shrink-swell, low strength, slope. | Moderate: slope. |
| Taney | Severe: wetness. | Moderate: wetness, shrink-swell, slope. | Severe: wetness. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| 25 Chard | Severe: cutbanks cave. | Slight | Slight | Moderate: slope. | Moderate: frost action. | Slight. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 26, 27 Chard | Severe: cutbanks cave, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 28: | | | | | | |
| Chard | Severe: cutbanks cave, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Chard, moist | Severe: cutbanks cave, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 29: | | | | | | |
| Chard | Severe: cutbanks cave, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Tammany | Severe: cutbanks cave, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 30: | | | | | | |
| Chard | Severe: cutbanks cave. | Slight | Slight | Moderate: slope. | Moderate: frost action. | Slight. |
| Urban land. | | | | | | |
| 31 Cramont | Moderate: too clayey. | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| 32: | | | | | | |
| Cramont | Moderate: too clayey. | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| Culdesac | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 33: | | | | | | |
| Cramont | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| Seddow | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 34 Crowers | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| 35 Driscoll | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness, slope. | Severe: frost action. | Moderate: wetness. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 36: | | | | | | |
| Driscoll | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness, slope. | Severe: frost action. | Moderate: wetness. |
| Larkin | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| 37: | | | | | | |
| Endicott | Severe: cemented pan. | Moderate: cemented pan. | Severe: cemented pan. | Moderate: slope, cemented pan. | Severe: low strength, frost action. | Moderate: cemented pan. |
| Bryden | Severe: cemented pan. | Moderate: shrink-swell, cemented pan. | Severe: cemented pan. | Moderate: shrink-swell, slope, cemented pan. | Severe: low strength, frost action. | Moderate: cemented pan. |
| 38: | | | | | | |
| Endicott | Severe: cemented pan. | Moderate: slope, cemented pan. | Severe: cemented pan. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope, cemented pan. |
| Bryden | Severe: cemented pan. | Moderate: shrink-swell, slope, cemented pan. | Severe: cemented pan. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope, cemented pan. |
| 39: | | | | | | |
| Endicott | Severe: cemented pan. | Moderate: slope, cemented pan. | Severe: cemented pan. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope, cemented pan. |
| Oliphant | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 40 Entic Haploxerolls | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope, depth to rock. |
| 41: | | | | | | |
| Gwin | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: small stones, slope, depth to rock. |
| Vollmer | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 42 Haploxerolls | Severe: depth to rock. | Moderate: shrink-swell, slope, depth to rock. | Severe: depth to rock. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope, depth to rock. |
| 43 Hooverton | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 44 Immig | Severe: depth to rock, slope. | Severe: shrink-swell, slope. | Severe: depth to rock, slope, shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, slope. | Severe: droughty, slope. |
| 45 Jacket | Moderate: too clayey. | Moderate: shrink-swell. | Severe: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength. | Slight. |
| 46 Jacket | Severe: slope. | Severe: slope. | Severe: slope, shrink-swell. | Severe: slope. | Severe: low strength, slope. | Severe: slope. |
| 47: | | | | | | |
| Jacket | Severe: slope. | Severe: shrink-swell, slope. | Severe: slope, shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, low strength, slope. | Severe: slope. |
| Larkin | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 48 Joel | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| 49 Joel | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| 50: | | | | | | |
| Joel | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| Setters | Severe: wetness. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: shrink-swell, low strength, frost action. | Moderate: wetness. |
| 51: | | | | | | |
| Joel | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| Setters | Severe: wetness. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell, slope. | Severe: shrink-swell, low strength, frost action. | Moderate: wetness, slope. |
| 52 Johnson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 53: | | | | | | |
| Johnson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 53: | | | | | | |
| Dragnot | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Dragnot, dry | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 54: | | | | | | |
| Johnson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Kruse | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope. | Severe: slope. |
| 55: | | | | | | |
| Johnson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Labuck | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 56: | | | | | | |
| Joseph | Severe: cutbanks cave, large stones. | Severe: flooding, large stones. | Severe: flooding, large stones. | Severe: flooding, large stones. | Severe: flooding, large stones. | Severe: small stones, large stones, droughty. |
| Tombeall | Severe: wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, frost action. | Moderate: wetness, flooding. |
| 57: | | | | | | |
| Kettenbach | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Kettenbach, moist | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Gwin | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: small stones, slope, depth to rock. |
| 58: | | | | | | |
| Kettenbach | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Keuterville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: small stones, droughty. |
| 59: | | | | | | |
| Kettenbach | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 59: | | | | | | |
| Rock outcrop. | | | | | | |
| 60, 61 Keuterville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: small stones, droughty. |
| 62: | | | | | | |
| Keuterville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: small stones, droughty. |
| Rock outcrop. | | | | | | |
| 63, 64 Klickson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| 65: | | | | | | |
| Klickson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| Agatha | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 66: | | | | | | |
| Klickson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| Hooverton | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 67: | | | | | | |
| Klickson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| Rock outcrop. | | | | | | |
| 68: | | | | | | |
| Klickson | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| Uptmor | Severe: slope. | Severe: shrink-swell, slope. | Severe: slope, shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, low strength, slope. | Severe: slope. |
| 69 Kruse | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope. | Severe: slope. |
| 70: | | | | | | |
| Lapwai | Slight | Severe: flooding. | Severe: flooding. | Severe: flooding. | Severe: frost action. | Slight. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 70: | | | | | | |
| Bridgewater | Severe: cutbanks cave, large stones. | Severe: flooding, large stones. | Severe: flooding, large stones. | Severe: flooding, large stones. | Severe: large stones. | Severe: small stones, large stones, droughty. |
| 71 Larabee | Severe: depth to rock. | Moderate: shrink-swell, slope, depth to rock. | Severe: depth to rock. | Severe: slope. | Moderate: depth to rock, shrink-swell, slope. | Moderate: droughty, slope, depth to rock. |
| 72: | | | | | | |
| Larabee | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Gwin | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: small stones, slope, depth to rock. |
| 73: | | | | | | |
| Larabee | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Zaza | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. |
| Seddow | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 74: | | | | | | |
| Larkin | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| Driscoll | Severe: wetness. | Moderate: wetness, slope. | Severe: wetness. | Severe: slope. | Severe: frost action. | Moderate: wetness, slope. |
| 75: | | | | | | |
| Latahco | Severe: wetness. | Severe: flooding. | Severe: flooding, wetness. | Severe: flooding. | Severe: flooding, frost action. | Moderate: wetness, flooding. |
| Thatuna | Severe: wetness. | Moderate: wetness, shrink-swell. | Severe: wetness. | Moderate: wetness, shrink-swell. | Severe: low strength, frost action. | Slight. |
| 76: | | | | | | |
| Lauby | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 76: | | | | | | |
| Southwick | Severe: wetness, slope. | Severe: slope. | Severe: wetness, slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 77: | | | | | | |
| Lickskillet | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. |
| Alpowa | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| Rock outcrop. | | | | | | |
| 78 Limekiln | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope, frost action. | Severe: small stones, slope, depth to rock. |
| 79: | | | | | | |
| Limekiln | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope, frost action. | Severe: small stones, slope, depth to rock. |
| Crowers | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| 80 Linville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 81: | | | | | | |
| Linville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Kettenbach | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 82: | | | | | | |
| Linville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Waha | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 83: | | | | | | |
| Mallory | Severe: depth to rock, slope. | Severe: shrink-swell, slope. | Severe: depth to rock, slope, shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, slope. | Severe: slope. |
| Jacket | Severe: slope. | Severe: slope. | Severe: slope, shrink-swell. | Severe: slope. | Severe: low strength, slope. | Severe: slope. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 84: | | | | | | |
| Maloney | Severe: depth to rock. | Moderate: slope, depth to rock. | Severe: depth to rock. | Severe: slope. | Moderate: depth to rock, slope, frost action. | Moderate: small stones, slope, depth to rock. |
| Zaza | Severe: depth to rock. | Severe: depth to rock. | Severe: depth to rock. | Severe: slope, depth to rock. | Severe: depth to rock. | Severe: depth to rock. |
| 85: | | | | | | |
| Meland | Severe: depth to rock. | Moderate: slope, depth to rock. | Severe: depth to rock. | Severe: slope. | Severe: low strength. | Moderate: slope, depth to rock. |
| Jacket | Moderate: too clayey, slope. | Severe: shrink-swell. | Severe: shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, low strength. | Moderate: slope. |
| 86: | | | | | | |
| Meland | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: low strength, slope. | Severe: slope. |
| Keuterville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: small stones, droughty. |
| 87: | | | | | | |
| Mohler | Slight | Slight | Moderate: shrink-swell. | Moderate: slope. | Severe: low strength, frost action. | Slight. |
| Nez Perce | Severe: wetness. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: shrink-swell, low strength. | Moderate: wetness. |
| Uhlorn | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| 88 Naff | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 89: | | | | | | |
| Naff | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| Palouse | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| 90: | | | | | | |
| Naff | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 90: | | | | | | |
| Palouse | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| 91: | | | | | | |
| Naff | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| Palouse | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| 92: | | | | | | |
| Naff | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| Palouse | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| Garfield | Moderate: too clayey, slope. | Severe: shrink-swell. | Severe: shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, low strength. | Moderate: slope. |
| 93: | | | | | | |
| Naff | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| Thatuna | Severe: wetness. | Moderate: wetness, shrink-swell. | Severe: wetness. | Moderate: wetness, shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| 94: | | | | | | |
| Naff | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| Waha | Severe: depth to rock. | Moderate: shrink-swell, depth to rock. | Severe: depth to rock. | Moderate: shrink-swell, slope, depth to rock. | Severe: low strength, frost action. | Moderate: depth to rock. |
| 95, 96: | | | | | | |
| Naff | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| Waha | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 97, 98 Nez Perce | Severe: wetness. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: shrink-swell, low strength. | Moderate: wetness. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 99: | | | | | | |
| Nez Perce | Severe: wetness. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell, slope. | Severe: shrink-swell, low strength. | Moderate: wetness, slope. |
| Uhlorn | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| 100 Oliphant | Slight | Slight | Slight | Slight | Moderate: low strength, frost action. | Slight. |
| 101 Oliphant | Moderate: slope. | Moderate: slope. | Moderate: slope. | Severe: slope. | Moderate: low strength, slope, frost action. | Moderate: slope. |
| 102 Oliphant, gravelly substratum | Slight | Slight | Slight | Moderate: slope. | Severe: frost action. | Slight. |
| 103: | | | | | | |
| Oliphant | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Alpowa | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: droughty. |
| 104: | | | | | | |
| Oliphant | Slight | Slight | Slight | Moderate: slope. | Moderate: low strength, frost action. | Slight. |
| Hatwai | Slight | Moderate: shrink-swell. | Slight | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Severe: excess sodium. |
| 105: | | | | | | |
| Oliphant | Moderate: slope. | Moderate: slope. | Moderate: slope. | Severe: slope. | Severe: frost action. | Moderate: slope. |
| Stember | Severe: depth to rock. | Moderate: slope, depth to rock, large stones. | Severe: depth to rock. | Severe: slope. | Severe: frost action. | Moderate: large stones, droughty, slope. |
| 106: | | | | | | |
| Palouse | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| Athena | Slight | Slight | Slight | Moderate: slope. | Severe: low strength, frost action. | Slight. |
| 107: | | | | | | |
| Palouse | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 107: | | | | | | |
| Athena | Moderate: slope. | Moderate: slope. | Moderate: slope. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| 108. | | | | | | |
| Pits, gravel | | | | | | |
| 109 Redmore | Moderate: cemented pan. | Moderate: shrink-swell. | Moderate: cemented pan, shrink-swell. | Moderate: shrink-swell. | Severe: low strength, frost action. | Severe: excess sodium. |
| 110: | | | | | | |
| Riverwash. | | | | | | |
| Aquents | Severe: cutbanks cave, large stones, wetness. | Severe: flooding, wetness, large stones. | Severe: flooding, wetness, large stones. | Severe: flooding, wetness, large stones. | Severe: wetness, flooding, large stones. | Severe: large stones, wetness, droughty. |
| 111: | | | | | | |
| Rock outcrop. | | | | | | |
| Flybow | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: small stones, slope. |
| 112 Seddow | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 113 Setters | Severe: wetness. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: shrink-swell, low strength, frost action. | Moderate: wetness. |
| 114 Shilla | Moderate: depth to rock, large stones. | Moderate: shrink-swell, large stones. | Moderate: depth to rock, shrink-swell. | Moderate: shrink-swell, slope, large stones. | Severe: frost action. | Moderate: small stones. |
| 115: | | | | | | |
| Shilla | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| Seddow | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 116 Slickpoo | Moderate: depth to rock, slope. | Moderate: shrink-swell, slope. | Moderate: depth to rock, slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| 117: | | | | | | |
| Slickpoo | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 117: | | | | | | |
| Broadax | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 118 Southwick | Severe: wetness. | Moderate: wetness, shrink-swell. | Severe: wetness. | Moderate: wetness, shrink-swell, slope. | Severe: low strength, frost action. | Moderate: wetness. |
| 119: | | | | | | |
| Southwick | Severe: wetness, slope. | Severe: slope. | Severe: wetness, slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| Bluesprin | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 120: | | | | | | |
| Southwick | Severe: wetness. | Moderate: wetness, shrink-swell. | Severe: wetness. | Moderate: wetness, shrink-swell, slope. | Severe: low strength, frost action. | Moderate: wetness. |
| Driscoll | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness, slope. | Severe: frost action. | Moderate: wetness. |
| 121: | | | | | | |
| Southwick | Severe: wetness, slope. | Severe: slope. | Severe: wetness, slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| Driscoll | Severe: wetness, slope. | Severe: slope. | Severe: wetness, slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| 122: | | | | | | |
| Southwick | Severe: wetness, slope. | Severe: slope. | Severe: wetness, slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| Larkin | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 123: | | | | | | |
| Sweiting | Severe: depth to rock. | Moderate: shrink-swell, slope, depth to rock. | Severe: depth to rock. | Severe: slope. | Severe: low strength. | Moderate: slope, depth to rock. |
| Joel | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 124 Talmaks | Slight | Slight | Slight | Moderate: slope. | Severe: low strength, frost action. | Slight. |
| 125 Talmaks | Moderate: slope. | Moderate: slope. | Moderate: slope. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| 126: | | | | | | |
| Talmaks | Moderate: slope. | Moderate: slope. | Moderate: slope. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| Seddow | Moderate: depth to rock, large stones, slope. | Moderate: shrink-swell, slope, large stones. | Moderate: depth to rock, slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| 127: | | | | | | |
| Tammany | Severe: cutbanks cave, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Chard | Severe: cutbanks cave, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Rock outcrop. | | | | | | |
| 128 Taney | Severe: wetness. | Moderate: wetness, shrink-swell. | Severe: wetness. | Moderate: wetness, shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| 129, 130: | | | | | | |
| Taney | Severe: wetness, slope. | Severe: slope. | Severe: wetness, slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| Joel | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 131: | | | | | | |
| Taney | Severe: wetness. | Moderate: wetness, shrink-swell. | Severe: wetness. | Moderate: wetness, shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| Setters | Severe: wetness. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: shrink-swell, low strength, frost action. | Moderate: wetness. |
| 132: | | | | | | |
| Taney | Severe: wetness. | Moderate: wetness, shrink-swell, slope. | Severe: wetness. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 132: | | | | | | |
| Setters | Severe: wetness. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell, slope. | Severe: shrink-swell, low strength, frost action. | Moderate: wetness, slope. |
| 133, 134, 135: | | | | | | |
| Thatuna | Severe: wetness, slope. | Severe: slope. | Severe: wetness, slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| Naff | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 136: | | | | | | |
| Thatuna | Severe: wetness, slope. | Severe: slope. | Severe: wetness, slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| Naff | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| Tilma | Severe: wetness. | Severe: shrink-swell. | Severe: wetness, shrink-swell. | Severe: shrink-swell, slope. | Severe: shrink-swell, low strength. | Moderate: wetness, slope. |
| 137 Tombeall | Severe: wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: frost action. | Moderate: wetness. |
| 138 Uhlig | Slight | Slight | Slight | Moderate: slope. | Moderate: frost action. | Slight. |
| 139 Uhlig | Moderate: slope. | Moderate: slope. | Moderate: slope. | Severe: slope. | Moderate: slope, frost action. | Moderate: slope. |
| 140 Uhlig | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 141 Uhlorn | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| 142: | | | | | | |
| Uhlorn | Slight | Moderate: shrink-swell. | Moderate: shrink-swell. | Moderate: shrink-swell, slope. | Severe: low strength, frost action. | Slight. |
| Nez Perce | Severe: wetness. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: shrink-swell, low strength. | Moderate: wetness. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 143: | | | | | | |
| Uhlorn | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| Nez Perce | Severe: wetness, slope. | Severe: wetness, shrink-swell, slope. | Severe: wetness, slope, shrink-swell. | Severe: wetness, shrink-swell, slope. | Severe: shrink-swell, low strength, slope. | Severe: slope. |
| 144: | | | | | | |
| Uhlorn | Moderate: slope. | Moderate: shrink-swell, slope. | Moderate: slope, shrink-swell. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope. |
| Vollmer | Severe: depth to rock. | Moderate: slope, depth to rock. | Severe: depth to rock. | Severe: slope. | Severe: low strength, frost action. | Moderate: slope, depth to rock. |
| 145: | | | | | | |
| Urban land. | | | | | | |
| Wistona | Slight | Severe: flooding. | Severe: flooding. | Severe: flooding. | Moderate: flooding, frost action. | Slight. |
| 146 Uvi | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 147 Vollmer | Severe: depth to rock. | Moderate: depth to rock. | Severe: depth to rock. | Moderate: slope, depth to rock. | Severe: low strength, frost action. | Moderate: depth to rock. |
| 148 Vollmer | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: low strength, slope, frost action. | Severe: slope. |
| 149: | | | | | | |
| Watama | Severe: depth to rock, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| Flybow | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: slope, depth to rock. | Severe: depth to rock, slope. | Severe: small stones, slope. |
| 150: | | | | | | |
| Webbridge | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope, frost action. | Severe: slope. |
| Agatha | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. |
| 151: | | | | | | |
| Westlake | Severe: wetness. | Severe: flooding. | Severe: flooding, wetness. | Severe: flooding. | Severe: low strength, flooding, frost action. | Moderate: wetness, flooding. |

Table 11.--Building Site Development--Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|---|---|---|---|---|---|---|
| 151: | | | | | | |
| Latahco | Severe: wetness. | Severe: flooding. | Severe: flooding, wetness. | Severe: flooding. | Severe: flooding, frost action. | Moderate: wetness, flooding. |
| 152 Wilkins | Severe: wetness. | Severe: flooding, wetness, shrink-swell. | Severe: flooding, wetness, shrink-swell. | Severe: flooding, wetness, shrink-swell. | Severe: shrink-swell, low strength, flooding. | Moderate: wetness, flooding. |
| 153 Wistona | Slight | Severe: flooding. | Severe: flooding. | Severe: flooding. | Moderate: flooding, frost action. | Slight. |
| 154: | | | | | | |
| Zaza | Severe: depth to rock. | Severe: depth to rock. | Severe: depth to rock. | Severe: slope, depth to rock. | Severe: depth to rock. | Severe: depth to rock. |
| Sweiting | Severe: depth to rock. | Moderate: shrink-swell, slope, depth to rock. | Severe: depth to rock. | Severe: slope. | Severe: low strength. | Moderate: slope, depth to rock. |

Table 12.--Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 1, 2 Agatha | Severe: percs slowly, slope. | Severe: slope. | Severe: depth to rock, slope, large stones. | Severe: slope. | Poor: large stones, slope. |
| 3: | | | | | |
| Agatha | Severe: percs slowly, slope. | Severe: slope. | Severe: depth to rock, slope, large stones. | Severe: slope. | Poor: large stones, slope. |
| Rock outcrop. | | | | | |
| 4 Ahsahka | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, too clayey. | Severe: slope. | Poor: too clayey, hard to pack, slope. |
| 5: | | | | | |
| Almota | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, slope. |
| Athena | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| Hatwai | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, excess sodium. | Severe: slope. | Poor: slope, excess sodium. |
| 6: | | | | | |
| Almota | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, slope. |
| Linville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: small stones, slope. |
| 7, 8: | | | | | |
| Alpowa | Severe: slope. | Severe: slope, large stones. | Severe: slope, large stones. | Severe: slope. | Poor: small stones, slope. |
| Lickskillet | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| 9 Aquolls | Severe: flooding, ponding, percs slowly. | Severe: flooding, ponding. | Severe: flooding, depth to rock, ponding. | Severe: flooding, ponding. | Poor: hard to pack, ponding. |
| 10 Athena | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 11: | | | | | |
| Bakeoven | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, slope. |
| Watama | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, slope. |
| 12: | | | | | |
| Boles | Severe: wetness, percs slowly. | Moderate: seepage, slope. | Severe: wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack, wetness. |
| Joel | Severe: percs slowly. | Moderate: seepage, slope. | Moderate: too clayey. | Slight | Fair: too clayey. |
| 13: | | | | | |
| Bridgewater | Severe: poor filter, large stones. | Severe: seepage, large stones. | Severe: seepage, too sandy, large stones. | Severe: seepage. | Poor: seepage, too sandy, small stones. |
| Joseph | Severe: flooding, wetness, poor filter. | Severe: seepage, flooding, wetness. | Severe: flooding, seepage, wetness. | Severe: flooding, seepage, wetness. | Poor: seepage, too sandy, small stones. |
| 14 Broadax | Severe: percs slowly. | Moderate: seepage, slope. | Slight | Slight | Good. |
| 15 Broadax | Severe: percs slowly. | Severe: slope. | Moderate: slope. | Moderate: slope. | Fair: slope. |
| 16: | | | | | |
| Broadax | Severe: percs slowly. | Moderate: seepage, slope. | Slight | Slight | Good. |
| Hatwai | Severe: percs slowly. | Moderate: seepage, slope. | Severe: excess sodium. | Slight | Poor: excess sodium. |
| 17: | | | | | |
| Broadax | Severe: percs slowly. | Severe: slope. | Moderate: slope. | Moderate: slope. | Fair: slope. |
| Hatwai | Severe: percs slowly. | Severe: slope. | Severe: excess sodium. | Moderate: slope. | Poor: excess sodium. |
| 18: | | | | | |
| Caldwell | Severe: flooding, wetness, percs slowly. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Fair: too clayey, wetness. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 18: | | | | | |
| Latah | Severe: flooding, wetness, percs slowly. | Severe: flooding. | Severe: flooding, wetness, too clayey. | Severe: flooding, wetness. | Poor: too clayey, hard to pack, wetness. |
| 19: | | | | | |
| Calouse | Moderate: percs slowly, slope. | Severe: slope. | Severe: excess sodium. | Moderate: slope. | Poor: excess sodium. |
| Almota | Severe: depth to rock. | Severe: depth to rock, slope. | Severe: depth to rock. | Severe: depth to rock. | Poor: depth to rock. |
| 20: | | | | | |
| Calouse | Moderate: percs slowly. | Moderate: seepage, slope. | Severe: excess sodium. | Slight | Poor: excess sodium. |
| Endicott | Severe: cemented pan. | Severe: cemented pan. | Severe: depth to rock, cemented pan. | Severe: cemented pan. | Poor: cemented pan. |
| Bryden | Severe: cemented pan, percs slowly. | Severe: cemented pan. | Severe: depth to rock, cemented pan. | Severe: cemented pan. | Poor: cemented pan. |
| 21 Carlinton | Severe: wetness, percs slowly. | Moderate: seepage, slope. | Severe: wetness. | Moderate: wetness. | Fair: too clayey, wetness. |
| 22 Carlinton | Severe: wetness, percs slowly, slope. | Severe: slope. | Severe: wetness, slope. | Severe: slope. | Poor: slope. |
| 23: | | | | | |
| Carlinton | Severe: wetness, percs slowly. | Moderate: seepage, slope. | Severe: wetness. | Moderate: wetness. | Fair: too clayey, wetness. |
| Talmaks | Severe: percs slowly. | Moderate: seepage, slope. | Moderate: too clayey. | Slight | Fair: too clayey. |
| 24: | | | | | |
| Cavendish | Severe: percs slowly. | Severe: slope. | Severe: depth to rock. | Moderate: depth to rock, slope. | Fair: depth to rock, too clayey, slope. |
| Taney | Severe: wetness, percs slowly. | Severe: slope, wetness. | Moderate: wetness, slope, too clayey. | Moderate: wetness, slope. | Fair: too clayey, slope, wetness. |
| 25 Chard | Moderate: percs slowly. | Severe: seepage. | Severe: seepage. | Severe: seepage. | Fair: thin layer. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 26, 27 Chard | Severe: slope. | Severe: seepage, slope. | Severe: seepage, slope. | Severe: seepage, slope. | Poor: slope. |
| 28: | | | | | |
| Chard | Severe: slope. | Severe: seepage, slope. | Severe: seepage, slope. | Severe: seepage, slope. | Poor: slope. |
| Chard, moist | Severe: slope. | Severe: seepage, slope. | Severe: seepage, slope. | Severe: seepage, slope. | Poor: slope. |
| 29: | | | | | |
| Chard | Severe: slope. | Severe: seepage, slope. | Severe: seepage, slope. | Severe: seepage, slope. | Poor: slope. |
| Tammany | Severe: poor filter, slope. | Severe: seepage, slope. | Severe: seepage, slope, too sandy. | Severe: seepage, slope. | Poor: seepage, too sandy, small stones. |
| 30: | | | | | |
| Chard | Moderate: percs slowly. | Severe: seepage. | Severe: seepage. | Severe: seepage. | Fair: thin layer. |
| Urban land. | | | | | |
| 31 Cramont | Severe: percs slowly. | Moderate: seepage, slope. | Severe: too clayey. | Slight | Poor: too clayey, hard to pack. |
| 32: | | | | | |
| Cramont | Severe: percs slowly. | Moderate: seepage, slope. | Severe: too clayey. | Slight | Poor: too clayey, hard to pack. |
| Culdesac | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| 33: | | | | | |
| Cramont | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, too clayey. | Severe: slope. | Poor: too clayey, hard to pack, slope. |
| Seddow | Severe: percs slowly, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Poor: small stones, slope. |
| 34 Crowers | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| 35 Driscoll | Severe: wetness, percs slowly. | Severe: slope. | Severe: wetness. | Moderate: wetness. | Poor: thin layer. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 36: | | | | | |
| Driscoll | Severe: wetness, percs slowly. | Moderate: seepage, slope. | Severe: wetness. | Moderate: wetness. | Poor: thin layer. |
| Larkin | Severe: percs slowly. | Moderate: seepage, slope. | Moderate: too clayey. | Slight | Fair: too clayey. |
| 37: | | | | | |
| Endicott | Severe: cemented pan. | Severe: cemented pan. | Severe: depth to rock, cemented pan. | Severe: cemented pan. | Poor: cemented pan. |
| Bryden | Severe: cemented pan, percs slowly. | Severe: cemented pan. | Severe: depth to rock, cemented pan. | Severe: cemented pan. | Poor: cemented pan. |
| 38: | | | | | |
| Endicott | Severe: cemented pan. | Severe: cemented pan, slope. | Severe: depth to rock, cemented pan. | Severe: cemented pan. | Poor: cemented pan. |
| Bryden | Severe: cemented pan, percs slowly. | Severe: cemented pan, slope. | Severe: depth to rock, cemented pan. | Severe: cemented pan. | Poor: cemented pan. |
| 39: | | | | | |
| Endicott | Severe: cemented pan. | Severe: cemented pan, slope. | Severe: depth to rock, cemented pan. | Severe: cemented pan. | Poor: cemented pan. |
| Oliphant | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| 40 Entic Haploxerolls | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| 41: | | | | | |
| Gwin | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| Vollmer | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, slope. |
| 42 Haploxerolls | Severe: depth to rock, percs slowly. | Severe: depth to rock, slope. | Severe: depth to rock. | Severe: depth to rock. | Poor: depth to rock, small stones. |
| 43 Hooverton | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 44 Immig | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope, too clayey. | Severe: depth to rock, slope. | Poor: depth to rock, too clayey, small stones. |
| 45 Jacket | Severe: percs slowly. | Severe: slope. | Severe: too clayey. | Slight | Poor: too clayey, hard to pack. |
| 46 Jacket | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, too clayey. | Severe: slope. | Poor: too clayey, hard to pack, slope. |
| 47: | | | | | |
| Jacket | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, too clayey. | Severe: slope. | Poor: too clayey, hard to pack, slope. |
| Larkin | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| 48 Joel | Severe: percs slowly. | Moderate: seepage, slope. | Moderate: too clayey. | Slight | Fair: too clayey. |
| 49 Joel | Severe: percs slowly. | Severe: slope. | Moderate: slope, too clayey. | Moderate: slope. | Fair: too clayey, slope. |
| 50: | | | | | |
| Joel | Severe: percs slowly. | Moderate: seepage, slope. | Moderate: too clayey. | Slight | Fair: too clayey. |
| Setters | Severe: wetness, percs slowly. | Moderate: seepage, slope. | Severe: wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack, wetness. |
| 51: | | | | | |
| Joel | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| Setters | Severe: wetness, percs slowly. | Severe: slope. | Severe: wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack, wetness. |
| 52 Johnson | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| 53: | | | | | |
| Johnson | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 53: | | | | | |
| Dragnot | Severe: depth to rock, slope. | Severe: seepage, depth to rock, slope. | Severe: depth to rock, seepage, slope. | Severe: depth to rock, seepage, slope. | Poor: depth to rock, small stones, slope. |
| Dragnot, dry | Severe: depth to rock, slope. | Severe: seepage, depth to rock, slope. | Severe: depth to rock, seepage, slope. | Severe: depth to rock, seepage, slope. | Poor: depth to rock, small stones, slope. |
| 54: | | | | | |
| Johnson | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| Kruse | Severe: percs slowly, slope. | Severe: seepage, slope. | Severe: seepage, slope. | Severe: slope. | Poor: slope. |
| 55: | | | | | |
| Johnson | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| Labuck | Severe: depth to rock, slope. | Severe: seepage, depth to rock, slope. | Severe: depth to rock, seepage, slope. | Severe: depth to rock, seepage, slope. | Poor: depth to rock, slope. |
| 56: | | | | | |
| Joseph | Severe: flooding, wetness, poor filter. | Severe: seepage, flooding, wetness. | Severe: flooding, seepage, wetness. | Severe: flooding, seepage, wetness. | Poor: seepage, too sandy, small stones. |
| Tombeall | Severe: flooding, wetness. | Severe: seepage, flooding, wetness. | Severe: flooding, seepage, wetness. | Severe: flooding, seepage, wetness. | Poor: seepage, small stones, wetness. |
| 57: | | | | | |
| Kettenbach | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| Kettenbach, moist | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| Gwin | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| 58: | | | | | |
| Kettenbach | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 58: | | | | | |
| Keuterville | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, large stones. | Severe: slope. | Poor: small stones, slope. |
| 59: | | | | | |
| Kettenbach | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| Rock outcrop. | | | | | |
| 60, 61 | | | | | |
| Keuterville | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, large stones. | Severe: slope. | Poor: small stones, slope. |
| 62: | | | | | |
| Keuterville | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, large stones. | Severe: slope. | Poor: small stones, slope. |
| Rock outcrop. | | | | | |
| 63, 64 | | | | | |
| Klickson | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, large stones. | Severe: slope. | Poor: small stones, slope. |
| 65: | | | | | |
| Klickson | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, large stones. | Severe: slope. | Poor: small stones, slope. |
| Agatha | Severe: percs slowly, slope. | Severe: slope. | Severe: depth to rock, slope, large stones. | Severe: slope. | Poor: large stones, slope. |
| 66: | | | | | |
| Klickson | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, large stones. | Severe: slope. | Poor: small stones, slope. |
| Hooverton | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| 67: | | | | | |
| Klickson | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, large stones. | Severe: slope. | Poor: small stones, slope. |
| Rock outcrop. | | | | | |
| 68: | | | | | |
| Klickson | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, large stones. | Severe: slope. | Poor: small stones, slope. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 68: | | | | | |
| Uptmor | Severe: percs slowly, slope. | Severe: slope. | Severe: depth to rock, slope, too clayey. | Severe: slope. | Poor: too clayey, hard to pack, small stones. |
| 69 Kruse | Severe: percs slowly, slope. | Severe: seepage, slope. | Severe: seepage, slope. | Severe: slope. | Poor: slope. |
| 70: | | | | | |
| Lapwai | Moderate: flooding, percs slowly. | Severe: seepage. | Severe: seepage. | Severe: seepage. | Poor: small stones. |
| Bridgewater | Severe: poor filter, large stones. | Severe: seepage, large stones. | Severe: seepage, too sandy, large stones. | Severe: seepage. | Poor: seepage, too sandy, small stones. |
| 71 Larabee | Severe: depth to rock, percs slowly. | Severe: depth to rock, slope. | Severe: depth to rock. | Severe: depth to rock. | Poor: depth to rock, small stones. |
| 72: | | | | | |
| Larabee | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| Gwin | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| 73: | | | | | |
| Larabee | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| Zaza | Severe: depth to rock, slope. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| Seddow | Severe: percs slowly, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Poor: small stones, slope. |
| 74: | | | | | |
| Larkin | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| Driscoll | Severe: wetness, percs slowly. | Severe: slope. | Severe: wetness. | Moderate: wetness, slope. | Poor: thin layer. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 75: | | | | | |
| Latahco | Severe: flooding, wetness, percs slowly. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding. | Fair: too clayey, wetness. |
| Thatuna | Severe: wetness, percs slowly. | Moderate: seepage, slope. | Moderate: wetness, too clayey. | Moderate: wetness. | Fair: too clayey, wetness. |
| 76: | | | | | |
| Lauby | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| Southwick | Severe: wetness, percs slowly, slope. | Severe: slope, wetness. | Severe: wetness, slope. | Severe: slope. | Poor: slope. |
| 77: | | | | | |
| Lickskillet | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| Alpowa | Severe: slope. | Severe: slope, large stones. | Severe: slope, large stones. | Severe: slope. | Poor: small stones, slope. |
| Rock outcrop. | | | | | |
| 78 Limekiln | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| 79: | | | | | |
| Limekiln | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| Crowers | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| 80 Linville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: small stones, slope. |
| 81: | | | | | |
| Linville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: small stones, slope. |
| Kettenbach | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 82: | | | | | |
| Linville | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: small stones, slope. |
| Waha | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, slope. |
| 83: | | | | | |
| Mallory | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope, too clayey. | Severe: depth to rock, slope. | Poor: depth to rock, too clayey, small stones. |
| Jacket | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, too clayey. | Severe: slope. | Poor: too clayey, hard to pack, slope. |
| 84: | | | | | |
| Maloney | Severe: depth to rock. | Severe: depth to rock, slope. | Severe: depth to rock. | Severe: depth to rock. | Poor: depth to rock, small stones. |
| Zaza | Severe: depth to rock. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, large stones. | Severe: depth to rock. | Poor: depth to rock, small stones. |
| 85: | | | | | |
| Meland | Severe: depth to rock, percs slowly. | Severe: depth to rock, slope. | Severe: depth to rock. | Severe: depth to rock. | Poor: depth to rock. |
| Jacket | Severe: percs slowly. | Severe: slope. | Severe: too clayey. | Moderate: slope. | Poor: too clayey, hard to pack. |
| 86: | | | | | |
| Meland | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, slope. |
| Keuterville | Severe: percs slowly, slope. | Severe: slope. | Severe: slope, large stones. | Severe: slope. | Poor: small stones, slope. |
| 87: | | | | | |
| Mohler | Severe: percs slowly. | Severe: slope. | Moderate: too clayey. | Slight | Fair: too clayey. |
| Nez Perce | Severe: wetness, percs slowly. | Moderate: seepage, slope. | Severe: wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack. |
| Uhlorn | Severe: percs slowly. | Moderate: seepage, slope. | Moderate: too clayey. | Slight | Fair: too clayey. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 88 Naff | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| 89: | | | | | |
| Naff | Severe: percs slowly. | Moderate: seepage, slope. | Moderate: too clayey. | Slight | Fair: too clayey. |
| Palouse | Moderate: percs slowly. | Moderate: seepage, slope. | Slight | Slight | Good. |
| 90: | | | | | |
| Naff | Severe: percs slowly. | Severe: slope. | Moderate: slope, too clayey. | Moderate: slope. | Fair: too clayey, slope. |
| Palouse | Moderate: percs slowly, slope. | Severe: slope. | Moderate: slope. | Moderate: slope. | Fair: slope. |
| 91: | | | | | |
| Naff | Severe: percs slowly. | Severe: slope. | Moderate: slope, too clayey. | Moderate: slope. | Fair: too clayey, slope. |
| Palouse | Moderate: percs slowly, slope. | Severe: slope. | Moderate: slope. | Moderate: slope. | Fair: slope. |
| 92: | | | | | |
| Naff | Severe: percs slowly. | Severe: slope. | Moderate: slope, too clayey. | Moderate: slope. | Fair: too clayey, slope. |
| Palouse | Moderate: percs slowly, slope. | Severe: slope. | Moderate: slope. | Moderate: slope. | Fair: slope. |
| Garfield | Severe: percs slowly. | Severe: slope. | Severe: too clayey. | Moderate: slope. | Poor: too clayey, hard to pack. |
| 93: | | | | | |
| Naff | Severe: percs slowly. | Severe: slope. | Moderate: too clayey. | Slight | Fair: too clayey. |
| Thatuna | Severe: wetness, percs slowly. | Moderate: seepage, slope. | Moderate: wetness, too clayey. | Moderate: wetness. | Fair: too clayey, wetness. |
| 94: | | | | | |
| Naff | Severe: percs slowly. | Severe: slope. | Moderate: too clayey. | Slight | Fair: too clayey. |
| Waha | Severe: depth to rock, percs slowly. | Severe: depth to rock, slope. | Severe: depth to rock. | Severe: depth to rock. | Poor: depth to rock. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 95, 96: | | | | | |
| Naff | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| Waha | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, slope. |
| 97, 98 Nez Perce | Severe: wetness, percs slowly. | Moderate: seepage, slope. | Severe: wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack. |
| 99: | | | | | |
| Nez Perce | Severe: wetness, percs slowly. | Severe: slope. | Severe: wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack. |
| Uhlorn | Severe: percs slowly. | Severe: slope. | Moderate: slope, too clayey. | Moderate: slope. | Fair: too clayey, slope. |
| 100 Oliphant | Moderate: percs slowly. | Moderate: seepage, slope. | Slight | Slight | Good. |
| 101 Oliphant | Moderate: percs slowly, slope. | Severe: slope. | Moderate: slope. | Moderate: slope. | Fair: slope. |
| 102 Oliphant, gravelly substratum | Moderate: percs slowly. | Moderate: seepage, slope. | Slight | Slight | Poor: small stones. |
| 103: | | | | | |
| Oliphant | Severe: slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| Alpowa | Severe: slope. | Severe: seepage, slope. | Severe: seepage, slope, large stones. | Severe: seepage, slope. | Poor: large stones, slope. |
| 104: | | | | | |
| Oliphant | Moderate: percs slowly. | Moderate: seepage, slope. | Slight | Slight | Good. |
| Hatwai | Severe: percs slowly. | Moderate: seepage, slope. | Severe: excess sodium. | Slight | Poor: excess sodium. |
| 105: | | | | | |
| Oliphant | Moderate: percs slowly, slope. | Severe: slope. | Moderate: slope. | Moderate: slope. | Poor: small stones. |
| Stember | Severe: depth to rock. | Severe: depth to rock, slope. | Severe: depth to rock. | Severe: depth to rock. | Poor: depth to rock, small stones. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 106: | | | | | |
| Palouse | Moderate: percs slowly. | Moderate: seepage, slope. | Slight | Slight | Good. |
| Athena | Moderate: percs slowly. | Moderate: seepage, slope. | Slight | Slight | Good. |
| 107: | | | | | |
| Palouse | Moderate: percs slowly, slope. | Severe: slope. | Moderate: slope. | Moderate: slope. | Fair: slope. |
| Athena | Moderate: percs slowly, slope. | Severe: slope. | Moderate: slope. | Moderate: slope. | Fair: slope. |
| 108. | | | | | |
| Pits, gravel | | | | | |
| 109 | Severe: percs slowly. | Moderate: seepage, cemented pan, slope. | Severe: cemented pan, excess sodium. | Moderate: cemented pan. | Poor: hard to pack, excess sodium. |
| 110: | | | | | |
| Riverwash. | | | | | |
| Aquents | Severe: flooding, wetness, poor filter. | Severe: seepage, flooding, wetness. | Severe: flooding, seepage, wetness. | Severe: flooding, seepage, wetness. | Poor: seepage, too sandy, small stones. |
| 111: | | | | | |
| Rock outcrop. | | | | | |
| Flybow | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, slope. |
| 112 | Severe: percs slowly, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Poor: small stones, slope. |
| 113 | Severe: wetness, percs slowly. | Moderate: seepage, slope. | Severe: wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack, wetness. |
| 114 | Severe: percs slowly. | Severe: slope. | Severe: depth to rock, large stones. | Moderate: depth to rock. | Poor: small stones. |
| 115: | | | | | |
| Shilla | Severe: percs slowly, slope. | Severe: slope. | Severe: depth to rock, slope, large stones. | Severe: slope. | Poor: small stones, slope. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 115: | | | | | |
| Seddow | Severe: percs slowly, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Poor: small stones, slope. |
| 116 Slickpoo | Severe: percs slowly. | Severe: slope. | Severe: depth to rock. | Moderate: depth to rock, slope. | Poor: large stones. |
| 117: | | | | | |
| Slickpoo | Severe: percs slowly, slope. | Severe: slope. | Severe: depth to rock, slope. | Severe: slope. | Poor: large stones, slope. |
| Broadax | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| 118 Southwick | Severe: wetness, percs slowly. | Severe: slope, wetness. | Severe: wetness. | Moderate: wetness. | Fair: wetness. |
| 119: | | | | | |
| Southwick | Severe: wetness, percs slowly, slope. | Severe: slope, wetness. | Severe: wetness, slope. | Severe: slope. | Poor: slope. |
| Bluesprin | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, small stones, slope. |
| 120: | | | | | |
| Southwick | Severe: wetness, percs slowly. | Severe: slope, wetness. | Severe: wetness. | Moderate: wetness. | Fair: wetness. |
| Driscoll | Severe: wetness, percs slowly. | Severe: slope. | Severe: wetness. | Moderate: wetness. | Poor: thin layer. |
| 121: | | | | | |
| Southwick | Severe: wetness, percs slowly, slope. | Severe: slope, wetness. | Severe: wetness, slope. | Severe: slope. | Poor: slope. |
| Driscoll | Severe: wetness, percs slowly, slope. | Severe: slope. | Severe: wetness, slope. | Severe: slope. | Poor: slope, thin layer. |
| 122: | | | | | |
| Southwick | Severe: wetness, percs slowly, slope. | Severe: slope, wetness. | Severe: wetness, slope. | Severe: slope. | Poor: slope. |
| Larkin | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 123: | | | | | |
| Sweiting | Severe: depth to rock, percs slowly. | Severe: depth to rock, slope. | Severe: depth to rock. | Severe: depth to rock. | Poor: depth to rock. |
| Joel | Severe: percs slowly. | Severe: slope. | Moderate: slope, too clayey. | Moderate: slope. | Fair: too clayey, slope. |
| 124 Talmaks | Severe: percs slowly. | Moderate: seepage, slope. | Moderate: too clayey. | Slight | Fair: too clayey. |
| 125 Talmaks | Severe: percs slowly. | Severe: slope. | Moderate: slope, too clayey. | Moderate: slope. | Fair: too clayey, slope. |
| 126: | | | | | |
| Talmaks | Severe: percs slowly. | Severe: slope. | Moderate: slope, too clayey. | Moderate: slope. | Fair: too clayey, slope. |
| Seddow | Severe: percs slowly. | Severe: slope. | Severe: depth to rock. | Moderate: depth to rock, slope. | Poor: small stones. |
| 127: | | | | | |
| Tammany | Severe: poor filter, slope. | Severe: seepage, slope. | Severe: seepage, slope, too sandy. | Severe: seepage, slope. | Poor: seepage, too sandy, small stones. |
| Chard | Severe: slope. | Severe: seepage, slope. | Severe: seepage, slope. | Severe: seepage, slope. | Poor: slope. |
| Rock outcrop. | | | | | |
| 128 Taney | Severe: wetness, percs slowly. | Severe: wetness. | Moderate: wetness, too clayey. | Moderate: wetness. | Fair: too clayey, wetness. |
| 129, 130: | | | | | |
| Taney | Severe: wetness, percs slowly, slope. | Severe: slope, wetness. | Severe: slope. | Severe: slope. | Poor: slope. |
| Joel | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| 131: | | | | | |
| Taney | Severe: wetness, percs slowly. | Severe: wetness. | Moderate: wetness, too clayey. | Moderate: wetness. | Fair: too clayey, wetness. |
| Setters | Severe: wetness, percs slowly. | Moderate: seepage, slope. | Severe: wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack, wetness. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 132: | | | | | |
| Taney | Severe: wetness, percs slowly. | Severe: slope, wetness. | Moderate: wetness, slope, too clayey. | Moderate: wetness, slope. | Fair: too clayey, slope, wetness. |
| Setters | Severe: wetness, percs slowly. | Severe: slope. | Severe: wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack, wetness. |
| 133, 134, 135: | | | | | |
| Thatuna | Severe: wetness, percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| Naff | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| 136: | | | | | |
| Thatuna | Severe: wetness, percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| Naff | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| Tilma | Severe: wetness, percs slowly. | Severe: slope. | Severe: wetness, too clayey. | Moderate: wetness, slope. | Poor: too clayey, hard to pack. |
| 137 Tombeall | Severe: wetness. | Severe: seepage, wetness. | Severe: seepage, wetness. | Severe: seepage, wetness. | Poor: seepage, small stones, wetness. |
| 138 Uhlig | Moderate: percs slowly. | Severe: seepage. | Severe: seepage. | Severe: seepage. | Good. |
| 139 Uhlig | Moderate: percs slowly, slope. | Severe: seepage, slope. | Severe: seepage. | Severe: seepage. | Fair: slope. |
| 140 Uhlig | Severe: slope. | Severe: seepage, slope. | Severe: seepage, slope. | Severe: seepage, slope. | Poor: slope. |
| 141 Uhlorn | Severe: percs slowly. | Severe: slope. | Moderate: slope, too clayey. | Moderate: slope. | Fair: too clayey, slope. |
| 142: | | | | | |
| Uhlorn | Severe: percs slowly. | Moderate: seepage, slope. | Moderate: too clayey. | Slight | Fair: too clayey. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 142: | | | | | |
| Nez Perce | Severe: wetness, percs slowly. | Moderate: seepage, slope. | Severe: wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack. |
| 143: | | | | | |
| Uhlorn | Severe: percs slowly, slope. | Severe: slope. | Severe: slope. | Severe: slope. | Poor: slope. |
| Nez Perce | Severe: wetness, percs slowly, slope. | Severe: slope. | Severe: wetness, slope, too clayey. | Severe: wetness, slope. | Poor: too clayey, hard to pack, slope. |
| 144: | | | | | |
| Uhlorn | Severe: percs slowly. | Severe: slope. | Moderate: slope, too clayey. | Moderate: slope. | Fair: too clayey, slope. |
| Vollmer | Severe: depth to rock, percs slowly. | Severe: depth to rock, slope. | Severe: depth to rock. | Severe: depth to rock. | Poor: depth to rock. |
| 145: | | | | | |
| Urban land. | | | | | |
| Wistona | Moderate: flooding, percs slowly. | Moderate: seepage. | Moderate: flooding. | Moderate: flooding. | Good. |
| 146 | Severe: slope. | Severe: seepage, slope. | Severe: seepage, slope. | Severe: slope. | Poor: slope. |
| 147 | Severe: depth to rock, percs slowly. | Severe: depth to rock. | Severe: depth to rock. | Severe: depth to rock. | Poor: depth to rock. |
| 148 | Severe: depth to rock, percs slowly, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, slope. |
| 149: | | | | | |
| Watama | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, slope. |
| Flybow | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Severe: depth to rock, slope. | Poor: depth to rock, slope. |
| 150: | | | | | |
| Webbridge | Severe: percs slowly, slope. | Severe: slope. | Severe: depth to rock, slope, large stones. | Severe: slope. | Poor: small stones, slope. |

Table 12.--Sanitary Facilities--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| 150: | | | | | |
| Agatha | Severe: percs slowly, slope. | Severe: slope. | Severe: depth to rock, slope, large stones. | Severe: slope. | Poor: large stones, slope. |
| 151: | | | | | |
| Westlake | Severe: flooding, wetness, percs slowly. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding, wetness. | Fair: too clayey, wetness. |
| Latahco | Severe: flooding, wetness, percs slowly. | Severe: flooding, wetness. | Severe: flooding, wetness. | Severe: flooding. | Fair: too clayey, wetness. |
| 152 Wilkins | Severe: flooding, wetness, percs slowly. | Severe: flooding. | Severe: flooding, wetness, too clayey. | Severe: flooding, wetness. | Poor: too clayey, hard to pack, wetness. |
| 153 Wistona | Moderate: flooding, percs slowly. | Moderate: seepage. | Moderate: flooding. | Moderate: flooding. | Good. |
| 154: | | | | | |
| Zaza | Severe: depth to rock. | Severe: depth to rock, slope, large stones. | Severe: depth to rock, large stones. | Severe: depth to rock. | Poor: depth to rock, small stones. |
| Sweiting | Severe: depth to rock, percs slowly. | Severe: depth to rock, slope. | Severe: depth to rock. | Severe: depth to rock. | Poor: depth to rock. |

Table 13.--Construction Materials

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 1, 2 Agatha | Poor: slope. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: large stones, area reclaim, slope. |
| 3: | | | | |
| Agatha | Poor: slope. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: large stones, area reclaim, slope. |
| Rock outcrop. | | | | |
| 4 Ahsahka | Poor: shrink-swell, low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 5: | | | | |
| Almota | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| Athena | Poor: low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Hatwai | Poor: low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: excess sodium, slope. |
| 6: | | | | |
| Almota | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| Linville | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| 7, 8: | | | | |
| Alpowa | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| Lickskillet | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, small stones, slope. |
| 9 Aquolls | Poor: shrink-swell, low strength, wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, wetness. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 10 Athena | Poor: low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 11: | | | | |
| Bakeoven | Poor: depth to rock. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, small stones, slope. |
| Watama | Poor: depth to rock. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 12: | | | | |
| Boles | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| Joel | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 13: | | | | |
| Bridgewater | Poor: large stones. | Improbable: large stones. | Improbable: large stones. | Poor: small stones, area reclaim. |
| Joseph | Poor: large stones. | Improbable: large stones. | Improbable: large stones. | Poor: too sandy, small stones, area reclaim. |
| 14 Broadax | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey. |
| 15 Broadax | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey, slope. |
| 16: | | | | |
| Broadax | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey. |
| Hatwai | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: excess sodium. |
| 17: | | | | |
| Broadax | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey, slope. |
| Hatwai | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: excess sodium. |
| 18: | | | | |
| Caldwell | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Latah | Poor: shrink-swell, low strength, wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: wetness. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 19: | | | | |
| Calouse | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: excess sodium. |
| Almota | Poor: depth to rock. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones. |
| 20: | | | | |
| Calouse | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: excess sodium. |
| Endicott | Poor: cemented pan, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: cemented pan, small stones. |
| Bryden | Poor: cemented pan, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: cemented pan, small stones, thin layer. |
| 21 Carlinton | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 22 Carlinton | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 23: | | | | |
| Carlinton | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Talmaks | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey. |
| 24: | | | | |
| Cavendish | Fair: depth to rock, shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim. |
| Taney | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| 25 Chard | Good | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 26 Chard | Fair: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 27 Chard | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 28: | | | | |
| Chard | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Chard, moist | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 29: | | | | |
| Chard | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 29: | | | | |
| Tammany | Poor: slope. | Probable | Probable | Poor: small stones, area reclaim, slope. |
| 30: | | | | |
| Chard | Good | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Urban land. | | | | |
| 31 Cramont | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| 32: | | | | |
| Cramont | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| Culdesac | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| 33: | | | | |
| Cramont | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, slope. |
| Seddow | Poor: thin layer. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| 34 Crowers | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| 35 Driscoll | Fair: low strength, thin layer, wetness. | Improbable: excess fines. | Improbable: excess fines. | Fair: thin layer. |
| 36: | | | | |
| Driscoll | Fair: low strength, thin layer, wetness. | Improbable: excess fines. | Improbable: excess fines. | Fair: thin layer. |
| Larkin | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 37: | | | | |
| Endicott | Poor: cemented pan, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: cemented pan, small stones. |
| Bryden | Poor: cemented pan, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: cemented pan, small stones, thin layer. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 38: | | | | |
| Endicott | Poor: cemented pan, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: cemented pan, small stones, slope. |
| Bryden | Poor: cemented pan, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: cemented pan, small stones, thin layer. |
| 39: | | | | |
| Endicott | Poor: cemented pan, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: cemented pan, small stones, slope. |
| Oliphant | Fair: low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 40 Entic Haploxerolls | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, small stones, slope. |
| 41: | | | | |
| Gwin | Poor: depth to rock. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, small stones, slope. |
| Vollmer | Poor: depth to rock, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| 42 Haploxerolls | Poor: depth to rock, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim. |
| 43 Hooverton | Poor: depth to rock, slope. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: small stones, slope. |
| 44 Immig | Poor: depth to rock, shrink-swell, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, small stones, slope. |
| 45 Jacket | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: thin layer. |
| 46 Jacket | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 47: | | | | |
| Jacket | Poor: shrink-swell, low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 47: | | | | |
| Larkin | Poor: low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 48 Joel | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 49 Joel | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| 50: | | | | |
| Joel | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Setters | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| 51: | | | | |
| Joel | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Setters | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| 52 Johnson | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| 53: | | | | |
| Johnson | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| Dragnot | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| Dragnot, dry | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| 54: | | | | |
| Johnson | Fair: shrink-swell, low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| Kruse | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 55: | | | | |
| Johnson | Fair: shrink-swell, low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| Labuck | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 56: | | | | |
| Joseph | Poor: large stones. | Improbable: large stones. | Improbable: large stones. | Poor: too sandy, small stones, area reclaim. |
| Tombeall | Fair: wetness. | Improbable: small stones. | Probable | Poor: small stones, area reclaim. |
| 57: | | | | |
| Kettenbach | Poor: depth to rock, slope. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: small stones, slope. |
| Kettenbach, moist | Poor: depth to rock, slope. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: small stones, slope. |
| Gwin | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, small stones, slope. |
| 58: | | | | |
| Kettenbach | Poor: depth to rock, slope. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: small stones, slope. |
| Keuterville | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| 59: | | | | |
| Kettenbach | Poor: depth to rock, slope. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: small stones, slope. |
| Rock outcrop. | | | | |
| 60 Keuterville | Fair: large stones, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| 61 Keuterville | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| 62: | | | | |
| Keuterville | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| Rock outcrop. | | | | |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 63, 64 Klickson | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| 65: | | | | |
| Klickson | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| Agatha | Poor: slope. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: large stones, area reclaim, slope. |
| 66: | | | | |
| Klickson | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| Hooverton | Poor: depth to rock, slope. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: small stones, slope. |
| 67: | | | | |
| Klickson | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| Rock outcrop. | | | | |
| 68: | | | | |
| Klickson | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| Uptmor | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, small stones, area reclaim. |
| 69 Kruse | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 70: | | | | |
| Lapwai | Good | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim. |
| Bridgewater | Poor: large stones. | Improbable: large stones. | Improbable: large stones. | Poor: small stones, area reclaim. |
| 71 Larabee | Poor: depth to rock. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 72: | | | | |
| Larabee | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| Gwin | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, small stones, slope. |
| 73: | | | | |
| Larabee | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| Zaza | Poor: depth to rock. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: depth to rock, small stones, slope. |
| Seddow | Poor: thin layer, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| 74: | | | | |
| Larkin | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Driscoll | Fair: low strength, thin layer, wetness. | Improbable: excess fines. | Improbable: excess fines. | Fair: thin layer, slope. |
| 75: | | | | |
| Latahco | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Thatuna | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 76: | | | | |
| Lauby | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Southwick | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 77: | | | | |
| Lickskillet | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, small stones, slope. |
| Alpowa | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| Rock outcrop. | | | | |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 78 Limekiln | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, small stones, slope. |
| 79: | | | | |
| Limekiln | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, small stones, slope. |
| Crowers | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| 80 Linville | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| 81: | | | | |
| Linville | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| Kettenbach | Poor: depth to rock, slope. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: small stones, slope. |
| 82: | | | | |
| Linville | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| Waha | Poor: depth to rock, low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 83: | | | | |
| Mallory | Poor: depth to rock, shrink-swell, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey, small stones, slope. |
| Jacket | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 84: | | | | |
| Maloney | Poor: depth to rock. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones. |
| Zaza | Poor: depth to rock. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: depth to rock, small stones. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 85: | | | | |
| Meland | Poor: depth to rock, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: depth to rock, small stones, slope. |
| Jacket | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: thin layer, slope. |
| 86: | | | | |
| Meland | Poor: depth to rock, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Keuterville | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| 87: | | | | |
| Mohler | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Nez Perce | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: thin layer. |
| Uhlorn | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 88 Naff | Poor: low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 89: | | | | |
| Naff | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Palouse | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 90: | | | | |
| Naff | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| Palouse | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| 91: | | | | |
| Naff | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| Palouse | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| 92: | | | | |
| Naff | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| Palouse | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 92: | | | | |
| Garfield | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| 93: | | | | |
| Naff | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Thatuna | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 94: | | | | |
| Naff | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Waha | Poor: depth to rock, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: depth to rock, too clayey. |
| 95: | | | | |
| Naff | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Waha | Poor: depth to rock, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 96: | | | | |
| Naff | Poor: low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Waha | Poor: depth to rock, low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 97, 98 Nez Perce | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: thin layer. |
| 99: | | | | |
| Nez Perce | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: thin layer, slope. |
| Uhlorn | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| 100 Oliphant | Fair: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 101 Oliphant | Fair: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| 102 Oliphant, gravelly substratum | Good | Improbable: excess fines. | Improbable: excess fines. | Poor: area reclaim. |
| 103: | | | | |
| Oliphant | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 103: | | | | |
| Alpowa | Poor: slope. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: area reclaim, small stones, slope. |
| 104: | | | | |
| Oliphant | Fair: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Hatwai | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: excess sodium. |
| 105: | | | | |
| Oliphant | Good | Improbable: excess fines. | Improbable: excess fines. | Poor: area reclaim. |
| Stember | Poor: depth to rock. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones. |
| 106: | | | | |
| Palouse | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Athena | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 107: | | | | |
| Palouse | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| Athena | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| 108. | | | | |
| Pits, gravel | | | | |
| 109 | | | | |
| Redmore | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: area reclaim, excess sodium. |
| 110: | | | | |
| Riverwash. | | | | |
| Aquents | Poor: large stones, wetness. | Probable | Probable | Poor: too sandy, small stones, area reclaim. |
| 111: | | | | |
| Rock outcrop. | | | | |
| Flybow | Poor: depth to rock, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, small stones, slope. |
| 112 | | | | |
| Seddow | Poor: thin layer, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 113 Setters | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| 114 Shilla | Fair: depth to rock, shrink-swell. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim. |
| 115: | | | | |
| Shilla | Fair: depth to rock, shrink-swell, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| Seddow | Poor: thin layer. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| 116 Slickpoo | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim. |
| 117: | | | | |
| Slickpoo | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| Broadax | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 118 Southwick | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 119: | | | | |
| Southwick | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Bluesprin | Poor: depth to rock. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| 120: | | | | |
| Southwick | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Driscoll | Fair: low strength, thin layer, wetness. | Improbable: excess fines. | Improbable: excess fines. | Fair: thin layer. |
| 121: | | | | |
| Southwick | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Driscoll | Fair: low strength, thin layer, wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 122: | | | | |
| Southwick | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Larkin | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 123: | | | | |
| Sweiting | Poor: depth to rock, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones. |
| Joel | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| 124 Talmaks | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey. |
| 125 Talmaks | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey, slope. |
| 126: | | | | |
| Talmaks | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey, slope. |
| Seddow | Poor: thin layer. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim. |
| 127: | | | | |
| Tammany | Poor: slope. | Probable | Probable | Poor: small stones, area reclaim, slope. |
| Chard | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Rock outcrop. | | | | |
| 128 Taney | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 129: | | | | |
| Taney | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Joel | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 130: | | | | |
| Taney | Poor: low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Joel | Poor: low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 131: | | | | |
| Taney | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Setters | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| 132: | | | | |
| Taney | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| Setters | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| 133, 134: | | | | |
| Thatuna | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Naff | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 135: | | | | |
| Thatuna | Poor: low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Naff | Poor: low strength, slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 136: | | | | |
| Thatuna | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Naff | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Tilma | Fair: low strength, wetness. | Improbable: excess fines. | Improbable: excess fines. | Fair: thin layer, slope. |
| 137 Tombeall | Fair: wetness. | Improbable: small stones. | Probable | Poor: small stones, area reclaim. |
| 138 Uhlig | Good | Improbable: excess fines. | Improbable: excess fines. | Fair: small stones. |
| 139 Uhlig | Good | Improbable: excess fines. | Improbable: excess fines. | Fair: small stones, slope. |
| 140 Uhlig | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 141 Uhlorn | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 142: | | | | |
| Uhlorn | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Nez Perce | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: thin layer. |
| 143: | | | | |
| Uhlorn | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Nez Perce | Poor: shrink-swell, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 144: | | | | |
| Uhlorn | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| Vollmer | Poor: depth to rock, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones. |
| 145: | | | | |
| Urban land. | | | | |
| Wistona | Good | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 146 Uvi | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 147 Vollmer | Poor: depth to rock, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones. |
| 148 Vollmer | Poor: depth to rock, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, slope. |
| 149: | | | | |
| Watama | Poor: depth to rock. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| Flybow | Poor: depth to rock. | Improbable: excess fines. | Improbable: excess fines. | Poor: depth to rock, small stones, slope. |
| 150: | | | | |
| Webbridge | Poor: slope. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones, area reclaim, slope. |
| Agatha | Poor: slope. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: large stones, area reclaim, slope. |

Table 13.--Construction Materials--Continued

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| 151: | | | | |
| Westlake | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| Latahco | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 152 Wilkins | Poor: low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: too clayey. |
| 153 Wistona | Good | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 154: | | | | |
| Zaza | Poor: depth to rock. | Improbable: excess fines, large stones. | Improbable: excess fines, large stones. | Poor: depth to rock, small stones. |
| Sweiting | Poor: depth to rock, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: small stones. |

Table 14.--Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 1, 2 Agatha | Severe: slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones. | Slope, large stones. | Large stones, slope. |
| 3: | | | | | | | |
| Agatha | Severe: slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones. | Slope, large stones. | Large stones, slope. |
| Rock outcrop. | | | | | | | |
| 4 Ahsahka | Severe: slope. | Moderate: hard to pack. | Severe: no water. | Deep to water | Slope, percs slowly. | Slope, erodes easily, percs slowly. | Slope, erodes easily, percs slowly. |
| 5: | | | | | | | |
| Almota | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| Athena | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Hatwai | Severe: slope. | Severe: piping, excess sodium. | Severe: no water. | Deep to water | Slope, percs slowly, erodes easily. | Slope, erodes easily. | Slope, excess sodium, erodes easily. |
| 6: | | | | | | | |
| Almota | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| Linville | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 7, 8: | | | | | | | |
| Alpowa | Severe: slope. | Severe: piping, large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones. | Large stones, slope, droughty. |
| Lickskillet | Severe: depth to rock, slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, droughty, depth to rock. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 9 Aquolls | Moderate: depth to rock. | Severe: thin layer, ponding. | Severe: slow refill. | Ponding, flooding, frost action. | Ponding, flooding. | Erodes easily, ponding. | Wetness, erodes easily. |
| 10 Athena | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 11: | | | | | | | |
| Bakeoven | Severe: depth to rock, slope. | Moderate: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| Watama | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, depth to rock. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| 12: | | | | | | | |
| Boles | Moderate: slope. | Moderate: hard to pack, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness, percs slowly. | Wetness, erodes easily, percs slowly. |
| Joel | Moderate: seepage, slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Erodes easily | Erodes easily. |
| 13: | | | | | | | |
| Bridgewater | Severe: seepage. | Severe: seepage, large stones. | Severe: no water. | Deep to water | Large stones, droughty. | Large stones, too sandy, soil blowing. | Large stones, droughty. |
| Joseph | Severe: seepage. | Severe: seepage, large stones. | Severe: large stones, cutbanks cave. | Deep to water | Large stones, droughty, fast intake. | Large stones, too sandy. | Large stones, droughty, rooting depth. |
| 14 Broadax | Moderate: seepage, slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |
| 15 Broadax | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 16: | | | | | | | |
| Broadax | Moderate: seepage, slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 16: | | | | | | | |
| Hatwai | Moderate: seepage, slope. | Severe: piping, excess sodium. | Severe: no water. | Deep to water | Slope, percs slowly, erodes easily. | Erodes easily | Excess sodium, erodes easily. |
| 17: | | | | | | | |
| Broadax | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Hatwai | Severe: slope. | Severe: piping, excess sodium. | Severe: no water. | Deep to water | Slope, percs slowly, erodes easily. | Slope, erodes easily. | Slope, excess sodium, erodes easily. |
| 18: | | | | | | | |
| Caldwell | Moderate: seepage. | Moderate: piping, wetness. | Severe: slow refill. | Deep to water | Erodes easily, flooding. | Erodes easily | Erodes easily. |
| Latah | Moderate: seepage. | Severe: wetness. | Severe: no water. | Percs slowly, flooding, frost action. | Wetness, percs slowly, flooding. | Erodes easily, wetness, percs slowly. | Wetness, erodes easily, percs slowly. |
| 19: | | | | | | | |
| Calouse | Severe: slope. | Severe: piping, excess sodium. | Severe: no water. | Deep to water | Slope, erodes easily, excess sodium. | Slope, erodes easily. | Slope, excess sodium, erodes easily. |
| Almota | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| 20: | | | | | | | |
| Calouse | Moderate: seepage, slope. | Severe: piping, excess sodium. | Severe: no water. | Deep to water | Slope, erodes easily, excess sodium. | Erodes easily | Excess sodium, erodes easily. |
| Endicott | Moderate: seepage, depth to rock, slope. | Moderate: thin layer, piping. | Severe: no water. | Deep to water | Slope, cemented pan, erodes easily. | Cemented pan, erodes easily. | Erodes easily, cemented pan. |
| Bryden | Moderate: seepage, depth to rock, slope. | Moderate: thin layer, piping. | Severe: no water. | Deep to water | Slope, cemented pan, erodes easily. | Cemented pan, erodes easily. | Erodes easily, cemented pan. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 21 Carlinton | Moderate: seepage, slope. | Moderate: wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Erodes easily, rooting depth. |
| 22 Carlinton | Severe: slope. | Moderate: wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Slope, erodes easily, rooting depth. |
| 23: | | | | | | | |
| Carlinton | Moderate: seepage, slope. | Moderate: wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Erodes easily, rooting depth. |
| Talmaks | Moderate: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |
| 24: | | | | | | | |
| Cavendish | Severe: slope. | Moderate: thin layer, piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Taney | Severe: slope. | Moderate: piping, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Slope, erodes easily, rooting depth. |
| 25 Chard | Severe: seepage. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |
| 26, 27 Chard | Severe: seepage, slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 28: | | | | | | | |
| Chard | Severe: seepage, slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Chard, moist | Severe: seepage, slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 29: | | | | | | | |
| Chard | Severe: seepage, slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 29: | | | | | | | |
| Tammany | Severe: seepage, slope. | Severe: seepage, large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, too sandy. | Large stones, slope, droughty. |
| 30: | | | | | | | |
| Chard | Severe: seepage. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |
| Urban land. | | | | | | | |
| 31 Cramont | Moderate: slope. | Moderate: hard to pack. | Severe: no water. | Deep to water | Slope, percs slowly, erodes easily. | Erodes easily, percs slowly. | Erodes easily, percs slowly. |
| 32: | | | | | | | |
| Cramont | Moderate: slope. | Moderate: hard to pack. | Severe: no water. | Deep to water | Slope, percs slowly, erodes easily. | Erodes easily, percs slowly. | Erodes easily, percs slowly. |
| Culdesac | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope | Slope, erodes easily. | Slope, erodes easily. |
| 33: | | | | | | | |
| Cramont | Severe: slope. | Moderate: hard to pack. | Severe: no water. | Deep to water | Slope, percs slowly, erodes easily. | Slope, erodes easily, percs slowly. | Slope, erodes easily, percs slowly. |
| Seddow | Severe: slope. | Moderate: thin layer, large stones. | Severe: no water. | Deep to water | Slope, large stones, erodes easily. | Slope, large stones, erodes easily. | Large stones, slope, erodes easily. |
| 34 Crowers | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope | Slope | Slope. |
| 35 Driscoll | Moderate: seepage, slope. | Severe: piping. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Erodes easily, percs slowly. |
| 36: | | | | | | | |
| Driscoll | Moderate: seepage, slope. | Severe: piping. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Erodes easily, percs slowly. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 36: | | | | | | | |
| Larkin | Moderate: seepage, slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Erodes easily | Erodes easily. |
| 37: | | | | | | | |
| Endicott | Moderate: seepage, depth to rock, slope. | Moderate: thin layer, piping. | Severe: no water. | Deep to water | Slope, cemented pan, erodes easily. | Cemented pan, erodes easily. | Erodes easily, cemented pan. |
| Bryden | Moderate: seepage, depth to rock, slope. | Moderate: thin layer, piping. | Severe: no water. | Deep to water | Slope, cemented pan, erodes easily. | Cemented pan, erodes easily. | Erodes easily, cemented pan. |
| 38: | | | | | | | |
| Endicott | Severe: slope. | Moderate: thin layer, piping. | Severe: no water. | Deep to water | Slope, cemented pan, erodes easily. | Slope, cemented pan, erodes easily. | Slope, erodes easily, cemented pan. |
| Bryden | Severe: slope. | Moderate: thin layer, piping. | Severe: no water. | Deep to water | Slope, cemented pan, erodes easily. | Slope, cemented pan, erodes easily. | Slope, erodes easily, cemented pan. |
| 39: | | | | | | | |
| Endicott | Severe: slope. | Moderate: thin layer, piping. | Severe: no water. | Deep to water | Slope, cemented pan, erodes easily. | Slope, cemented pan, erodes easily. | Slope, erodes easily, cemented pan. |
| Oliphant | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 40 Entic Haploxerolls | Severe: depth to rock, slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| 41: | | | | | | | |
| Gwin | Severe: depth to rock, slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| Vollmer | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 42 Haploxerolls | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, depth to rock. | Slope, depth to rock. | Slope, depth to rock. |
| 43 Hooverton | Severe: slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| 44 Immig | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, droughty, percs slowly. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| 45 Jacket | Moderate: slope. | Moderate: hard to pack. | Severe: no water. | Deep to water | Slope, percs slowly. | Erodes easily, percs slowly. | Erodes easily, percs slowly. |
| 46 Jacket | Severe: slope. | Moderate: hard to pack. | Severe: no water. | Deep to water | Slope, percs slowly. | Slope, erodes easily, percs slowly. | Slope, erodes easily, percs slowly. |
| 47: | | | | | | | |
| Jacket | Severe: slope. | Moderate: hard to pack. | Severe: no water. | Deep to water | Slope, percs slowly. | Slope, erodes easily, percs slowly. | Slope, erodes easily, percs slowly. |
| Larkin | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Slope, erodes easily. | Slope, erodes easily. |
| 48 Joel | Moderate: seepage, slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Erodes easily | Erodes easily. |
| 49 Joel | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Slope, erodes easily. | Slope, erodes easily. |
| 50: | | | | | | | |
| Joel | Moderate: seepage, slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Erodes easily | Erodes easily. |
| Setters | Moderate: slope. | Moderate: hard to pack, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Wetness, erodes easily. |
| 51: | | | | | | | |
| Joel | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Slope, erodes easily. | Slope, erodes easily. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 51: | | | | | | | |
| Setters | Severe: slope. | Moderate: hard to pack, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Wetness, slope, erodes easily. |
| 52 Johnson | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope | Slope | Slope. |
| 53: | | | | | | | |
| Johnson | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope | Slope | Slope. |
| Dragnot | Severe: seepage, slope. | Severe: seepage. | Severe: no water. | Deep to water | Slope, depth to rock. | Slope, depth to rock. | Slope, depth to rock. |
| Dragnot, dry | Severe: seepage, slope. | Severe: seepage. | Severe: no water. | Deep to water | Slope, depth to rock. | Slope, depth to rock. | Slope, depth to rock. |
| 54: | | | | | | | |
| Johnson | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope | Slope | Slope. |
| Kruse | Severe: seepage, slope. | Moderate: thin layer. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 55: | | | | | | | |
| Johnson | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope | Slope | Slope. |
| Labuck | Severe: seepage, slope. | Severe: seepage. | Severe: no water. | Deep to water | Slope, droughty, soil blowing. | Slope, depth to rock, soil blowing. | Slope, droughty, depth to rock. |
| 56: | | | | | | | |
| Joseph | Severe: seepage. | Severe: seepage, large stones. | Severe: large stones, cutbanks cave. | Deep to water | Large stones, droughty, fast intake. | Large stones, too sandy. | Large stones, droughty, rooting depth. |
| Tombeall | Severe: seepage. | Severe: seepage, wetness. | Moderate: slow refill. | Flooding, large stones, frost action. | Wetness, flooding. | Wetness | Wetness. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 57: | | | | | | | |
| Kettenbach | Severe: slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| Kettenbach, moist | Severe: slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| Gwin | Severe: depth to rock, slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| 58: | | | | | | | |
| Kettenbach | Severe: slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| Keuterville | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones. | Large stones, slope, droughty. |
| 59: | | | | | | | |
| Kettenbach | Severe: slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| Rock outcrop. | | | | | | | |
| 60, 61 Keuterville | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones. | Large stones, slope, droughty. |
| 62: | | | | | | | |
| Keuterville | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones. | Large stones, slope, droughty. |
| Rock outcrop. | | | | | | | |
| 63, 64 Klickson | Severe: slope. | Moderate: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, erodes easily. | Large stones, slope, erodes easily. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 65: | | | | | | | |
| Klickson | Severe: slope. | Moderate: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, erodes easily. | Large stones, slope, erodes easily. |
| Agatha | Severe: slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones. | Slope, large stones. | Large stones, slope. |
| 66: | | | | | | | |
| Klickson | Severe: slope. | Moderate: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, erodes easily. | Large stones, slope, erodes easily. |
| Hooverton | Severe: slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| 67: | | | | | | | |
| Klickson | Severe: slope. | Moderate: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, erodes easily. | Large stones, slope, erodes easily. |
| Rock outcrop. | | | | | | | |
| 68: | | | | | | | |
| Klickson | Severe: slope. | Moderate: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, erodes easily. | Large stones, slope, erodes easily. |
| Uptmor | Severe: slope. | Severe: hard to pack. | Severe: no water. | Deep to water | Slope, percs slowly, erodes easily. | Slope, erodes easily, percs slowly. | Slope, erodes easily, percs slowly. |
| 69 Kruse | Severe: seepage, slope. | Moderate: thin layer. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 70: | | | | | | | |
| Lapwai | Severe: seepage. | Severe: seepage. | Severe: no water. | Deep to water | Favorable | Erodes easily | Erodes easily. |
| Bridgewater | Severe: seepage. | Severe: seepage, large stones. | Severe: no water. | Deep to water | Large stones, droughty. | Large stones, too sandy, soil blowing. | Large stones, droughty. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 71 Larabee | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| 72: | | | | | | | |
| Larabee | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| Gwin | Severe: depth to rock, slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| 73: | | | | | | | |
| Larabee | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| Zaza | Severe: depth to rock, slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| Seddow | Severe: slope. | Moderate: thin layer, large stones. | Severe: no water. | Deep to water | Slope, large stones, erodes easily. | Slope, large stones, erodes easily. | Large stones, slope, erodes easily. |
| 74: | | | | | | | |
| Larkin | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Slope, erodes easily. | Slope, erodes easily. |
| Driscoll | Severe: slope. | Severe: piping. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Slope, erodes easily, percs slowly. |
| 75: | | | | | | | |
| Latahco | Moderate: seepage. | Moderate: wetness. | Severe: no water. | Flooding, frost action. | Wetness, flooding. | Erodes easily, wetness. | Erodes easily. |
| Thatuna | Moderate: seepage. | Moderate: wetness. | Severe: no water. | Percs slowly, frost action. | Wetness, percs slowly. | Erodes easily, wetness. | Erodes easily, percs slowly. |
| 76: | | | | | | | |
| Lauby | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope | Slope, erodes easily. | Slope, erodes easily. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 76: | | | | | | | |
| Southwick | Severe: slope. | Severe: thin layer. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Slope, erodes easily, percs slowly. |
| 77: | | | | | | | |
| Lickskillet | Severe: depth to rock, slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, droughty, depth to rock. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| Alpowa | Severe: slope. | Severe: piping, large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones. | Large stones, slope, droughty. |
| Rock outcrop. | | | | | | | |
| 78 Limekiln | Severe: depth to rock, slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| 79: | | | | | | | |
| Limekiln | Severe: depth to rock, slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| Crowers | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope | Slope | Slope. |
| 80 Linville | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 81: | | | | | | | |
| Linville | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Kettenbach | Severe: slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| 82: | | | | | | | |
| Linville | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Waha | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 83: | | | | | | | |
| Mallory | Severe: slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| Jacket | Severe: slope. | Moderate: hard to pack. | Severe: no water. | Deep to water | Slope, percs slowly. | Slope, erodes easily, percs slowly. | Slope, erodes easily, percs slowly. |
| 84: | | | | | | | |
| Maloney | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, depth to rock. | Slope, depth to rock. | Slope, depth to rock. |
| Zaza | Severe: depth to rock, slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| 85: | | | | | | | |
| Meland | Severe: slope. | Moderate: thin layer, piping. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| Jacket | Severe: slope. | Moderate: hard to pack. | Severe: no water. | Deep to water | Slope, percs slowly. | Slope, erodes easily, percs slowly. | Slope, erodes easily, percs slowly. |
| 86: | | | | | | | |
| Meland | Severe: slope. | Moderate: thin layer, piping. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| Keuterville | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones. | Large stones, slope, droughty. |
| 87: | | | | | | | |
| Mohler | Moderate: seepage, slope. | Slight | Severe: no water. | Deep to water | Slope | Erodes easily | Erodes easily. |
| Nez Perce | Moderate: seepage, slope. | Moderate: hard to pack, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Wetness, erodes easily. |
| Uhlorn | Moderate: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 88 Naff | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 89: | | | | | | | |
| Naff | Moderate: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |
| Palouse | Moderate: seepage, slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Erodes easily | Erodes easily. |
| 90: | | | | | | | |
| Naff | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Palouse | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Slope, erodes easily. | Slope, erodes easily. |
| 91: | | | | | | | |
| Naff | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Palouse | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Slope, erodes easily. | Slope, erodes easily. |
| 92: | | | | | | | |
| Naff | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Palouse | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Slope, erodes easily. | Slope, erodes easily. |
| Garfield | Severe: slope. | Moderate: hard to pack. | Severe: no water. | Deep to water | Slope, percs slowly. | Slope, percs slowly. | Slope, percs slowly. |
| 93: | | | | | | | |
| Naff | Moderate: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |
| Thatuna | Moderate: seepage, slope. | Moderate: wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Erodes easily, percs slowly. |
| 94: | | | | | | | |
| Naff | Moderate: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 94: | | | | | | | |
| Waha | Moderate: depth to rock, slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Depth to rock, erodes easily. | Erodes easily, depth to rock. |
| 95, 96: | | | | | | | |
| Naff | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Waha | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| 97 Nez Perce | Moderate: seepage, slope. | Moderate: hard to pack, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Wetness, erodes easily. |
| 98 Nez Perce | Moderate: seepage. | Moderate: hard to pack, wetness. | Severe: no water. | Percs slowly, frost action. | Wetness, percs slowly. | Erodes easily, wetness. | Wetness, erodes easily. |
| 99: | | | | | | | |
| Nez Perce | Severe: slope. | Moderate: hard to pack, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Wetness, slope, erodes easily. |
| Uhlorn | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 100 Oliphant | Moderate: seepage. | Severe: piping. | Severe: no water. | Deep to water | Erodes easily | Erodes easily | Erodes easily. |
| 101 Oliphant | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 102 Oliphant, gravelly substratum | Moderate: seepage, slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |
| 103: | | | | | | | |
| Oliphant | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 103: | | | | | | | |
| Alpowa | Severe: seepage, slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, erodes easily. | Large stones, slope, erodes easily. |
| 104: | | | | | | | |
| Oliphant | Moderate: seepage, slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |
| Hatwai | Moderate: seepage, slope. | Severe: piping, excess sodium. | Severe: no water. | Deep to water | Slope, percs slowly, erodes easily. | Erodes easily | Excess sodium, erodes easily. |
| 105: | | | | | | | |
| Oliphant | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Stember | Severe: slope. | Moderate: thin layer, large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, erodes easily. |
| 106: | | | | | | | |
| Palouse | Moderate: seepage, slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Erodes easily | Erodes easily. |
| Athena | Moderate: seepage, slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |
| 107: | | | | | | | |
| Palouse | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Slope, erodes easily. | Slope, erodes easily. |
| Athena | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 108. Pits, gravel | | | | | | | |
| 109 Redmore | Moderate: seepage, cemented pan, slope. | Severe: excess sodium. | Severe: no water. | Deep to water | Slope, percs slowly, erodes easily. | Erodes easily | Excess sodium, erodes easily, percs slowly. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 110: Riverwash. | | | | | | | |
| Aquents | Severe: seepage. | Severe: seepage, large stones, wetness. | Severe: large stones, cutbanks cave. | Flooding, large stones, cutbanks cave. | Large stones, wetness, droughty. | Large stones, wetness, too sandy. | Large stones, wetness, droughty. |
| 111: Rock outcrop. | | | | | | | |
| Flybow | Severe: depth to rock, slope. | Moderate: large stones. | Severe: no water. | Deep to water | Slope, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| 112 Seddow | Severe: slope. | Moderate: thin layer, large stones. | Severe: no water. | Deep to water | Slope, large stones, erodes easily. | Slope, large stones, erodes easily. | Large stones, slope, erodes easily. |
| 113 Setters | Moderate: slope. | Moderate: hard to pack, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Wetness, erodes easily. |
| 114 Shilla | Moderate: depth to rock, slope. | Severe: seepage. | Severe: no water. | Deep to water | Slope, large stones. | Large stones, erodes easily. | Large stones, erodes easily. |
| 115: | | | | | | | |
| Shilla | Severe: slope. | Severe: seepage. | Severe: no water. | Deep to water | Slope, large stones. | Slope, large stones, erodes easily. | Large stones, slope, erodes easily. |
| Seddow | Severe: slope. | Moderate: thin layer, large stones. | Severe: no water. | Deep to water | Slope, large stones, erodes easily. | Slope, large stones, erodes easily. | Large stones, slope, erodes easily. |
| 116 Slickpoo | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 117: | | | | | | | |
| Slickpoo | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Broadax | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 118 Southwick | Moderate: seepage, slope. | Severe: thin layer. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Erodes easily, percs slowly. |
| 119: | | | | | | | |
| Southwick | Severe: slope. | Severe: thin layer. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Slope, erodes easily, percs slowly. |
| Bluesprin | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Slope, large stones, depth to rock. | Large stones, slope, erodes easily. |
| 120: | | | | | | | |
| Southwick | Moderate: seepage, slope. | Severe: thin layer. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Erodes easily, percs slowly. |
| Driscoll | Moderate: seepage, slope. | Severe: piping. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Erodes easily, percs slowly. |
| 121: | | | | | | | |
| Southwick | Severe: slope. | Severe: thin layer. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Slope, erodes easily, percs slowly. |
| Driscoll | Severe: slope. | Severe: piping. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Slope, erodes easily, percs slowly. |
| 122: | | | | | | | |
| Southwick | Severe: slope. | Severe: thin layer. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Slope, erodes easily, percs slowly. |
| Larkin | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Slope, erodes easily. | Slope, erodes easily. |
| 123: | | | | | | | |
| Sweiting | Severe: slope. | Moderate: thin layer. | Severe: no water. | Deep to water | Slope, percs slowly, depth to rock. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| Joel | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Slope, erodes easily. | Slope, erodes easily. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 124 Talmaks | Moderate: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |
| 125 Talmaks | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 126: | | | | | | | |
| Talmaks | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Seddow | Severe: slope. | Moderate: thin layer, large stones. | Severe: no water. | Deep to water | Slope, large stones, erodes easily. | Slope, large stones, erodes easily. | Large stones, slope, erodes easily. |
| 127: | | | | | | | |
| Tammany | Severe: seepage, slope. | Severe: seepage, large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, too sandy. | Large stones, slope, droughty. |
| Chard | Severe: seepage, slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Rock outcrop. | | | | | | | |
| 128 Taney | Moderate: seepage, slope. | Moderate: piping, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Erodes easily, rooting depth. |
| 129, 130: | | | | | | | |
| Taney | Severe: slope. | Moderate: piping, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Slope, erodes easily, rooting depth. |
| Joel | Severe: slope. | Moderate: piping. | Severe: no water. | Deep to water | Slope | Slope, erodes easily. | Slope, erodes easily. |
| 131: | | | | | | | |
| Taney | Moderate: seepage, slope. | Moderate: piping, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Erodes easily, rooting depth. |
| Setters | Moderate: slope. | Moderate: hard to pack, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Wetness, erodes easily. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 132: | | | | | | | |
| Taney | Moderate: seepage, slope. | Moderate: piping, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Erodes easily, rooting depth. |
| Setters | Severe: slope. | Moderate: hard to pack, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Wetness, slope, erodes easily. |
| 133, 134, 135: | | | | | | | |
| Thatuna | Severe: slope. | Moderate: wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Slope, erodes easily, percs slowly. |
| Naff | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 136: | | | | | | | |
| Thatuna | Severe: slope. | Moderate: wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Slope, erodes easily, percs slowly. |
| Naff | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Tilma | Severe: slope. | Severe: thin layer. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, wetness, percs slowly. | Slope, percs slowly. |
| 137 Tombeall | Severe: seepage. | Severe: seepage, wetness. | Moderate: slow refill. | Large stones, frost action. | Wetness | Wetness | Wetness. |
| 138 Uhlig | Severe: seepage. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |
| 139, 140 Uhlig | Severe: seepage, slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 141 Uhlorn | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 142: | | | | | | | |
| Uhlorn | Moderate: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Erodes easily | Erodes easily. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 142: | | | | | | | |
| Nez Perce | Moderate: seepage, slope. | Moderate: hard to pack, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Erodes easily, wetness. | Wetness, erodes easily. |
| 143: | | | | | | | |
| Uhlorn | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Nez Perce | Severe: slope. | Moderate: hard to pack, wetness. | Severe: no water. | Percs slowly, frost action, slope. | Slope, wetness, percs slowly. | Slope, erodes easily, wetness. | Wetness, slope, erodes easily. |
| 144: | | | | | | | |
| Uhlorn | Severe: slope. | Slight | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| Vollmer | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| 145: | | | | | | | |
| Urban land. | | | | | | | |
| Wistona | Moderate: seepage. | Severe: piping. | Severe: no water. | Deep to water | Soil blowing, erodes easily. | Erodes easily, soil blowing. | Erodes easily. |
| 146 Uvi | Severe: seepage, slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, erodes easily. | Slope, erodes easily. | Slope, erodes easily. |
| 147 Vollmer | Moderate: depth to rock, slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Depth to rock, erodes easily. | Erodes easily, depth to rock. |
| 148 Vollmer | Severe: slope. | Severe: thin layer. | Severe: no water. | Deep to water | Slope, depth to rock, erodes easily. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |
| 149: | | | | | | | |
| Watama | Severe: slope. | Severe: piping. | Severe: no water. | Deep to water | Slope, depth to rock. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |

Table 14.--Water Management--Continued

| Soil name and map symbol | Limitations for-- Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Features affecting-- Drainage | Irrigation | Terraces and diversions | Grassed waterways |
|---|---|---|---|---|---|---|---|
| 149: | | | | | | | |
| Flybow | Severe: depth to rock, slope. | Moderate: large stones. | Severe: no water. | Deep to water | Slope, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| 150: | | | | | | | |
| Webbridge | Severe: slope. | Moderate: thin layer, large stones. | Severe: no water. | Deep to water | Slope, large stones. | Slope, large stones. | Large stones, slope. |
| Agatha | Severe: slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones. | Slope, large stones. | Large stones, slope. |
| 151: | | | | | | | |
| Westlake | Moderate: seepage. | Severe: wetness. | Severe: slow refill. | Flooding, frost action. | Wetness, erodes easily, flooding. | Erodes easily, wetness. | Erodes easily. |
| Latahco | Moderate: seepage. | Moderate: wetness. | Severe: no water. | Flooding, frost action. | Wetness, flooding. | Erodes easily, wetness. | Erodes easily. |
| 152 Wilkins | Slight | Moderate: hard to pack, wetness. | Severe: no water. | Percs slowly, flooding, frost action. | Wetness, percs slowly. | Erodes easily, wetness, percs slowly. | Wetness, erodes easily, percs slowly. |
| 153 Wistona | Moderate: seepage. | Severe: piping. | Severe: no water. | Deep to water | Soil blowing, erodes easily. | Erodes easily, soil blowing. | Erodes easily. |
| 154: | | | | | | | |
| Zaza | Severe: depth to rock, slope. | Severe: large stones. | Severe: no water. | Deep to water | Slope, large stones, droughty. | Slope, large stones, depth to rock. | Large stones, slope, droughty. |
| Sweiting | Severe: slope. | Moderate: thin layer. | Severe: no water. | Deep to water | Slope, percs slowly, depth to rock. | Slope, depth to rock, erodes easily. | Slope, erodes easily, depth to rock. |

Table 15.--Engineering Index Properties

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 1, 2---------- Agatha | 0-15 | Loam---------- | CL, CL-ML | A-4, A-6 | 0 | 0-10 | 90-100 | 90-100 | 85-100 | 60-80 | 25-35 | 5-15 |
| | 15-23 | Cobbly clay loam, gravelly loam, very gravelly silt loam. | CL, GC | A-6, A-2 | 0 | 15-45 | 50-80 | 45-75 | 40-75 | 30-60 | 30-40 | 10-20 |
| | 23-47 | Very cobbly clay loam, extremely cobbly loam, extremely cobbly clay loam. | GC | A-2, A-6, A-7 | 0-5 | 30-80 | 35-60 | 30-55 | 25-50 | 20-45 | 30-45 | 10-25 |
| | 47 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3: Agatha-------- | 0-15 | Loam---------- | CL, CL-ML | A-4, A-6 | 0 | 0-10 | 90-100 | 90-100 | 85-100 | 60-80 | 25-35 | 5-15 |
| | 15-23 | Cobbly clay loam, gravelly loam, very gravelly silt loam. | CL, GC | A-6, A-2 | 0 | 15-45 | 50-80 | 45-75 | 40-75 | 30-60 | 30-40 | 10-20 |
| | 23-47 | Very cobbly clay loam, extremely cobbly loam, extremely cobbly clay loam. | GC | A-2, A-6, A-7 | 0-5 | 30-80 | 35-60 | 30-55 | 25-50 | 20-45 | 30-45 | 10-25 |
| | 47 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Rock outcrop. | | | | | | | | | | | | |
| 4---------- Ahsahka | 0-11 | Loam---------- | CL, CL-ML | A-4, A-6 | 0 | 0 | 90-100 | 85-100 | 80-95 | 60-75 | 25-35 | 5-15 |
| | 11-32 | Loam, silt loam, clay loam. | CL, CL-ML | A-4, A-6 | 0 | 0 | 90-100 | 85-100 | 80-95 | 65-85 | 25-40 | 5-20 |
| | 32-60 | Silty clay loam, silty clay, clay. | CL, CH | A-7 | 0 | 0-10 | 90-100 | 85-95 | 80-90 | 70-85 | 40-60 | 15-35 |
| 5: Almota-------- | 0-17 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 90-100 | 85-100 | 80-100 | 75-100 | 25-35 | 5-15 |
| | 17-24 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 80-95 | 75-90 | 70-90 | 65-90 | 25-35 | 5-15 |
| | 24-35 | Gravelly silt loam. | CL, CL-ML | A-4, A-6 | 0 | 0 | 65-80 | 60-75 | 55-75 | 55-75 | 25-35 | 5-15 |
| | 35-39 | Very gravelly gravelly silt loam. | CL, CL-ML, | A-4, A-6 | 0 | 0 | 55-75 | 45-70 | 40-70 | 40-70 | 25-35 | 5-15 |
| | 39 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 5: | | | | | | | | | | | | |
| Athena-------- | 0-14 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 14-44 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 44-64 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| Hatwai-------- | 0-13 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 25-35 | 5-15 |
| | 13-16 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 20-30 | NP-10 |
| | 16-28 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-45 | 10-20 |
| | 28-60 | Silt loam, silty clay loam. | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 25-40 | 5-20 |
| 6: | | | | | | | | | | | | |
| Almota-------- | 0-17 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 90-100 | 85-100 | 80-100 | 75-100 | 25-35 | 5-15 |
| | 17-24 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 80-95 | 75-90 | 70-90 | 65-90 | 25-35 | 5-15 |
| | 24-35 | Gravelly silt loam. | CL, CL-ML | A-4, A-6 | 0 | 0 | 65-80 | 60-75 | 55-75 | 55-75 | 25-35 | 5-15 |
| | 35-39 | Very gravelly silt loam, gravelly silt loam. | CL, CL-ML, GC, GM-GC | A-4, A-6 | 0 | 0 | 55-75 | 45-70 | 40-70 | 40-70 | 25-35 | 5-15 |
| | 39 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Linville------ | 0-19 | Silt loam----- | CL-ML, CL | A-4 | 0 | 0-5 | 95-100 | 85-95 | 80-95 | 70-85 | 25-35 | 5-15 |
| | 19-67 | Gravelly silt loam. | CL | A-6 | 0 | 0-15 | 65-80 | 60-75 | 55-70 | 50-65 | 30-40 | 10-15 |
| 7, 8: | | | | | | | | | | | | |
| Alpowa-------- | 0-8 | Cobbly silt loam. | ML, CL-ML | A-4 | 0 | 15-25 | 75-90 | 80-90 | 65-90 | 70-90 | 20-30 | NP-10 |
| | 8-13 | Very cobbly silt loam. | ML, CL-ML, GM, GM-GC | A-4 | 0 | 40-45 | 65-85 | 55-80 | 40-80 | 45-80 | 20-30 | NP-10 |
| | 13-60 | Very cobbly silt loam, very gravelly loam, very cobbly loam. | ML, CL-ML, GM, GM-GC | A-4, A-2 | 0-5 | 30-50 | 45-75 | 35-70 | 25-70 | 30-70 | 20-30 | NP-10 |
| Lickskillet-- | 0-5 | Stony silt loam. | CL | A-6 | 5-10 | 5-10 | 70-95 | 60-80 | 55-75 | 50-65 | 30-35 | 10-15 |
| | 5-16 | Very gravelly silty clay loam, extremely gravelly silty clay loam, very gravelly loam. | GC | A-2, A-6, A-7 | 0 | 0-30 | 30-55 | 20-50 | 15-45 | 10-40 | 35-45 | 15-20 |
| | 16 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments > 10 inches | Fragments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 9---------- Aquolls | 0-3 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 90-100 | 85-100 | 80-100 | 75-100 | 25-35 | 5-15 |
| | 3-10 | Silt loam, silty clay loam. | CL, CL-ML | A-4, A-6 | 0 | 0 | 90-100 | 85-100 | 80-100 | 75-100 | 25-40 | 5-20 |
| | 10-18 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 25-35 | 5-10 |
| | 18-38 | Silty clay loam, silt loam, gravelly clay loam. | CL, GC, CH | A-6, A-7 | 0 | 0 | 60-100 | 50-100 | 45-100 | 35-100 | 30-55 | 10-30 |
| | 38-42 | Extremely gravelly clay loam, very gravelly loam, very gravelly clay loam. | GC | A-2, A-6, A-7 | 0 | 15-45 | 30-65 | 20-60 | 20-55 | 15-50 | 30-50 | 10-25 |
| | 42 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10---------- Athena | 0-14 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 14-44 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 44-64 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| 11: | | | | | | | | | | | | |
| Bakeoven----- | 0-3 | Very stony loam. | GM, SM | A-4 | 15-40 | 10-20 | 65-80 | 60-75 | 50-70 | 35-50 | 25-35 | NP-10 |
| | 3-6 | Very gravelly clay loam, very cobbly loam, very gravelly loam. | GM, GC | A-4, A-6 | 0-15 | 10-40 | 50-65 | 45-60 | 40-55 | 35-50 | 30-40 | 5-15 |
| | 6 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Watama------- | 0-11 | Silt loam----- | ML, CL | A-4, A-6 | 0 | 0 | 100 | 85-100 | 80-95 | 80-95 | 30-40 | 5-15 |
| | 11-34 | Silt loam----- | ML, CL | A-4, A-6 | 0 | 0 | 95-100 | 80-90 | 75-85 | 65-80 | 30-40 | 5-15 |
| | 34-38 | Gravelly silt loam. | ML, CL | A-4, A-6 | 0 | 0-10 | 70-80 | 60-75 | 60-70 | 55-65 | 30-40 | 5-15 |
| | 38 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 12: | | | | | | | | | | | | |
| Boles-------- | 0-13 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 25-40 | 5-15 |
| | 13-17 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 25-35 | 5-10 |
| | 17-45 | Silty clay, clay. | CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 50-70 | 25-40 |
| | 45-70 | Silty clay loam, silty clay, clay. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 45-70 | 20-40 |
| Joel--------- | 0-18 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 18-24 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 24-60 | Silt loam, silty clay loam. | ML, CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 35-45 | 10-20 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 13: | | | | | | | | | | | | |
| Bridgewater-- | 0-16 | Extremely gravelly sandy loam. | GM-GC, GM, GP-GM | A-1 | 0 | 30-45 | 25-45 | 15-30 | 10-20 | 5-15 | 20-30 | NP-10 |
| | 16-34 | Extremely gravelly loam, extremely gravelly sandy loam, extremely cobbly sandy loam. | GM-GC, GM | A-1, A-2 | 0 | 30-55 | 30-60 | 20-45 | 15-40 | 10-30 | 20-30 | NP-10 |
| | 34-60 | Extremely gravelly loamy coarse sand, extremely gravelly sand, extremely cobbly sand. | GM, GP, GP-GM | A-1 | 0 | 45-55 | 25-55 | 15-45 | 5-30 | 0-15 | --- | NP |
| Joseph------- | 0-10 | Extremely cobbly loamy coarse sand. | GP-GM | A-1 | 0-5 | 40-55 | 20-55 | 10-45 | 5-35 | 5-10 | --- | NP |
| | 10-60 | Extremely cobbly loamy coarse sand, extremely cobbly sand, extremely gravelly coarse sand. | GP, GP-GM | A-1 | 0-5 | 35-55 | 20-55 | 10-40 | 5-35 | 0-10 | --- | NP |
| 14, 15-------- Broadax | 0-16 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 100 | 100 | 100 | 95-100 | 30-40 | 5-15 |
| | 16-33 | Silty clay loam, silt loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 100 | 95-100 | 35-45 | 15-20 |
| | 33-37 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 100 | 95-100 | 30-40 | 10-15 |
| | 37-65 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 100 | 95-100 | 25-40 | 5-15 |
| 16, 17: | | | | | | | | | | | | |
| Broadax------ | 0-16 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 100 | 100 | 100 | 95-100 | 30-40 | 5-15 |
| | 16-33 | Silty clay loam, silt loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 100 | 95-100 | 35-45 | 15-20 |
| | 33-37 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 100 | 95-100 | 30-40 | 10-15 |
| | 37-65 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 100 | 95-100 | 25-40 | 5-15 |
| Hatwai------- | 0-13 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 25-35 | 5-15 |
| | 13-21 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 20-30 | NP-10 |
| | 21-36 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-45 | 10-20 |
| | 36-66 | Silt loam, silty clay loam. | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 25-40 | 5-20 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 18: | | | | | | | | | | | | |
| Caldwell----- | 0-26 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 85-100 | 25-35 | 10-15 |
| | 26-60 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 95-100 | 85-100 | 25-45 | 10-20 |
| Latah-------- | 0-19 | Silt loam----- | ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | NP-10 |
| | 19-30 | Silt loam----- | ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | NP-10 |
| | 30-60 | Silty clay, silty clay loam, clay. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 45-55 | 20-30 |
| 19: | | | | | | | | | | | | |
| Calouse------ | 0-10 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 10-23 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 23-32 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 32-68 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-100 | 25-35 | 5-15 |
| Almota------- | 0-17 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 90-100 | 85-100 | 80-100 | 75-100 | 25-35 | 5-15 |
| | 17-24 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 80-95 | 75-90 | 70-90 | 65-90 | 25-35 | 5-15 |
| | 24-35 | Gravelly silt loam. | CL, CL-ML | A-4, A-6 | 0 | 0 | 65-80 | 60-75 | 55-75 | 55-75 | 25-35 | 5-15 |
| | 35-39 | Very gravelly silt loam, gravelly silt loam. | CL, CL-ML, GC, GM-GC | A-4, A-6 | 0 | 0 | 55-75 | 45-70 | 40-70 | 40-70 | 25-35 | 5-15 |
| | 39 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 20: | | | | | | | | | | | | |
| Calouse------ | 0-10 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 10-23 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 23-32 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 32-68 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-100 | 25-35 | 5-15 |
| Endicott----- | 0-15 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-15 |
| | 15-22 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-15 |
| | 22-29 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-15 |
| | 29-38 | Gravelly loam, very gravelly loam, gravelly silt loam. | GM, ML | A-4 | 0 | 0-10 | 45-80 | 40-75 | 35-70 | 30-65 | 30-40 | 5-10 |
| | 38-60 | Strongly cemented. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bryden------- | 0-10 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-15 |
| | 10-19 | Silty clay loam, silt loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-20 |
| | 19-31 | Silt loam----- | CL | A-6 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-95 | 30-40 | 10-20 |
| | 31-37 | Very gravelly loam, very gravelly silt loam, gravelly loam. | GC, CL | A-6 | 0 | 0-10 | 55-80 | 45-75 | 40-70 | 35-65 | 30-40 | 10-15 |
| | 37-60 | Indurated----- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 21, 22-------- | 0-8 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| Carlinton | 8-22 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 25-35 | 10-15 |
| | 22-28 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 25-35 | 10-15 |
| | 28-50 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 35-45 | 15-20 |
| | 50-61 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 35-45 | 15-20 |
| 23: | | | | | | | | | | | | |
| Carlinton---- | 0-5 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 5-32 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 25-35 | 10-15 |
| | 32-36 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 25-35 | 10-15 |
| | 36-55 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 35-45 | 15-20 |
| | 55-60 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 35-45 | 15-20 |
| Talmaks------ | 0-3 | Silt loam----- | ML | A-5 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-45 | 5-10 |
| | 3-16 | Silt loam----- | ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 5-10 |
| | 16-47 | Silt loam, silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 40-50 | 15-25 |
| | 47-70 | Silty clay loam. | CL | A-7 | 0 | 0 | 90-100 | 85-100 | 80-100 | 75-100 | 40-50 | 15-25 |
| 24: | | | | | | | | | | | | |
| Cavendish---- | 0-8 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-100 | 25-35 | 5-10 |
| | 8-30 | Silt loam, gravelly silty clay loam, silty clay loam. | CL | A-6 | 0 | 0 | 65-95 | 60-90 | 60-85 | 55-75 | 30-40 | 10-15 |
| | 30-43 | Gravelly clay loam, clay loam, cobbly clay loam. | CL | A-6 | 0 | 0-30 | 60-95 | 55-90 | 50-80 | 45-65 | 35-40 | 15-20 |
| | 43 | Weathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Taney-------- | 0-14 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 14-23 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 23-29 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-30 | 5-10 |
| | 29-36 | Silt loam, silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-50 | 10-25 |
| | 36-63 | Silt loam, silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-50 | 10-25 |
| 25, 26, 27---- | 0-15 | Silt loam----- | ML | A-4 | 0 | 0 | 100 | 100 | 90-100 | 70-80 | 15-25 | NP-5 |
| Chard | 15-32 | Loam, silt loam. | ML | A-4 | 0 | 0 | 95-100 | 95-100 | 90-100 | 65-80 | 15-25 | NP-5 |
| | 32-55 | Loam, fine sandy loam, very fine sandy loam. | ML | A-4 | 0 | 0 | 95-100 | 95-100 | 80-95 | 55-75 | 15-25 | NP-5 |
| | 55-62 | Sand, loamy fine sand, fine sand. | SM | A-4, A-2 | 0 | 0 | 95-100 | 95-100 | 65-90 | 20-50 | --- | NP |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments > 10 inches | Fragments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 28: | | | | | | | | | | | | |
| Chard-------- | 0-15 | Silt loam----- | ML | A-4 | 0 | 0 | 100 | 100 | 90-100 | 70-80 | 15-25 | NP-5 |
| | 15-32 | Loam, silt loam. | ML | A-4 | 0 | 0 | 95-100 | 95-100 | 90-100 | 65-80 | 15-25 | NP-5 |
| | 32-55 | Loam, fine sandy loam, very fine sandy loam. | ML | A-4 | 0 | 0 | 95-100 | 95-100 | 80-95 | 55-75 | 15-25 | NP-5 |
| | 55-62 | Sand, loamy fine sand, fine sand. | SM | A-4, A-2 | 0 | 0 | 95-100 | 95-100 | 65-90 | 20-50 | --- | NP |
| Chard, moist | 0-15 | Silt loam----- | ML | A-4 | 0 | 0 | 100 | 100 | 90-100 | 70-80 | 15-25 | NP-5 |
| | 15-32 | Loam, silt loam. | ML | A-4 | 0 | 0 | 95-100 | 95-100 | 90-100 | 65-80 | 15-25 | NP-5 |
| | 32-55 | Loam, fine sandy loam, very fine sandy loam. | ML | A-4 | 0 | 0 | 95-100 | 95-100 | 80-95 | 55-75 | 15-25 | NP-5 |
| | 55-62 | Sand, loamy fine sand, fine sand. | SM | A-4, A-2 | 0 | 0 | 95-100 | 95-100 | 65-90 | 20-50 | --- | NP |
| 29: | | | | | | | | | | | | |
| Chard-------- | 0-15 | Silt loam----- | ML | A-4 | 0 | 0 | 100 | 100 | 90-100 | 70-80 | 15-25 | NP-5 |
| | 15-32 | Loam, silt loam. | ML | A-4 | 0 | 0 | 95-100 | 95-100 | 90-100 | 65-80 | 15-25 | NP-5 |
| | 32-55 | Loam, fine sandy loam, very fine sandy loam. | ML | A-4 | 0 | 0 | 95-100 | 95-100 | 80-95 | 55-75 | 15-25 | NP-5 |
| | 55-62 | Sand, loamy fine sand, fine sand. | SM | A-4, A-2 | 0 | 0 | 95-100 | 95-100 | 65-90 | 20-50 | --- | NP |
| Tammany------ | 0-4 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0-5 | 80-90 | 75-90 | 65-85 | 55-75 | 25-35 | 5-15 |
| | 4-10 | Very gravelly loam, very gravelly sandy loam. | GM-GC, GC | A-2, A-4, A-6 | 0 | 15-30 | 45-65 | 35-60 | 30-50 | 20-40 | 25-35 | 5-15 |
| | 10-17 | Very gravelly loam, very gravelly sandy loam. | GM-GC, GC | A-2, A-4, A-6 | 0 | 15-30 | 45-65 | 35-60 | 30-50 | 20-40 | 25-35 | 5-15 |
| | 17-29 | Extremely gravelly coarse sandy loam, very gravelly loam, extremely cobbly sandy loam. | GM, GM-GC, GP-GM | A-1, A-2 | 0 | 30-50 | 30-65 | 15-50 | 10-40 | 5-30 | 20-30 | NP-10 |
| | 29-60 | Extremely gravelly coarse sand. | GP | A-1 | 0 | 30-50 | 25-50 | 10-35 | 5-15 | 0-5 | --- | NP |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 30: | | | | | | | | | | | | |
| Chard-------- | 0-15 | Silt loam----- | ML | A-4 | 0 | 0 | 100 | 100 | 90-100 | 70-80 | 15-25 | NP-5 |
| | 15-32 | Loam, silt loam. | ML | A-4 | 0 | 0 | 95-100 | 95-100 | 90-100 | 65-80 | 15-25 | NP-5 |
| | 32-55 | Loam, fine sandy loam, very fine sandy loam. | ML | A-4 | 0 | 0 | 95-100 | 95-100 | 80-95 | 55-75 | 15-25 | NP-5 |
| | 55-62 | Sand, loamy fine sand, fine sand. | SM | A-4, A-2 | 0 | 0 | 95-100 | 95-100 | 65-90 | 20-50 | --- | NP |
| Urban land. | | | | | | | | | | | | |
| 31---------- | 0-2 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 5-15 |
| Cramont | 2-14 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 5-15 |
| | 14-44 | Silty clay loam, silty clay. | CL, CH | A-7 | 0 | 0 | 90-100 | 90-100 | 85-100 | 80-100 | 40-55 | 20-35 |
| | 44-65 | Silty clay loam, clay loam, cobbly clay loam. | CL | A-7 | 0 | 0-20 | 85-100 | 80-100 | 75-100 | 70-100 | 40-50 | 20-30 |
| 32: | | | | | | | | | | | | |
| Cramont------ | 0-2 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 5-15 |
| | 2-14 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 5-15 |
| | 14-44 | Silty clay loam, silty clay. | CL, CH | A-7 | 0 | 0 | 90-100 | 90-100 | 85-100 | 80-100 | 40-55 | 20-35 |
| | 44-65 | Silty clay loam, clay loam, cobbly clay loam. | CL | A-7 | 0 | 0-20 | 85-100 | 80-100 | 75-100 | 70-100 | 40-50 | 20-30 |
| Culdesac----- | 0-3 | Silt loam----- | ML, MH | A-5 | 0 | 0 | 90-100 | 75-100 | 70-100 | 65-95 | 40-60 | 5-10 |
| | 3-18 | Silt loam----- | ML | A-4, A-5 | 0 | 0 | 90-100 | 75-100 | 70-100 | 65-95 | 30-50 | NP-10 |
| | 18-54 | Silty clay loam. | CL | A-6, A-7 | 0 | 0-15 | 75-100 | 70-100 | 65-100 | 55-95 | 35-45 | 15-25 |
| | 54-60 | Clay loam, silty clay loam, gravelly clay loam. | CL | A-6, A-7 | 0 | 0-15 | 75-100 | 70-100 | 65-100 | 55-95 | 35-45 | 15-25 |
| 33: | | | | | | | | | | | | |
| Cramont------ | 0-2 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 5-15 |
| | 2-14 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 5-15 |
| | 14-44 | Silty clay loam, silty clay. | CL, CH | A-7 | 0 | 0 | 90-100 | 90-100 | 85-100 | 80-100 | 40-55 | 20-35 |
| | 44-65 | Silty clay loam, clay loam, cobbly clay loam. | CL | A-7 | 0 | 0-20 | 85-100 | 80-100 | 75-100 | 70-100 | 40-50 | 20-30 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 33: | | | | | | | | | | | | |
| Seddow------- | 0-4 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-95 | 30-40 | 5-15 |
| | 4-13 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 90-100 | 80-100 | 75-100 | 70-95 | 30-40 | 5-15 |
| | 13-29 | Silty clay loam, gravelly clay loam, gravelly silt loam. | CL, ML | A-6, A-7 | 0 | 0-25 | 70-95 | 65-90 | 60-85 | 50-80 | 35-50 | 10-25 |
| | 29-48 | Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam. | GC | A-2, A-7 | 0 | 30-55 | 40-65 | 30-60 | 25-55 | 20-50 | 40-50 | 15-25 |
| | 48 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 34---------- Crowers | 0-10 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 25-35 | 5-15 |
| | 10-27 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 90-100 | 90-100 | 85-100 | 80-95 | 25-35 | 5-15 |
| | 27-31 | Silt loam, cobbly silt loam. | CL-ML, CL | A-4, A-6 | 0 | 0-25 | 85-90 | 80-90 | 75-90 | 70-85 | 25-40 | 5-15 |
| | 31-41 | Very cobbly silt loam, extremely cobbly silt loam. | CL-ML, CL, GM-GC, GC | A-4, A-6 | 0-5 | 40-50 | 50-85 | 45-80 | 40-75 | 35-70 | 25-40 | 5-15 |
| | 41-62 | Cobbly silt loam. | CL-ML, CL | A-4, A-6 | 0-5 | 15-25 | 80-90 | 75-90 | 65-85 | 60-80 | 25-40 | 5-15 |
| 35---------- Driscoll | 0-13 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 20-30 | 5-15 |
| | 13-31 | Silt loam, silt. | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-15 |
| | 31-46 | Silty clay, silty clay loam. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 45-70 | 20-40 |
| | 46-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 95-100 | 95-100 | 90-100 | 40-50 | 15-25 |
| 36: | | | | | | | | | | | | |
| Driscoll----- | 0-13 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 20-30 | 5-15 |
| | 13-31 | Silt loam, silt. | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-15 |
| | 31-46 | Silty clay, silty clay loam. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 45-70 | 20-40 |
| | 46-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 95-100 | 95-100 | 90-100 | 40-50 | 15-25 |
| Larkin------- | 0-19 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 20-30 | 5-10 |
| | 19-61 | Silt loam, silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-20 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 37, 38: | | | | | | | | | | | | |
| Endicott----- | 0-12 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-15 |
| | 12-20 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-15 |
| | 20-30 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-15 |
| | 30-36 | Gravelly loam, very gravelly loam, gravelly silt loam. | GM, ML | A-4 | 0 | 0-10 | 45-80 | 40-75 | 35-70 | 30-65 | 30-40 | 5-10 |
| | 36-60 | Strongly cemented. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bryden------- | 0-10 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-15 |
| | 10-19 | Silty clay loam, silt loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-20 |
| | 19-31 | Silt loam----- | CL | A-6 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-95 | 30-40 | 10-20 |
| | 31-37 | Very gravelly loam, very gravelly silt loam, gravelly loam. | GC, CL | A-6 | 0 | 0-10 | 55-80 | 45-75 | 40-70 | 35-65 | 30-40 | 10-15 |
| | 37-60 | Indurated----- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 39: | | | | | | | | | | | | |
| Endicott----- | 0-12 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-15 |
| | 12-20 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-15 |
| | 20-30 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-15 |
| | 30-36 | Gravelly loam, very gravelly loam, gravelly silt loam. | GM, ML | A-4 | 0 | 0-10 | 45-80 | 40-75 | 35-70 | 30-65 | 30-40 | 5-10 |
| | 36-60 | Strongly cemented. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Oliphant----- | 0-16 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 16-24 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 24-29 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 29-62 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| 40---------- Entic Haploxerolls | 0-8 | Gravelly loam | GM-GC, CL-ML | A-4 | 0 | 0 | 55-80 | 50-75 | 45-70 | 35-55 | 25-30 | 5-10 |
| | 8-17 | Gravelly loam, very gravelly loam, loam. | GM-GC, CL-ML | A-2, A-4 | 0 | 0 | 45-85 | 35-85 | 30-80 | 25-65 | 25-30 | 5-10 |
| | 17-28 | Weathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | 28 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 41: | | | | | | | | | | | | |
| Gwin--------- | 0-6 | Very stony silt loam. | GC, CL | A-6 | 10-20 | 15-25 | 50-70 | 45-65 | 40-65 | 35-60 | 30-40 | 10-15 |
| | 6-12 | Extremely gravelly silty clay loam, very gravelly silt loam, very gravelly clay loam. | GC, CL | A-2, A-6, A-7 | 0-10 | 30-40 | 30-65 | 20-60 | 20-60 | 15-55 | 35-50 | 15-25 |
| | 12 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Vollmer------ | 0-12 | Silt loam----- | ML | A-4 | 0 | 0-5 | 95-100 | 85-100 | 80-100 | 80-100 | 30-35 | 5-10 |
| | 12-28 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0-5 | 90-100 | 80-100 | 75-100 | 75-100 | 30-45 | 10-20 |
| | 28-36 | Cobbly silt loam, gravelly clay loam, gravelly silty clay loam. | CL | A-6, A-7 | 0 | 5-20 | 80-95 | 70-90 | 65-90 | 60-90 | 30-45 | 10-20 |
| | 36 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 42---------- Haploxerolls | 0-14 | Silty clay loam. | CL | A-7 | 0 | 0 | 95-100 | 95-100 | 95-100 | 85-90 | 40-50 | 15-25 |
| | 14-23 | Silty clay loam, silt loam, gravelly clay loam. | CL | A-6, A-7 | 0 | 0-15 | 80-100 | 75-100 | 65-100 | 50-90 | 35-50 | 15-25 |
| | 23-60 | Silty clay loam, silt loam, gravelly clay loam. | CL, GC | A-6, A-7 | 0 | 0-25 | 70-100 | 65-100 | 55-100 | 40-90 | 35-50 | 15-25 |
| 43---------- Hooverton | 0-11 | Stony loam---- | GM-GC, GC, CL-ML, CL | A-4, A-6 | 1-5 | 0-10 | 65-80 | 60-75 | 50-70 | 40-60 | 25-40 | 5-15 |
| | 11-17 | Very cobbly loam, very gravelly silt loam, very cobbly silt loam. | GC, CL | A-6 | 0-10 | 25-40 | 55-70 | 50-65 | 45-65 | 35-55 | 30-40 | 10-15 |
| | 17-35 | Very cobbly clay loam, extremely cobbly clay loam, extremely gravelly silt loam. | GC, GP-GC | A-2, A-6, A-7 | 0-10 | 45-75 | 20-60 | 10-55 | 10-50 | 5-45 | 35-45 | 15-20 |
| | 35 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 44---------- Immig | 0-5 | Very stony clay loam. | GC, CL, SC | A-7 | 15-25 | 5-10 | 65-80 | 60-75 | 50-70 | 40-60 | 40-45 | 15-20 |
| | 5-10 | Gravelly clay loam, very gravelly clay loam. | GC, CL, SC | A-2, A-7 | 0 | 0-10 | 45-80 | 40-75 | 35-65 | 30-60 | 40-45 | 15-20 |
| | 10-29 | Extremely gravelly clay. | GC, GP-GC | A-2 | 0 | 15-30 | 15-35 | 5-25 | 5-20 | 5-20 | 50-65 | 25-35 |
| | 29 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 45, 46-------- Jacket | 0-7 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 100 | 95-100 | 20-30 | 5-10 |
| | 7-27 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 100 | 95-100 | 40-50 | 15-25 |
| | 27-56 | Silty clay loam, silty clay. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 45-65 | 20-35 |
| | 56-63 | Silty clay, silty clay loam, gravelly silty clay loam. | CL, CH | A-7 | 0 | 0-5 | 75-100 | 70-100 | 65-100 | 65-100 | 45-65 | 20-35 |
| 47: | | | | | | | | | | | | |
| Jacket------- | 0-7 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 90-100 | 90-100 | 20-30 | 5-10 |
| | 7-27 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 90-100 | 90-100 | 40-50 | 15-25 |
| | 27-56 | Silty clay loam, silty clay. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 45-65 | 20-35 |
| | 56-63 | Silty clay, silty clay loam, gravelly silty clay loam. | CL, CH | A-7 | 0 | 0-5 | 75-100 | 70-100 | 65-100 | 65-100 | 45-65 | 20-35 |
| Larkin------- | 0-19 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 20-30 | 5-10 |
| | 19-61 | Silt loam, silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-20 |
| 48, 49-------- Joel | 0-18 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 18-24 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 24-60 | Silt loam, silty clay loam. | ML, CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 35-45 | 10-20 |
| 50, 51: | | | | | | | | | | | | |
| Joel--------- | 0-18 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 18-25 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 25-66 | Silt loam, silty clay loam. | ML, CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 35-45 | 10-20 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 50, 51: | | | | | | | | | | | | |
| Setters------ | 0-12 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 12-17 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 17-19 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-30 | 5-10 |
| | 19-61 | Silty clay loam, silty clay. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-60 | 20-35 |
| 52---------- Johnson | 0-10 | Loam---------- | CL-ML, SC-SM | A-4 | 0 | 0 | 95-100 | 75-100 | 65-95 | 45-75 | 20-30 | 5-10 |
| | 10-63 | Clay loam, loam, gravelly clay loam. | CL-ML, CL, SC-SM, SC | A-4, A-6 | 0 | 0 | 95-100 | 65-100 | 55-95 | 45-80 | 25-40 | 5-20 |
| 53: | | | | | | | | | | | | |
| Johnson------ | 0-10 | Loam---------- | CL-ML, SC-SM | A-4 | 0 | 0 | 95-100 | 75-100 | 65-95 | 45-75 | 20-30 | 5-10 |
| | 10-63 | Clay loam, loam, gravelly clay loam. | CL-ML, CL, SC-SM, SC | A-4, A-6 | 0 | 0 | 95-100 | 65-100 | 55-95 | 45-80 | 25-40 | 5-20 |
| Dragnot------ | 0-4 | Stony loam---- | CL-ML, SC-SM | A-4 | 1-5 | 0 | 90-100 | 70-95 | 60-85 | 40-60 | 25-30 | 5-10 |
| | 4-11 | Loam---------- | CL-ML, SC-SM | A-4 | 0 | 0 | 90-100 | 75-95 | 65-85 | 40-60 | 25-30 | 5-10 |
| | 11-18 | Loam, fine gravelly loam. | CL, CL-ML, SC, SC-SM | A-4, A-6 | 0 | 0 | 90-100 | 70-95 | 60-85 | 40-65 | 25-35 | 5-15 |
| | 18-31 | Very gravelly sandy loam, very gravelly loam. | SM | A-1 | 0 | 0 | 60-75 | 25-45 | 20-40 | 10-25 | 10-25 | NP-10 |
| | 31 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dragnot, dry | 0-4 | Stony loam---- | CL-ML, SC-SM | A-4 | 1-5 | 0 | 90-100 | 70-95 | 60-85 | 40-60 | 25-30 | 5-10 |
| | 4-11 | Loam---------- | CL-ML, SC-SM | A-4 | 0 | 0 | 90-100 | 75-95 | 65-85 | 40-60 | 25-30 | 5-10 |
| | 11-18 | Loam, fine gravelly loam. | CL, CL-ML, SC, SC-SM | A-4, A-6 | 0 | 0 | 90-100 | 70-95 | 60-85 | 40-65 | 25-35 | 5-15 |
| | 18-31 | Very gravelly sandy loam, very gravelly loam. | SM | A-1 | 0 | 0 | 60-75 | 25-45 | 20-40 | 10-25 | 10-25 | NP-5 |
| | 31 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 54: | | | | | | | | | | | | |
| Johnson------ | 0-13 | Loam---------- | CL-ML, SC-SM | A-4 | 0 | 0 | 95-100 | 75-100 | 65-95 | 45-75 | 20-30 | 5-10 |
| | 13-60 | Clay loam, loam, gravelly clay loam. | CL-ML, CL, SC-SM, SC | A-4, A-6 | 0 | 0 | 95-100 | 65-100 | 55-95 | 45-80 | 25-40 | 5-20 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 54: | | | | | | | | | | | | |
| Kruse-------- | 0-16 | Loam---------- | ML | A-4, A-6 | 0 | 0 | 100 | 100 | 80-100 | 70-80 | 30-40 | 5-15 |
| | 16-49 | Clay loam, sandy clay loam, loam. | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 80-95 | 60-80 | 35-45 | 15-25 |
| | 49-65 | Coarse sandy loam, sandy loam. | ML, SM | A-4 | 0 | 0 | 95-100 | 85-100 | 55-75 | 35-55 | 25-35 | 5-10 |
| 55: | | | | | | | | | | | | |
| Johnson------ | 0-13 | Loam---------- | CL-ML, SC-SM | A-4 | 0 | 0 | 95-100 | 75-100 | 65-95 | 45-75 | 20-30 | 5-10 |
| | 13-60 | Clay loam, loam, gravelly clay loam. | CL-ML, CL, SC-SM, SC | A-4, A-6 | 0 | 0 | 95-100 | 65-100 | 55-95 | 45-80 | 25-40 | 5-20 |
| Labuck------- | 0-4 | Coarse sandy loam. | SM | A-1, A-2 | 0 | 0 | 95-100 | 75-90 | 45-65 | 20-35 | 25-30 | NP-5 |
| | 4-15 | Coarse sandy loam, fine gravelly coarse sandy loam, fine gravelly sandy loam. | SM | A-1, A-2 | 0 | 0 | 95-100 | 70-90 | 45-60 | 20-35 | 25-30 | NP-5 |
| | 15-26 | Fine gravelly coarse sandy loam, fine gravelly sandy loam. | SM | A-1, A-2 | 0 | 0 | 95-100 | 50-75 | 30-50 | 15-30 | 25-30 | NP-5 |
| | 26 | Weathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 56: | | | | | | | | | | | | |
| Joseph------- | 0-10 | Extremely cobbly loamy coarse sand. | GP-GM | A-1 | 0-5 | 40-55 | 20-55 | 10-45 | 5-35 | 5-10 | --- | NP |
| | 10-60 | Extremely cobbly loamy coarse sand, extremely cobbly sand, extremely gravelly coarse sand. | GP, GP-GM | A-1 | 0-5 | 35-55 | 20-55 | 10-40 | 5-35 | 0-10 | --- | NP |
| Tombeall----- | 0-7 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 95-100 | 90-100 | 75-95 | 65-80 | 25-35 | 5-15 |
| | 7-28 | Silt loam, sandy loam, loam. | CL-ML, CL, SC-SM, SC | A-4, A-6 | 0 | 0 | 80-100 | 75-100 | 55-90 | 45-80 | 25-35 | 5-15 |
| | 28-35 | Very gravelly sandy loam, very gravelly loam. | GM-GC, GM | A-2, A-1 | 0 | 10-15 | 40-60 | 30-50 | 20-40 | 15-30 | 20-30 | NP-10 |
| | 35-60 | Extremely gravelly sandy loam, extremely gravelly loam. | GM, GP, GP-GM, GM-GC | A-1 | 0 | 25-40 | 20-45 | 5-30 | 5-25 | 0-20 | 20-30 | NP-10 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 57: | | | | | | | | | | | | |
| Kettenbach--- | 0-4 | Stony silt loam. | GM-GC, GC, CL-ML, CL | A-4, A-6 | 5-10 | 0-5 | 50-75 | 50-75 | 45-70 | 35-65 | 25-35 | 5-15 |
| | 4-10 | Very gravelly silt loam, gravelly silty clay loam, gravelly silt loam. | GC, CL | A-6, A-2 | 0 | 0-30 | 45-75 | 40-70 | 35-65 | 30-55 | 30-40 | 10-20 |
| | 10-25 | Extremely gravelly silty clay loam, very gravelly silt loam, very cobbly silty clay loam. | GC | A-2, A-6, A-7 | 0 | 5-55 | 25-55 | 25-55 | 20-50 | 15-45 | 30-45 | 10-20 |
| | 25 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Kettenbach, moist------- | 0-5 | Stony silt loam. | GM-GC, GC, CL-ML, CL | A-4, A-6 | 5-10 | 0-5 | 50-75 | 50-75 | 45-70 | 35-65 | 25-35 | 5-15 |
| | 5-15 | Very gravelly silt loam, gravelly silty clay loam, gravelly silt loam. | GC, CL | A-6, A-2 | 0 | 0-30 | 45-75 | 40-70 | 35-65 | 30-55 | 30-40 | 10-20 |
| | 15-30 | Extremely gravelly silty clay loam, very gravelly silt loam, very cobbly silty clay loam. | GC | A-2, A-6, A-7 | 0 | 5-55 | 25-55 | 25-55 | 20-50 | 15-45 | 30-45 | 10-20 |
| | 30 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Gwin--------- | 0-6 | Very stony silt loam. | GC, CL | A-6 | 10-20 | 15-25 | 50-70 | 45-65 | 40-65 | 35-60 | 30-40 | 10-15 |
| | 6-12 | Extremely gravelly silty clay loam, very gravelly silt loam, very gravelly clay loam. | GC, CL | A-2, A-6, A-7 | 0-10 | 30-40 | 30-65 | 20-60 | 20-60 | 15-55 | 35-50 | 15-25 |
| | 12 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 58: | | | | | | | | | | | | |
| Kettenbach--- | 0-4 | Stony silt loam. | GM-GC, GC, CL-ML, CL | A-4, A-6 | 5-10 | 0-5 | 50-75 | 50-75 | 45-70 | 35-65 | 25-35 | 5-15 |
| | 4-10 | Very gravelly silt loam, gravelly silty clay loam, gravelly silt loam. | GC, CL | A-6, A-2 | 0 | 0-30 | 45-75 | 40-70 | 35-65 | 30-55 | 30-40 | 10-20 |
| | 10-25 | Extremely gravelly silty clay loam, very gravelly silt loam, very cobbly silty clay loam. | GC | A-2, A-6, A-7 | 0 | 5-55 | 25-55 | 25-55 | 20-50 | 15-45 | 30-45 | 10-20 |
| | 25 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Keuterville-- | 0-13 | Gravelly silt loam. | CL-ML, GM-GC, SC-SM | A-4 | 0 | 0-5 | 60-90 | 55-75 | 45-65 | 35-60 | 20-30 | 5-10 |
| | 13-49 | Very gravelly silty clay loam, very cobbly clay loam, very gravelly loam. | GC | A-6 | 0 | 0-50 | 45-60 | 40-50 | 35-50 | 35-50 | 30-40 | 10-15 |
| | 49-61 | Very gravelly loam, very gravelly clay loam, very cobbly silty clay loam. | GM-GC, CL-ML | A-4, A-2 | 0 | 10-55 | 40-65 | 35-65 | 15-60 | 10-55 | 20-30 | 5-10 |
| 59: | | | | | | | | | | | | |
| Kettenbach--- | 0-4 | Stony silt loam. | GM-GC, GC, CL-ML, CL | A-4, A-6 | 5-10 | 0-5 | 50-75 | 50-75 | 45-70 | 35-65 | 25-35 | 5-15 |
| | 4-10 | Very gravelly silt loam, gravelly silty clay loam, gravelly silt loam. | GC, CL | A-6, A-2 | 0 | 0-30 | 45-75 | 40-70 | 35-65 | 30-55 | 30-40 | 10-20 |
| | 10-25 | Extremely gravelly silty clay loam, very gravelly silt loam, very cobbly silty clay loam. | GC | A-2, A-6, A-7 | 0 | 5-55 | 25-55 | 25-55 | 20-50 | 15-45 | 30-45 | 10-20 |
| | 25 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Rock outcrop. | | | | | | | | | | | | |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 60, 61-------- Keuterville | 0-13 | Gravelly silt loam. | CL-ML, GM-GC, SC-SM | A-4 | 0 | 0-5 | 60-90 | 55-75 | 45-65 | 35-60 | 20-30 | 5-10 |
| | 13-49 | Very gravelly silty clay loam, very cobbly clay loam, very gravelly loam. | GC | A-6 | 0 | 0-50 | 45-60 | 40-50 | 35-50 | 35-50 | 30-40 | 10-15 |
| | 49-61 | Very gravelly loam, very gravelly clay loam, very cobbly silty clay loam. | GM-GC, CL-ML | A-4, A-2 | 0 | 10-55 | 40-65 | 35-65 | 15-60 | 10-55 | 20-30 | 5-10 |
| 62: | | | | | | | | | | | | |
| Keuterville-- | 0-13 | Gravelly silt loam. | CL-ML, GM-GC, SC-SM | A-4 | 0 | 0-5 | 60-90 | 55-75 | 45-65 | 35-60 | 20-30 | 5-10 |
| | 13-49 | Very gravelly silty clay loam, very cobbly clay loam, very gravelly loam. | GC | A-6 | 0 | 0-50 | 45-60 | 40-50 | 35-50 | 35-50 | 30-40 | 10-15 |
| | 49-61 | Very gravelly loam, very gravelly clay loam, very cobbly silty clay loam. | GM-GC, CL-ML | A-4, A-2 | 0 | 10-55 | 40-65 | 35-65 | 15-60 | 10-55 | 20-30 | 5-10 |
| Rock outcrop. | | | | | | | | | | | | |
| 63, 64-------- Klickson | 0-7 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 85-100 | 85-100 | 75-100 | 65-95 | 25-35 | 5-15 |
| | 7-15 | Gravelly silt loam, very gravelly silt loam. | GM-GC, GC, CL-ML, CL | A-4, A-6 | 0 | 10-25 | 60-100 | 55-85 | 50-85 | 45-80 | 25-35 | 5-15 |
| | 15-36 | Very gravelly silt loam, very cobbly silt loam, very cobbly silty clay loam. | GC, CL | A-6, A-7 | 0 | 25-45 | 50-70 | 45-65 | 40-65 | 35-60 | 35-45 | 15-20 |
| | 36-61 | Very cobbly silt loam, extremely cobbly silty clay loam, extremely gravelly silty clay loam. | GC, CL | A-6, A-7 | 0-5 | 40-50 | 40-65 | 30-60 | 30-60 | 25-55 | 35-45 | 15-20 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 65: | | | | | | | | | | | | |
| Klickson----- | 0-7 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 85-100 | 85-100 | 75-100 | 65-95 | 25-35 | 5-15 |
| | 7-15 | Gravelly silt loam, very gravelly silt loam. | GM-GC, GC, CL-ML, CL | A-4, A-6 | 0 | 10-25 | 60-100 | 55-85 | 50-85 | 45-80 | 25-35 | 5-15 |
| | 15-36 | Very gravelly silt loam, very cobbly silt loam, very cobbly silty clay loam. | GC, CL | A-6, A-7 | 0 | 25-45 | 50-70 | 45-65 | 40-65 | 35-60 | 35-45 | 15-20 |
| | 36-61 | Very cobbly silt loam, extremely cobbly silty clay loam, extremely gravelly silty clay loam. | GC, CL | A-6, A-7 | 0-5 | 40-50 | 40-65 | 30-60 | 30-60 | 25-55 | 35-45 | 15-20 |
| Agatha------- | 0-15 | Loam---------- | CL, CL-ML | A-4, A-6 | 0 | 0-10 | 90-100 | 90-100 | 85-100 | 60-80 | 25-35 | 5-15 |
| | 15-23 | Cobbly clay loam, gravelly loam, very gravelly silt loam. | CL, GC | A-6, A-2 | 0 | 15-45 | 50-80 | 45-75 | 40-75 | 30-60 | 30-40 | 10-20 |
| | 23-47 | Very cobbly clay loam, extremely cobbly loam, extremely cobbly clay loam. | GC | A-2, A-6, A-7 | 0-5 | 30-80 | 35-60 | 30-55 | 25-50 | 20-45 | 30-45 | 10-25 |
| | 47 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 66: | | | | | | | | | | | | |
| Klickson----- | 0-7 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 85-100 | 85-100 | 75-100 | 65-95 | 25-35 | 5-15 |
| | 7-15 | Gravelly silt loam, very gravelly silt loam. | GM-GC, GC, CL-ML, CL | A-4, A-6 | 0 | 10-25 | 60-100 | 55-85 | 50-85 | 45-80 | 25-35 | 5-15 |
| | 15-36 | Very gravelly silt loam, very cobbly silt loam, very cobbly silty clay loam. | GC, CL | A-6, A-7 | 0 | 25-45 | 50-70 | 45-65 | 40-65 | 35-60 | 35-45 | 15-20 |
| | 36-61 | Very cobbly silt loam, extremely cobbly silty clay loam, extremely gravelly silty clay loam. | GC, CL | A-6, A-7 | 0-5 | 40-50 | 40-65 | 30-60 | 30-60 | 25-55 | 35-45 | 15-20 |
| Hooverton---- | 0-11 | Stony loam---- | GM-GC, GC, CL-ML, CL | A-4, A-6 | 1-5 | 0-10 | 65-80 | 60-75 | 50-70 | 40-60 | 25-40 | 5-15 |
| | 11-17 | Very cobbly loam, very gravelly silt loam, very cobbly silt loam. | GC, CL | A-6 | 0-10 | 25-40 | 55-70 | 50-65 | 45-65 | 35-55 | 30-40 | 10-15 |
| | 17-35 | Very cobbly clay loam, extremely cobbly clay loam, extremely gravelly silt loam. | GC, GP-GC | A-2, A-6, A-7 | 0-10 | 45-75 | 20-60 | 10-55 | 10-50 | 5-45 | 35-45 | 15-20 |
| | 35 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 67: | | | | | | | | | | | | |
| Klickson----- | 0-7 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 85-100 | 85-100 | 75-100 | 65-95 | 25-35 | 5-15 |
| | 7-15 | Gravelly silt loam, very gravelly silt loam. | GM-GC, GC, CL-ML, CL | A-4, A-6 | 0 | 10-25 | 60-100 | 55-85 | 50-85 | 45-80 | 25-35 | 5-15 |
| | 15-36 | Very gravelly silt loam, very cobbly silt loam, very cobbly silty clay loam. | GC, CL | A-6, A-7 | 0 | 25-45 | 50-70 | 45-65 | 40-65 | 35-60 | 35-45 | 15-20 |
| | 36-61 | Very cobbly silt loam, extremely cobbly silty clay loam, extremely gravelly silty clay loam. | GC, CL | A-6, A-7 | 0-5 | 40-50 | 40-65 | 30-60 | 30-60 | 25-55 | 35-45 | 15-20 |
| Rock outcrop. | | | | | | | | | | | | |
| 68: | | | | | | | | | | | | |
| Klickson----- | 0-7 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 85-100 | 85-100 | 75-100 | 65-95 | 25-35 | 5-15 |
| | 7-15 | Gravelly silt loam, very gravelly silt loam. | GM-GC, GC, CL-ML, CL | A-4, A-6 | 0 | 10-25 | 60-100 | 55-85 | 50-85 | 45-80 | 25-35 | 5-15 |
| | 15-36 | Very gravelly silt loam, very cobbly silt loam, very cobbly silty clay loam. | GC, CL | A-6, A-7 | 0 | 25-45 | 50-70 | 45-65 | 40-65 | 35-60 | 35-45 | 15-20 |
| | 36-61 | Very cobbly silt loam, extremely cobbly silty clay loam, extremely gravelly silty clay loam. | GC, CL | A-6, A-7 | 0-5 | 40-50 | 40-65 | 30-60 | 30-60 | 25-55 | 35-45 | 15-20 |
| Uptmor------- | 0-6 | Silt loam----- | CL | A-6 | 0 | 0 | 85-100 | 85-100 | 75-100 | 65-95 | 30-40 | 10-15 |
| | 6-15 | Clay loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 85-100 | 85-100 | 75-100 | 65-95 | 35-45 | 15-20 |
| | 15-26 | Clay, silty clay loam, silty clay. | CH | A-7 | 0 | 0-5 | 85-100 | 80-100 | 70-100 | 65-100 | 50-75 | 25-45 |
| | 26-47 | Gravelly clay, cobbly clay, cobbly silty clay loam. | CH | A-7 | 0 | 10-25 | 70-95 | 65-90 | 55-90 | 50-90 | 50-75 | 25-45 |
| | 47 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments > 10 inches | Fragments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 69---------- Kruse | 0-16 | Loam---------- | ML | A-4, A-6 | 0 | 0 | 100 | 100 | 80-100 | 70-80 | 30-40 | 5-15 |
| | 16-49 | Clay loam, sandy clay loam, loam. | CL | A-6, A-7 | 0 | 0 | 100 | 95-100 | 80-95 | 60-80 | 35-45 | 15-25 |
| | 49-65 | Coarse sandy loam, sandy loam. | ML, SM | A-4 | 0 | 0 | 95-100 | 85-100 | 55-75 | 35-55 | 25-35 | 5-10 |
| 70: | | | | | | | | | | | | |
| Lapwai------- | 0-9 | Silt loam----- | ML | A-4 | 0 | 0 | 90-100 | 80-100 | 75-95 | 60-85 | 25-35 | NP-10 |
| | 9-28 | Silt loam, loam. | ML | A-4 | 0 | 0 | 90-100 | 80-100 | 75-95 | 60-85 | 25-35 | NP-10 |
| | 28-35 | Silt loam, loam, gravelly loam. | ML | A-4 | 0 | 0 | 80-100 | 70-100 | 65-95 | 50-80 | 25-35 | NP-10 |
| | 35-60 | Very gravelly sandy loam, very gravelly loam. | GM | A-1, A-2, A-4 | 0 | 25-30 | 55-70 | 50-65 | 35-55 | 15-40 | 25-30 | NP-5 |
| Bridgewater-- | 0-16 | Extremely gravelly sandy loam. | GM-GC, GM, GP-GM | A-1 | 0 | 30-45 | 25-45 | 15-30 | 10-20 | 5-15 | 20-30 | NP-10 |
| | 16-34 | Extremely gravelly loam, extremely gravelly sandy loam, extremely cobbly sandy loam. | GM-GC, GM | A-1, A-2 | 0 | 30-55 | 30-60 | 20-45 | 15-40 | 10-30 | 20-30 | NP-10 |
| | 34-60 | Extremely gravelly loamy coarse sand, extremely gravelly sand, extremely cobbly sand. | GM, GP, GP-GM | A-1 | 0 | 45-55 | 25-55 | 15-45 | 5-30 | 0-15 | --- | NP |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 71---------- Larabee | 0-4 | Loam---------- | CL | A-6 | 0 | 0 | 90-100 | 85-100 | 75-90 | 55-70 | 30-40 | 10-15 |
| | 4-10 | Gravelly silt loam, loam. | CL | A-6 | 0 | 0-10 | 80-90 | 75-85 | 65-75 | 55-70 | 30-40 | 10-15 |
| | 10-20 | Very gravelly silt loam, very gravelly clay loam, gravelly loam. | CL, GC | A-6, A-7, A-2 | 0 | 10-25 | 55-70 | 45-65 | 40-65 | 30-55 | 30-45 | 10-20 |
| | 20-29 | Extremely gravelly clay loam, extremely cobbly clay loam, very cobbly clay loam. | GC, GP-GC | A-2 | 0 | 30-50 | 25-65 | 15-60 | 15-60 | 10-50 | 40-50 | 15-25 |
| | 29 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 72: | | | | | | | | | | | | |
| Larabee------ | 0-4 | Loam---------- | CL | A-6 | 0 | 0 | 90-100 | 85-100 | 75-90 | 55-70 | 30-40 | 10-15 |
| | 4-10 | Gravelly silt loam, loam. | CL | A-6 | 0 | 0-10 | 80-90 | 75-85 | 65-75 | 55-70 | 30-40 | 10-15 |
| | 10-20 | Very gravelly silt loam, very gravelly clay loam, gravelly loam. | CL, GC | A-6, A-7, A-2 | 0 | 10-25 | 55-70 | 45-65 | 40-65 | 30-55 | 30-45 | 10-20 |
| | 20-29 | Extremely gravelly clay loam, extremely cobbly clay loam, very cobbly clay loam. | GC, GP-GC | A-2 | 0 | 30-50 | 25-65 | 15-60 | 15-60 | 10-50 | 40-50 | 15-25 |
| | 29 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Gwin--------- | 0-6 | Very stony silt loam. | GC, CL | A-6 | 10-20 | 15-25 | 50-70 | 45-65 | 40-65 | 35-60 | 30-40 | 10-15 |
| | 6-12 | Extremely gravelly silty clay loam, very gravelly silt loam, very gravelly clay loam. | GC, CL | A-2, A-6, A-7 | 0-10 | 30-40 | 30-65 | 20-60 | 20-60 | 15-55 | 35-50 | 15-25 |
| | 12 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 73: | | | | | | | | | | | | |
| Larabee------ | 0-4 | Loam---------- | CL | A-6 | 0 | 0 | 90-100 | 85-100 | 75-90 | 55-70 | 30-40 | 10-15 |
| | 4-10 | Gravelly silt loam, loam. | CL | A-6 | 0 | 0-10 | 80-90 | 75-85 | 65-75 | 55-70 | 30-40 | 10-15 |
| | 10-20 | Very gravelly silt loam, very gravelly clay loam, gravelly loam. | CL, GC | A-6, A-7, A-2 | 0 | 10-25 | 55-70 | 45-65 | 40-65 | 30-55 | 30-45 | 10-20 |
| | 20-29 | Extremely gravelly clay loam, extremely cobbly clay loam, very cobbly clay loam. | GC, GP-GC | A-2 | 0 | 30-50 | 25-65 | 15-60 | 15-60 | 10-50 | 40-50 | 15-25 |
| | 29 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Zaza--------- | 0-4 | Very stony loam. | CL-ML, GM-GC | A-2, A-4 | 15-30 | 0-15 | 55-80 | 50-75 | 40-70 | 30-55 | 20-30 | 5-10 |
| | 4-8 | Very cobbly loam, cobbly loam. | CL-ML, GM-GC | A-2, A-4 | 0-5 | 15-50 | 55-85 | 50-80 | 40-75 | 30-55 | 20-30 | 5-10 |
| | 8-14 | Extremely cobbly loam, very cobbly loam. | GM-GC | A-2, A-4 | 0-5 | 55-70 | 35-75 | 25-70 | 20-65 | 15-50 | 20-30 | 5-10 |
| | 14 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Seddow------- | 0-4 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-95 | 30-40 | 5-15 |
| | 4-13 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 90-100 | 80-100 | 75-100 | 70-95 | 30-40 | 5-15 |
| | 13-29 | Silty clay loam, gravelly clay loam, gravelly silt loam. | CL, ML | A-6, A-7 | 0 | 0-25 | 70-95 | 65-90 | 60-85 | 50-80 | 35-50 | 10-25 |
| | 29-48 | Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam. | GC | A-2, A-7 | 0 | 30-55 | 40-65 | 30-60 | 25-55 | 20-50 | 40-50 | 15-25 |
| | 48 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 74: | | | | | | | | | | | | |
| Larkin------- | 0-19 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 20-30 | 5-10 |
| | 19-61 | Silt loam, silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-20 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 74: | | | | | | | | | | | | |
| Driscoll----- | 0-13 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 20-30 | 5-15 |
| | 13-31 | Silt loam, silt. | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-15 |
| | 31-46 | Silty clay, silty clay loam. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 45-70 | 20-40 |
| | 46-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 95-100 | 95-100 | 90-100 | 40-50 | 15-25 |
| 75: | | | | | | | | | | | | |
| Latahco------ | 0-13 | Silt loam----- | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-45 | 10-20 |
| | 13-22 | Silt loam----- | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-45 | 10-20 |
| | 22-35 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 15-30 | NP-10 |
| | 35-60 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 90-100 | 90-100 | 85-100 | 80-100 | 35-45 | 15-25 |
| Thatuna------ | 0-16 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 16-31 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 31-37 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-10 |
| | 37-61 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| 76: | | | | | | | | | | | | |
| Lauby-------- | 0-17 | Silt loam----- | CL | A-6 | 0 | 0-5 | 95-100 | 90-100 | 90-100 | 80-95 | 30-40 | 10-15 |
| | 17-24 | Silt loam, silty clay loam. | CL, CL-ML | A-4, A-6 | 0 | 0-5 | 95-100 | 85-100 | 80-100 | 75-85 | 20-30 | 5-15 |
| | 24-50 | Silty clay loam, clay loam. | CL | A-6, A-7 | 0 | 0-5 | 95-100 | 80-100 | 65-95 | 55-85 | 35-50 | 15-25 |
| | 50-60 | Loam, gravelly loam. | ML, SM | A-4 | 0 | 0-5 | 90-100 | 65-100 | 50-85 | 40-80 | 20-25 | NP-5 |
| Southwick---- | 0-9 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 9-26 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 26-32 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 25-30 | 5-10 |
| | 32-46 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-50 | 10-25 |
| | 46-64 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-100 | 30-50 | 10-25 |
| 77: | | | | | | | | | | | | |
| Lickskillet-- | 0-5 | Stony silt loam. | CL | A-6 | 5-10 | 5-10 | 70-95 | 60-80 | 55-75 | 50-65 | 30-35 | 10-15 |
| | 5-16 | Very gravelly silty clay loam, extremely gravelly silty clay loam, very gravelly loam. | GC | A-2, A-6, A-7 | 0 | 0-30 | 30-55 | 20-50 | 15-45 | 10-40 | 35-45 | 15-20 |
| | 16 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 77: | | | | | | | | | | | | |
| Alpowa------- | 0-8 | Cobbly silt loam. | ML, CL-ML | A-4 | 0 | 15-25 | 75-90 | 80-90 | 65-90 | 70-90 | 20-30 | NP-10 |
| | 8-13 | Very cobbly silt loam. | ML, CL-ML, GM, GM-GC | A-4 | 0 | 40-45 | 65-85 | 55-80 | 40-80 | 45-80 | 20-30 | NP-10 |
| | 13-60 | Very cobbly silt loam, very gravelly loam, very cobbly loam. | ML, CL-ML, GM, GM-GC | A-4, A-2 | 0-5 | 30-50 | 45-75 | 35-70 | 25-70 | 30-70 | 20-30 | NP-10 |
| Rock outcrop. | | | | | | | | | | | | |
| 78---------- Limekiln | 0-8 | Very stony silt loam. | CL, GC | A-6 | 1-5 | 15-20 | 50-65 | 45-60 | 40-60 | 40-55 | 25-35 | 10-15 |
| | 8-13 | Very gravelly silt loam. | CL, GC | A-6 | 0 | 15-30 | 45-65 | 40-60 | 35-60 | 35-55 | 25-35 | 10-15 |
| | 13-16 | Extremely gravelly silt loam, extremely cobbly silt loam, very cobbly silt loam. | GC | A-2, A-6 | 0 | 30-55 | 30-55 | 20-50 | 15-50 | 15-50 | 25-35 | 10-15 |
| | 16 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 79: | | | | | | | | | | | | |
| Limekiln----- | 0-8 | Very stony silt loam. | CL, GC | A-6 | 1-5 | 15-20 | 50-65 | 45-60 | 40-60 | 40-55 | 25-35 | 10-15 |
| | 8-13 | Very gravelly silt loam. | CL, GC | A-6 | 0 | 15-30 | 45-65 | 40-60 | 35-60 | 35-55 | 25-35 | 10-15 |
| | 13-16 | Extremely gravelly silt loam, extremely cobbly silt loam, very cobbly silt loam. | GC | A-2, A-6 | 0 | 30-55 | 30-55 | 20-50 | 15-50 | 15-50 | 25-35 | 10-15 |
| | 16 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Crowers------ | 0-10 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 25-35 | 5-15 |
| | 10-27 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 90-100 | 90-100 | 85-100 | 80-95 | 25-35 | 5-15 |
| | 27-31 | Silt loam, cobbly silt loam. | CL-ML, CL | A-4, A-6 | 0 | 0-25 | 85-90 | 80-90 | 75-90 | 70-85 | 25-40 | 5-15 |
| | 31-41 | Very cobbly silt loam, extremely cobbly silt loam. | CL-ML, CL, GM-GC, GC | A-4, A-6 | 0-5 | 40-50 | 50-85 | 45-80 | 40-75 | 35-70 | 25-40 | 5-15 |
| | 41-62 | Cobbly silt loam. | CL-ML, CL | A-4, A-6 | 0-5 | 15-25 | 80-90 | 75-90 | 65-85 | 60-80 | 25-40 | 5-15 |
| 80---------- Linville | 0-19 | Silt loam----- | CL-ML, CL | A-4 | 0 | 0-5 | 95-100 | 85-95 | 80-95 | 70-85 | 25-35 | 5-15 |
| | 19-67 | Gravelly silt loam. | CL | A-6 | 0 | 0-15 | 65-80 | 60-75 | 55-70 | 50-65 | 30-40 | 10-15 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 81: | | | | | | | | | | | | |
| Linville----- | 0-19 | Silt loam----- | CL-ML, CL | A-4 | 0 | 0-5 | 95-100 | 85-95 | 80-95 | 70-85 | 25-35 | 5-15 |
| | 19-67 | Gravelly silt loam. | CL | A-6 | 0 | 0-15 | 65-80 | 60-75 | 55-70 | 50-65 | 30-40 | 10-15 |
| Kettenbach--- | 0-4 | Stony silt loam. | GM-GC, GC, CL-ML, CL | A-4, A-6 | 5-10 | 0-5 | 50-75 | 50-75 | 45-70 | 35-65 | 25-35 | 5-15 |
| | 4-10 | Very gravelly silt loam, gravelly silty clay loam, gravelly silt loam. | GC, CL | A-6, A-2 | 0 | 0-30 | 45-75 | 40-70 | 35-65 | 30-55 | 30-40 | 10-20 |
| | 10-25 | Extremely gravelly silty clay loam, very gravelly silt loam, very cobbly silty clay loam. | GC | A-2, A-6, A-7 | 0 | 5-55 | 25-55 | 25-55 | 20-50 | 15-45 | 30-45 | 10-20 |
| | 25 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 82: | | | | | | | | | | | | |
| Linville----- | 0-19 | Silt loam----- | CL-ML, CL | A-4 | 0 | 0-5 | 95-100 | 85-95 | 80-95 | 70-85 | 25-35 | 5-15 |
| | 19-67 | Gravelly silt loam. | CL | A-6 | 0 | 0-15 | 65-80 | 60-75 | 55-70 | 50-65 | 30-40 | 10-15 |
| Waha--------- | 0-13 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 25-35 | 5-15 |
| | 13-29 | Silty clay loam, silt loam. | CL | A-6 | 0 | 0 | 100 | 75-100 | 70-100 | 65-95 | 30-40 | 10-20 |
| | 29-34 | Gravelly clay loam, gravelly silty clay loam, cobbly silty clay loam. | CL | A-6 | 0 | 0-25 | 70-80 | 65-75 | 60-75 | 55-75 | 30-40 | 10-20 |
| | 34 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 83: | | | | | | | | | | | | |
| Mallory------ | 0-7 | Very stony loam. | GC | A-2, A-6 | 5-10 | 10-25 | 55-70 | 50-65 | 40-60 | 30-50 | 25-30 | 10-15 |
| | 7-15 | Very gravelly clay loam. | GC | A-2, A-6, A-7 | 0 | 15-30 | 45-55 | 35-50 | 30-50 | 25-45 | 35-45 | 15-25 |
| | 15-34 | Extremely gravelly clay, extremely gravelly clay loam. | GC | A-2 | 0 | 30-45 | 20-45 | 10-35 | 5-30 | 10-35 | 45-60 | 20-30 |
| | 34 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 83: | | | | | | | | | | | | |
| Jacket------- | 0-7 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 100 | 95-100 | 20-30 | 5-10 |
| | 7-27 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 100 | 95-100 | 40-50 | 15-25 |
| | 27-56 | Silty clay loam, silty clay. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 45-65 | 20-35 |
| | 56-63 | Silty clay, silty clay loam, gravelly silty clay loam. | CL, CH | A-7 | 0 | 0-5 | 75-100 | 70-100 | 65-100 | 65-100 | 45-65 | 20-35 |
| 84: | | | | | | | | | | | | |
| Maloney------ | 0-5 | Fine gravelly silt loam. | SC, CL | A-6 | 0 | 0 | 90-100 | 60-85 | 50-80 | 40-75 | 30-40 | 10-15 |
| | 5-25 | Fine gravelly loam, fine gravelly silt loam, silt loam. | CL, SC | A-6 | 0 | 0-15 | 90-100 | 60-85 | 50-80 | 40-75 | 30-40 | 10-15 |
| | 25 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Zaza--------- | 0-4 | Very stony loam. | CL-ML, GM-GC | A-2, A-4 | 15-30 | 0-15 | 55-80 | 50-75 | 40-70 | 30-55 | 20-30 | 5-10 |
| | 4-8 | Very cobbly loam, cobbly loam. | CL-ML, GM-GC | A-2, A-4 | 0-5 | 15-50 | 55-85 | 50-80 | 40-75 | 30-55 | 20-30 | 5-10 |
| | 8-14 | Extremely cobbly loam, very cobbly loam. | GM-GC | A-2, A-4 | 0-5 | 55-70 | 35-75 | 25-70 | 20-65 | 15-50 | 20-30 | 5-10 |
| | 14 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 85: | | | | | | | | | | | | |
| Meland------- | 0-16 | Silt loam----- | CL | A-6 | 0 | 0 | 95-100 | 95-100 | 90-100 | 75-85 | 30-40 | 10-15 |
| | 16-35 | Clay loam, gravelly clay loam, gravelly silty clay loam. | CL | A-7 | 0 | 0-10 | 75-100 | 70-90 | 65-85 | 50-75 | 40-50 | 20-25 |
| | 35 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | 40-50 | 20-25 |
| Jacket------- | 0-7 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 90-100 | 90-100 | 20-30 | 5-10 |
| | 7-27 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 90-100 | 90-100 | 40-50 | 15-25 |
| | 27-56 | Silty clay loam, silty clay. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 45-65 | 20-35 |
| | 56-63 | Silty clay, silty clay loam, gravelly silty clay loam. | CL, CH | A-7 | 0 | 0-5 | 75-100 | 70-100 | 65-100 | 65-100 | 45-65 | 20-35 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 86: | | | | | | | | | | | | |
| Meland-------- | 0-16 | Silt loam----- | CL | A-6 | 0 | 0 | 95-100 | 95-100 | 90-100 | 75-85 | 30-40 | 10-15 |
| | 16-35 | Clay loam, gravelly clay loam, gravelly silty clay loam. | CL | A-7 | 0 | 0-10 | 75-100 | 70-90 | 65-85 | 50-75 | 40-50 | 20-25 |
| | 35 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | 40-50 | 20-25 |
| Keuterville-- | 0-13 | Gravelly silt loam. | CL-ML, GM-GC, SC-SM | A-4 | 0 | 0-5 | 60-90 | 55-75 | 45-65 | 35-60 | 20-30 | 5-10 |
| | 13-49 | Very gravelly silty clay loam, very cobbly clay loam, very gravelly loam. | GC | A-6 | 0 | 0-50 | 45-60 | 40-50 | 35-50 | 35-50 | 30-40 | 10-15 |
| | 49-61 | Very gravelly loam, very gravelly clay loam, very cobbly silty clay loam. | GM-GC, CL-ML | A-4, A-2 | 0 | 10-55 | 40-65 | 35-65 | 15-60 | 10-55 | 20-30 | 5-10 |
| 87: | | | | | | | | | | | | |
| Mohler-------- | 0-11 | Silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 11-23 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 23-29 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 29-68 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 20-25 |
| Nez Perce---- | 0-11 | Silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-20 |
| | 11-15 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-15 |
| | 15-21 | Silt loam, silt. | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-10 |
| | 21-31 | Silty clay---- | CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 50-70 | 25-40 |
| | 31-66 | Silty clay, silty clay loam. | CH, CL | A-7 | 0 | 0 | 100 | 95-100 | 90-100 | 85-100 | 40-70 | 15-40 |
| Uhlorn-------- | 0-7 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 7-17 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 17-23 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 23-55 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 55-69 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 20-25 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 88---------- | 0-18 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| Naff | 18-25 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 25-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 15-25 |
| 89, 90: | | | | | | | | | | | | |
| Naff--------- | 0-18 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 18-25 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 25-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 15-25 |
| Palouse------ | 0-15 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 15-27 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 27-50 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 50-63 | Silt loam, silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-40 | 15-20 |
| 91: | | | | | | | | | | | | |
| Naff--------- | 0-12 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 12-20 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 20-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 15-25 |
| Palouse------ | 0-15 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 15-27 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 27-50 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 50-63 | Silt loam, silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-40 | 15-20 |
| 92: | | | | | | | | | | | | |
| Naff--------- | 0-12 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 12-20 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 20-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 15-25 |
| Palouse------ | 0-15 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 15-27 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 27-50 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 50-63 | Silt loam, silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-40 | 15-20 |
| Garfield----- | 0-4 | Silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 10-20 |
| | 4-29 | Silty clay loam, silty clay. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-55 | 20-30 |
| | 29-61 | Silty clay loam, silt loam. | ML | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-40 | 10-15 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 93: | | | | | | | | | | | | |
| Naff--------- | 0-18 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 18-25 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 25-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 15-25 |
| Thatuna------ | 0-16 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 16-31 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 31-37 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-10 |
| | 37-61 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| 94, 95, 96: | | | | | | | | | | | | |
| Naff--------- | 0-18 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 18-25 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 25-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 15-25 |
| Waha--------- | 0-13 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 25-35 | 5-15 |
| | 13-29 | Silty clay loam, silt loam. | CL | A-6 | 0 | 0 | 100 | 75-100 | 70-100 | 65-95 | 30-40 | 10-20 |
| | 29-34 | Gravelly clay loam, gravelly silty clay loam, cobbly silty clay loam. | CL | A-6 | 0 | 0-25 | 70-80 | 65-75 | 60-75 | 55-75 | 30-40 | 10-20 |
| | 34 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 97---------- Nez Perce | 0-11 | Silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-20 |
| | 11-15 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-15 |
| | 15-21 | Silt loam, silt. | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-10 |
| | 21-31 | Silty clay---- | CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 50-70 | 25-40 |
| | 31-66 | Silty clay, silty clay loam. | CH, CL | A-7 | 0 | 0 | 100 | 95-100 | 90-100 | 85-100 | 40-70 | 15-40 |
| 98---------- Nez Perce | 0-9 | Silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-20 |
| | 9-15 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-15 |
| | 15-19 | Silt loam, silt. | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-10 |
| | 19-31 | Silty clay---- | CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 50-70 | 25-40 |
| | 31-67 | Silty clay, silty clay loam. | CH, CL | A-7 | 0 | 0 | 100 | 95-100 | 90-100 | 85-100 | 40-70 | 15-40 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 99: | | | | | | | | | | | | |
| Nez Perce---- | 0-11 | Silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-20 |
| | 11-15 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-15 |
| | 15-21 | Silt loam, silt. | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-10 |
| | 21-31 | Silty clay---- | CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 50-70 | 25-40 |
| | 31-66 | Silty clay, silty clay loam. | CH, CL | A-7 | 0 | 0 | 100 | 95-100 | 90-100 | 85-100 | 40-70 | 15-40 |
| Uhlorn------- | 0-7 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 7-17 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 17-23 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 23-55 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 55-69 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 20-25 |
| 100, 101------ Oliphant | 0-16 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 16-24 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 24-29 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 29-62 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| 102---------- Oliphant, gravelly substratum | 0-8 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 8-26 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 26-36 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 36-62 | Gravelly silt loam, very gravelly silt loam. | GM-GC, CL-ML | A-4 | 0 | 10-30 | 50-90 | 50-90 | 45-90 | 40-90 | 20-30 | 5-10 |
| 103: | | | | | | | | | | | | |
| Oliphant----- | 0-16 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 16-24 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 24-29 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 29-62 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| Alpowa------- | 0-12 | Silt loam----- | ML | A-4 | 0 | 0-15 | 80-100 | 80-95 | 70-90 | 55-80 | 20-35 | NP-10 |
| | 12-60 | Very cobbly sandy loam, very cobbly loam, very cobbly silt loam. | GM, SM | A-4, A-2 | 0 | 40-55 | 60-80 | 50-75 | 40-60 | 25-45 | 25-35 | NP-10 |
| 104: | | | | | | | | | | | | |
| Oliphant----- | 0-16 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 16-24 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 24-29 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 29-62 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments > 10 inches | Fragments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 104: | | | | | | | | | | | | |
| Hatwai------- | 0-13 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 25-35 | 5-15 |
| | 13-21 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 20-30 | NP-10 |
| | 21-36 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-45 | 10-20 |
| | 36-66 | Silt loam, silty clay loam. | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 25-40 | 5-20 |
| 105: | | | | | | | | | | | | |
| Oliphant----- | 0-8 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 8-26 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 26-36 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 36-62 | Gravelly silt loam, very gravelly silt loam. | GM-GC, CL-ML | A-4 | 0 | 10-30 | 50-90 | 50-90 | 45-90 | 40-90 | 20-30 | 5-10 |
| Stember------ | 0-9 | Silt loam----- | CL | A-6 | 0 | 0-10 | 90-100 | 85-90 | 80-90 | 75-85 | 30-35 | 10-15 |
| | 9-13 | Very gravelly silt loam, gravelly silt loam. | CL, GC | A-6 | 0 | 10-25 | 55-65 | 50-60 | 45-60 | 45-60 | 30-35 | 10-15 |
| | 13-30 | Very gravelly loam, extremely cobbly loam. | GC | A-2, A-6 | 0 | 30-50 | 45-65 | 35-60 | 30-60 | 20-45 | 30-40 | 10-15 |
| | 30 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 106, 107: | | | | | | | | | | | | |
| Palouse------ | 0-15 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 15-27 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 27-50 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 50-63 | Silt loam, silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-40 | 15-20 |
| Athena------- | 0-14 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 14-44 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 44-64 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| 108. Pits, gravel | | | | | | | | | | | | |
| 109---------- Redmore | 0-12 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 30-40 | 10-15 |
| | 12-19 | Silty clay, silty clay loam. | CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 50-60 | 30-40 |
| | 19-35 | Silt loam, silty clay loam. | CL, CH | A-7 | 0 | 0 | 90-100 | 85-100 | 80-100 | 75-95 | 45-55 | 25-30 |
| | 35-42 | Loam, silt loam. | CL | A-7 | 0 | 0 | 90-100 | 85-100 | 70-85 | 60-80 | 40-50 | 20-25 |
| | 42-46 | Very gravelly loam. | GM | A-2, A-4 | 0 | 10-25 | 50-70 | 40-60 | 35-55 | 30-45 | 30-40 | 5-10 |
| | 46-60 | Indurated----- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 110: Riverwash. | | | | | | | | | | | | |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 110: | | | | | | | | | | | | |
| Aquents------ | 0-2 | Very cobbly very fine sandy loam. | SC-SM, CL-ML | A-2, A-4 | 0 | 55-65 | 75-100 | 70-100 | 60-90 | 20-55 | 25-30 | 5-10 |
| | 2-60 | Gravelly sandy loam, extremely cobbly sand, extremely gravelly loamy sand. | GP, GM-GC, SP, SC-SM | A-1, A-2 | 0-10 | 15-50 | 20-85 | 10-80 | 5-60 | 0-35 | 20-30 | NP-10 |
| 111: | | | | | | | | | | | | |
| Rock outcrop. | | | | | | | | | | | | |
| Flybow------- | 0-4 | Very gravelly silt loam. | GM-GC, GC | A-2, A-4, A-6 | 0 | 10-25 | 40-55 | 35-50 | 35-50 | 30-45 | 25-35 | 5-15 |
| | 4 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 112---------- Seddow | 0-4 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-95 | 30-40 | 5-15 |
| | 4-13 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 90-100 | 80-100 | 75-100 | 70-95 | 30-40 | 5-15 |
| | 13-29 | Silty clay loam, gravelly clay loam, gravelly silt loam. | CL, ML | A-6, A-7 | 0 | 0-25 | 70-95 | 65-90 | 60-85 | 50-80 | 35-50 | 10-25 |
| | 29-48 | Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam. | GC | A-2, A-7 | 0 | 30-55 | 40-65 | 30-60 | 25-55 | 20-50 | 40-50 | 15-25 |
| | 48 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 113---------- Setters | 0-12 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 12-17 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 17-19 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-30 | 5-10 |
| | 19-61 | Silty clay loam, silty clay. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-60 | 20-35 |
| 114---------- Shilla | 0-1 | Silt loam----- | ML | A-4, A-5 | 0 | 0 | 90-100 | 70-100 | 65-95 | 55-90 | 35-50 | NP-10 |
| | 1-16 | Silt loam----- | ML | A-4, A-5 | 0 | 0 | 90-100 | 70-100 | 65-95 | 55-90 | 35-45 | NP-10 |
| | 16-24 | Cobbly loam, loam, cobbly clay loam. | ML | A-6, A-4 | 0 | 0-15 | 80-90 | 75-85 | 65-85 | 50-70 | 30-40 | 5-15 |
| | 24-53 | Very cobbly clay loam, very gravelly clay loam, extremely cobbly clay loam. | GC, GM | A-2, A-6, A-7 | 0-30 | 15-70 | 30-55 | 20-50 | 15-45 | 10-40 | 35-45 | 10-20 |
| | 53 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments > 10 inches | Fragments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 115: | | | | | | | | | | | | |
| Shilla------- | 0-1 | Silt loam----- | ML | A-4, A-5 | 0 | 0 | 90-100 | 70-100 | 65-95 | 55-90 | 35-50 | NP-10 |
| | 1-16 | Silt loam----- | ML | A-4, A-5 | 0 | 0 | 90-100 | 70-100 | 65-95 | 55-90 | 35-45 | NP-10 |
| | 16-24 | Cobbly loam, loam, cobbly clay loam. | ML | A-6, A-4 | 0 | 0-15 | 80-90 | 75-85 | 65-85 | 50-70 | 30-40 | 5-15 |
| | 24-53 | Very cobbly clay loam, very gravelly clay loam, extremely cobbly clay loam. | GC, GM | A-2, A-6, A-7 | 0-30 | 15-70 | 30-55 | 20-50 | 15-45 | 10-40 | 35-45 | 10-20 |
| | 53 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Seddow------- | 0-4 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-95 | 30-40 | 5-15 |
| | 4-13 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 90-100 | 80-100 | 75-100 | 70-95 | 30-40 | 5-15 |
| | 13-29 | Silty clay loam, gravelly clay loam, gravelly silt loam. | CL, ML | A-6, A-7 | 0 | 0-25 | 70-95 | 65-90 | 60-85 | 50-80 | 35-50 | 10-25 |
| | 29-48 | Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam. | GC | A-2, A-7 | 0 | 30-55 | 40-65 | 30-60 | 25-55 | 20-50 | 40-50 | 15-25 |
| | 48 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 116---------- Slickpoo | 0-12 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 25-40 | 5-15 |
| | 12-22 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 90-100 | 85-100 | 80-100 | 75-95 | 30-45 | 10-20 |
| | 22-37 | Cobbly silty clay loam. | CL | A-6, A-7 | 0 | 15-30 | 75-95 | 70-90 | 65-90 | 60-85 | 35-50 | 15-25 |
| | 37-45 | Very cobbly silt loam, very cobbly loam. | CL-ML, CL, GC | A-4, A-6 | 0 | 30-45 | 55-70 | 50-65 | 40-60 | 40-60 | 25-40 | 5-15 |
| | 45 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 117: | | | | | | | | | | | | |
| Slickpoo----- | 0-12 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-95 | 25-40 | 5-15 |
| | 12-22 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 90-100 | 85-100 | 80-100 | 75-95 | 30-45 | 10-20 |
| | 22-37 | Cobbly silty clay loam. | CL | A-6, A-7 | 0 | 15-30 | 75-95 | 70-90 | 65-90 | 60-85 | 35-50 | 15-25 |
| | 37-45 | Very cobbly silt loam, very cobbly loam. | CL-ML, CL, GC | A-4, A-6 | 0 | 30-45 | 55-70 | 50-65 | 40-60 | 40-60 | 25-40 | 5-15 |
| | 45 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments > 10 inches | Fragments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 117: | | | | | | | | | | | | |
| Broadax------ | 0-16 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 100 | 100 | 100 | 95-100 | 30-40 | 5-15 |
| | 16-33 | Silty clay loam, silt loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 100 | 95-100 | 35-45 | 15-20 |
| | 33-37 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 100 | 95-100 | 30-40 | 10-15 |
| | 37-65 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 100 | 95-100 | 25-40 | 5-15 |
| 118---------- Southwick | 0-9 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 9-26 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 26-32 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 25-30 | 5-10 |
| | 32-46 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-50 | 10-25 |
| | 46-64 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-100 | 30-50 | 10-25 |
| 119: | | | | | | | | | | | | |
| Southwick---- | 0-9 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 9-26 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 26-32 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 25-30 | 5-10 |
| | 32-46 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-50 | 10-25 |
| | 46-64 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-100 | 30-50 | 10-25 |
| Bluesprin---- | 0-14 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 75-95 | 75-90 | 70-85 | 60-80 | 25-35 | 5-15 |
| | 14-22 | Very gravelly silty clay loam, very gravelly silt loam. | GC | A-2, A-6 | 0 | 15-35 | 45-55 | 40-50 | 35-50 | 30-50 | 30-40 | 10-20 |
| | 22-28 | Extremely gravelly silty clay loam, extremely gravelly clay loam. | GC | A-2 | 0 | 20-50 | 30-40 | 25-35 | 20-30 | 15-30 | 30-40 | 10-20 |
| | 28 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 120, 121: | | | | | | | | | | | | |
| Southwick---- | 0-9 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 9-26 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 26-32 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 25-30 | 5-10 |
| | 32-46 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-50 | 10-25 |
| | 46-64 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-100 | 30-50 | 10-25 |
| Driscoll----- | 0-13 | Silt loam----- | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 20-30 | 5-15 |
| | 13-31 | Silt loam, silt. | CL, CL-ML | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-15 |
| | 31-46 | Silty clay, silty clay loam. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 45-70 | 20-40 |
| | 46-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 95-100 | 95-100 | 90-100 | 40-50 | 15-25 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments > 10 inches | Fragments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 122: | | | | | | | | | | | | |
| Southwick---- | 0-9 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 9-26 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 26-32 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 25-30 | 5-10 |
| | 32-46 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-50 | 10-25 |
| | 46-64 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-100 | 30-50 | 10-25 |
| Larkin------- | 0-19 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 20-30 | 5-10 |
| | 19-61 | Silt loam, silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-20 |
| 123: | | | | | | | | | | | | |
| Sweiting----- | 0-12 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 12-23 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 90-100 | 85-100 | 65-100 | 65-100 | 35-50 | 15-30 |
| | 23-31 | Very gravelly clay, very gravelly silty clay, gravelly clay. | CH, GC | A-2, A-7 | 0 | 0-20 | 40-70 | 35-65 | 35-65 | 30-65 | 50-70 | 25-40 |
| | 31 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Joel--------- | 0-18 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 18-24 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 24-60 | Silt loam, silty clay loam. | ML, CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 35-45 | 10-20 |
| 124, 125------ Talmaks | 0-3 | Silt loam----- | ML | A-5 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-45 | 5-10 |
| | 3-16 | Silt loam----- | ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 5-10 |
| | 16-47 | Silt loam, silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 40-50 | 15-25 |
| | 47-70 | Silty clay loam. | CL | A-7 | 0 | 0 | 90-100 | 85-100 | 80-100 | 75-100 | 40-50 | 15-25 |
| 126: | | | | | | | | | | | | |
| Talmaks------ | 0-3 | Silt loam----- | ML | A-5 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-45 | 5-10 |
| | 3-16 | Silt loam----- | ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 5-10 |
| | 16-47 | Silt loam, silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 40-50 | 15-25 |
| | 47-70 | Silty clay loam. | CL | A-7 | 0 | 0 | 90-100 | 85-100 | 80-100 | 75-100 | 40-50 | 15-25 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 126: | | | | | | | | | | | | |
| Seddow------- | 0-4 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 95-100 | 90-100 | 85-100 | 80-95 | 30-40 | 5-15 |
| | 4-13 | Silt loam----- | ML | A-4, A-6 | 0 | 0 | 90-100 | 80-100 | 75-100 | 70-95 | 30-40 | 5-15 |
| | 13-29 | Silty clay loam, gravelly clay loam, gravelly silt loam. | CL, ML | A-6, A-7 | 0 | 0-25 | 70-95 | 65-90 | 60-85 | 50-80 | 35-50 | 10-25 |
| | 29-48 | Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam. | GC | A-2, A-7 | 0 | 30-55 | 40-65 | 30-60 | 25-55 | 20-50 | 40-50 | 15-25 |
| | 48 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 127: | | | | | | | | | | | | |
| Tammany------ | 0-4 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0-5 | 80-90 | 75-90 | 65-85 | 55-75 | 25-35 | 5-15 |
| | 4-10 | Very gravelly loam, very gravelly sandy loam. | GM-GC, GC | A-2, A-4, A-6 | 0 | 15-30 | 45-65 | 35-60 | 30-50 | 20-40 | 25-35 | 5-15 |
| | 10-17 | Very gravelly loam, very gravelly sandy loam. | GM-GC, GC | A-2, A-4, A-6 | 0 | 15-30 | 45-65 | 35-60 | 30-50 | 20-40 | 25-35 | 5-15 |
| | 17-29 | Extremely gravelly coarse sandy loam, very gravelly loam, extremely cobbly sandy loam. | GM, GM-GC, GP-GM | A-1, A-2 | 0 | 30-50 | 30-65 | 15-50 | 10-40 | 5-30 | 20-30 | NP-10 |
| | 29-60 | Extremely gravelly coarse sand. | GP | A-1 | 0 | 30-50 | 25-50 | 10-35 | 5-15 | 0-5 | --- | NP |
| Chard-------- | 0-15 | Silt loam----- | ML | A-4 | 0 | 0 | 100 | 100 | 90-100 | 70-80 | 15-25 | NP-5 |
| | 15-32 | Loam, silt loam. | ML | A-4 | 0 | 0 | 95-100 | 95-100 | 90-100 | 65-80 | 15-25 | NP-5 |
| | 32-55 | Loam, fine sandy loam, very fine sandy loam. | ML | A-4 | 0 | 0 | 95-100 | 95-100 | 80-95 | 55-75 | 15-25 | NP-5 |
| | 55-62 | Sand, loamy fine sand, fine sand. | SM | A-4, A-2 | 0 | 0 | 95-100 | 95-100 | 65-90 | 20-50 | --- | NP |
| Rock outcrop. | | | | | | | | | | | | |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 128---------- Taney | 0-14 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 14-23 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 23-29 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-30 | 5-10 |
| | 29-36 | Silt loam, silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-50 | 10-25 |
| | 36-63 | Silt loam, silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-50 | 10-25 |
| 129, 130: | | | | | | | | | | | | |
| Taney-------- | 0-14 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 14-23 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 23-29 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-30 | 5-10 |
| | 29-36 | Silt loam, silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-50 | 10-25 |
| | 36-63 | Silt loam, silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-50 | 10-25 |
| Joel--------- | 0-18 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 18-24 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 20-30 | 5-10 |
| | 24-60 | Silt loam, silty clay loam. | ML, CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 35-45 | 10-20 |
| 131, 132: | | | | | | | | | | | | |
| Taney-------- | 0-14 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 14-23 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 23-29 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-30 | 5-10 |
| | 29-36 | Silt loam, silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-50 | 10-25 |
| | 36-63 | Silt loam, silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-50 | 10-25 |
| Setters------ | 0-12 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 12-17 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 17-19 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-30 | 5-10 |
| | 19-61 | Silty clay loam, silty clay. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-60 | 20-35 |
| 133: | | | | | | | | | | | | |
| Thatuna------ | 0-16 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 16-31 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 31-37 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-10 |
| | 37-61 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| Naff--------- | 0-18 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 18-25 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 25-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 15-25 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 134: | | | | | | | | | | | | |
| Thatuna------ | 0-16 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 16-31 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 31-37 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-10 |
| | 37-61 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| Naff--------- | 0-12 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 12-20 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 20-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 15-25 |
| 135: | | | | | | | | | | | | |
| Thatuna------ | 0-16 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 16-31 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 31-37 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-10 |
| | 37-61 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| Naff--------- | 0-18 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 18-25 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 25-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 15-25 |
| 136: | | | | | | | | | | | | |
| Thatuna------ | 0-16 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 16-31 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 31-37 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-10 |
| | 37-61 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| Naff--------- | 0-18 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 18-25 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 25-60 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 15-25 |
| Tilma-------- | 0-25 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 100 | 95-100 | 20-30 | NP-10 |
| | 25-60 | Silty clay, silty clay loam. | CL, CH | A-7 | 0 | 0 | 100 | 100 | 100 | 95-100 | 40-60 | 20-35 |
| 137---------- Tombeall | 0-7 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 95-100 | 90-100 | 75-95 | 65-80 | 25-35 | 5-15 |
| | 7-28 | Silt loam, sandy loam, loam. | CL-ML, CL, SC-SM, SC | A-4, A-6 | 0 | 0 | 80-100 | 75-100 | 55-90 | 45-80 | 25-35 | 5-15 |
| | 28-35 | Very gravelly sandy loam, very gravelly loam. | GM-GC, GM | A-2, A-1 | 0 | 10-15 | 40-60 | 30-50 | 20-40 | 15-30 | 20-30 | NP-10 |
| | 35-60 | Extremely gravelly sandy loam, extremely gravelly loam. | GM, GP, GP-GM, GM-GC | A-1 | 0 | 25-40 | 20-45 | 5-30 | 5-25 | 0-20 | 20-30 | NP-10 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 138, 139, 140 Uhlig | 0-15 | Silt loam----- | ML | A-4 | 0 | 0 | 95-100 | 90-100 | 80-100 | 65-80 | 20-30 | NP-5 |
| | 15-39 | Loam, very fine sandy loam, silt loam. | ML | A-4 | 0 | 0 | 95-100 | 90-100 | 85-95 | 60-80 | 20-30 | NP-5 |
| | 39-68 | Very fine sandy loam, fine sandy loam. | ML, SM | A-4 | 0 | 0 | 90-100 | 75-100 | 60-80 | 40-55 | 20-30 | NP-5 |
| 141---------- Uhlorn | 0-7 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 7-17 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 17-23 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 23-55 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 55-69 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 20-25 |
| 142, 143: Uhlorn------- | 0-7 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 7-17 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 17-23 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 23-55 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 55-69 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 20-25 |
| Nez Perce---- | 0-11 | Silty clay loam. | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-20 |
| | 11-15 | Silt loam----- | CL-ML, CL | A-4, A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-15 |
| | 15-21 | Silt loam, silt. | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-10 |
| | 21-31 | Silty clay---- | CH | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 50-70 | 25-40 |
| | 31-66 | Silty clay, silty clay loam. | CH, CL | A-7 | 0 | 0 | 100 | 95-100 | 90-100 | 85-100 | 40-70 | 15-40 |
| 144: Uhlorn------- | 0-7 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 7-17 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 17-23 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 23-55 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 35-50 | 15-25 |
| | 55-69 | Silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 40-50 | 20-25 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 144: | | | | | | | | | | | | |
| Vollmer------ | 0-12 | Silt loam----- | ML | A-4 | 0 | 0-5 | 95-100 | 85-100 | 80-100 | 80-100 | 30-35 | 5-10 |
| | 12-28 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0-5 | 90-100 | 80-100 | 75-100 | 75-100 | 30-45 | 10-20 |
| | 28-36 | Cobbly silt loam, gravelly clay loam, gravelly silty clay loam. | CL | A-6, A-7 | 0 | 5-20 | 80-95 | 70-90 | 65-90 | 60-90 | 30-45 | 10-20 |
| | 36 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 145: | | | | | | | | | | | | |
| Urban land. | | | | | | | | | | | | |
| Wistona------ | 0-8 | Very fine sandy loam. | ML | A-4 | 0 | 0 | 100 | 95-100 | 90-100 | 55-70 | 10-20 | NP-5 |
| | 8-45 | Very fine sandy loam, fine sandy loam, sandy loam. | ML, SM | A-4 | 0 | 0 | 100 | 95-100 | 80-100 | 35-70 | 10-20 | NP-5 |
| | 45-64 | Very fine sandy loam, fine sandy loam, sandy loam. | ML, SM | A-4 | 0 | 0 | 95-100 | 90-100 | 75-100 | 35-70 | 10-20 | NP-5 |
| 146---------- Uvi | 0-4 | Silt loam----- | CL-ML | A-4 | 0 | 0 | 95-100 | 90-100 | 80-90 | 70-80 | 25-30 | 5-10 |
| | 4-55 | Loam, sandy loam. | CL-ML, SC-SM | A-2, A-4 | 0 | 0 | 95-100 | 75-100 | 40-85 | 25-70 | 25-30 | 5-10 |
| | 55-65 | Very gravelly loam, very gravelly sandy loam. | SM | A-1, A-4 | 0 | 0 | 70-80 | 30-50 | 15-45 | 10-40 | 20-25 | NP-5 |
| 147, 148------ Vollmer | 0-12 | Silt loam----- | ML | A-4 | 0 | 0-5 | 95-100 | 85-100 | 80-100 | 80-100 | 30-35 | 5-10 |
| | 12-28 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0-5 | 90-100 | 80-100 | 75-100 | 75-100 | 30-45 | 10-20 |
| | 28-36 | Cobbly silt loam, gravelly clay loam, gravelly silty clay loam. | CL | A-6, A-7 | 0 | 5-20 | 80-95 | 70-90 | 65-90 | 60-90 | 30-45 | 10-20 |
| | 36 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 149: | | | | | | | | | | | | |
| Watama------- | 0-11 | Silt loam----- | ML, CL | A-4, A-6 | 0 | 0 | 100 | 85-100 | 80-95 | 80-95 | 30-40 | 5-15 |
| | 11-34 | Silt loam----- | ML, CL | A-4, A-6 | 0 | 0 | 95-100 | 80-90 | 75-85 | 65-80 | 30-40 | 5-15 |
| | 34-38 | Gravelly silt loam. | ML, CL | A-4, A-6 | 0 | 0-10 | 70-80 | 60-75 | 60-70 | 55-65 | 30-40 | 5-15 |
| | 38 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 149: | | | | | | | | | | | | |
| Flybow------- | 0-4 | Very gravelly silt loam. | GM-GC, GC | A-2, A-4, A-6 | 0 | 10-25 | 40-55 | 35-50 | 35-50 | 30-45 | 25-35 | 5-15 |
| | 4 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 150: | | | | | | | | | | | | |
| Webbridge---- | 0-3 | Silt loam----- | ML, SM | A-4, A-5 | 0 | 0 | 100 | 65-100 | 50-90 | 45-80 | 30-50 | NP-10 |
| | 3-17 | Silt loam----- | ML, SM | A-2, A-4, A-5 | 0 | 0 | 85-100 | 45-85 | 35-75 | 30-70 | 30-50 | NP-10 |
| | 17-34 | Cobbly clay loam, very cobbly clay loam, very gravelly loam. | CL, GC | A-2, A-6, A-7 | 0-5 | 25-40 | 60-85 | 55-80 | 45-75 | 35-55 | 30-45 | 10-20 |
| | 34-53 | Extremely cobbly loam, very cobbly clay loam, very gravelly clay loam. | GC | A-2, A-6, A-7 | 0-5 | 30-70 | 25-65 | 15-60 | 15-55 | 10-40 | 30-45 | 10-20 |
| | 53 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Agatha------- | 0-15 | Loam---------- | CL, CL-ML | A-4, A-6 | 0 | 0-10 | 90-100 | 90-100 | 85-100 | 60-80 | 25-35 | 5-15 |
| | 15-23 | Cobbly clay loam, gravelly loam, very gravelly silt loam. | CL, GC | A-6, A-2 | 0 | 15-45 | 50-80 | 45-75 | 40-75 | 30-60 | 30-40 | 10-20 |
| | 23-47 | Very cobbly clay loam, extremely cobbly loam, extremely cobbly clay loam. | GC | A-2, A-6, A-7 | 0-5 | 30-80 | 35-60 | 30-55 | 25-50 | 20-45 | 30-45 | 10-25 |
| | 47 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 151: | | | | | | | | | | | | |
| Westlake----- | 0-10 | Silt loam----- | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 85-95 | 30-45 | 10-20 |
| | 10-21 | Silt loam----- | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 85-95 | 30-45 | 10-20 |
| | 21-49 | Silt loam, silty clay loam. | CL | A-7 | 0 | 0 | 100 | 100 | 90-100 | 80-95 | 40-50 | 15-25 |
| | 49-64 | Silt loam, loam, clay loam. | CL | A-6 | 0 | 0 | 80-100 | 75-100 | 60-95 | 55-80 | 30-40 | 10-20 |
| Latahco------ | 0-13 | Silt loam----- | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-45 | 10-20 |
| | 13-22 | Silt loam----- | CL | A-6, A-7 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-45 | 10-20 |
| | 22-35 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 15-30 | NP-10 |
| | 35-60 | Silt loam, silty clay loam. | CL | A-6, A-7 | 0 | 0 | 90-100 | 90-100 | 85-100 | 80-100 | 35-45 | 15-25 |

Table 15.--Engineering Index Properties--Continued

| Soil name and map symbol | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Frag- ments > 10 inches | Frag- ments 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 152---------- Wilkins | 0-15 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 30-40 | 10-15 |
| | 15-20 | Silt loam----- | ML, CL-ML | A-4 | 0 | 0 | 100 | 100 | 95-100 | 95-100 | 25-35 | 5-10 |
| | 20-52 | Silty clay---- | CH | A-7 | 0 | 0 | 100 | 100 | 90-100 | 90-100 | 50-70 | 25-40 |
| | 52-64 | Clay loam, silty clay loam. | CL, CH | A-6, A-7 | 0 | 0 | 100 | 95-100 | 85-100 | 70-100 | 35-55 | 15-30 |
| 153---------- Wistona | 0-8 | Very fine sandy loam. | ML | A-4 | 0 | 0 | 100 | 95-100 | 90-100 | 55-70 | 10-20 | NP-5 |
| | 8-45 | Very fine sandy loam, fine sandy loam, sandy loam. | ML, SM | A-4 | 0 | 0 | 100 | 95-100 | 80-100 | 35-70 | 10-20 | NP-5 |
| | 45-64 | Very fine sandy loam, fine sandy loam, sandy loam. | ML, SM | A-4 | 0 | 0 | 95-100 | 90-100 | 75-100 | 35-70 | 10-20 | NP-5 |
| 154: | | | | | | | | | | | | |
| Zaza--------- | 0-4 | Very stony loam. | CL-ML, GM-GC | A-2, A-4 | 15-30 | 0-15 | 55-80 | 50-75 | 40-70 | 30-55 | 20-30 | 5-10 |
| | 4-8 | Very cobbly loam, cobbly loam. | CL-ML, GM-GC | A-2, A-4 | 0-5 | 15-50 | 55-85 | 50-80 | 40-75 | 30-55 | 20-30 | 5-10 |
| | 8-14 | Extremely cobbly loam, very cobbly loam. | GM-GC | A-2, A-4 | 0-5 | 55-70 | 35-75 | 25-70 | 20-65 | 15-50 | 20-30 | 5-10 |
| | 14 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sweiting----- | 0-12 | Silt loam----- | CL | A-6 | 0 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 10-15 |
| | 12-23 | Silty clay loam. | CL | A-6, A-7 | 0 | 0 | 90-100 | 85-100 | 65-100 | 65-100 | 35-50 | 15-30 |
| | 23-31 | Very gravelly clay, very gravelly silty clay, gravelly clay. | CH, GC | A-2, A-7 | 0 | 0-20 | 40-70 | 35-65 | 35-65 | 30-65 | 50-70 | 25-40 |
| | 31 | Unweathered bedrock. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 16.--Physical and Chemical Properties of the Soils

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea-bility | Available water capacity | Soil reaction | Salinity | Shrink-swell potential | Erosion factors K | Erosion factors T | Wind erodi-bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 1, 2---------- | 0-15 | 12-24 | 1.40-1.45 | 0.6-2.0 | 0.16-0.20 | 5.6-7.3 | 0-0 | Low------- | 0.32 | 3 | 6 | 1-3 |
| Agatha | 15-23 | 18-30 | 1.45-1.55 | 0.2-2.0 | 0.13-0.17 | 5.6-6.5 | 0-0 | Low------- | 0.20 | | | |
| | 23-47 | 24-35 | 1.45-1.50 | 0.2-0.6 | 0.04-0.09 | 5.6-6.5 | 0-0 | Low------- | 0.10 | | | |
| | 47 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 3: | | | | | | | | | | | | |
| Agatha---------- | 0-15 | 12-24 | 1.40-1.45 | 0.6-2.0 | 0.16-0.20 | 5.6-7.3 | 0-0 | Low------- | 0.32 | 3 | 6 | 1-3 |
| | 15-23 | 18-30 | 1.45-1.55 | 0.2-2.0 | 0.13-0.17 | 5.6-6.5 | 0-0 | Low------- | 0.20 | | | |
| | 23-47 | 24-35 | 1.45-1.50 | 0.2-0.6 | 0.04-0.09 | 5.6-6.5 | 0-0 | Low------- | 0.10 | | | |
| | 47 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Rock outcrop. | | | | | | | | | | | | |
| 4---------- | 0-11 | 15-22 | 1.30-1.50 | 0.6-2.0 | 0.15-0.18 | 6.1-7.3 | 0-0 | Low------- | 0.32 | 5 | 5 | 2-5 |
| Ahsahka | 11-32 | 18-30 | 1.20-1.40 | 0.2-2.0 | 0.16-0.21 | 6.1-7.3 | 0-0 | Moderate | 0.43 | | | |
| | 32-60 | 32-50 | 1.25-1.50 | 0.06-0.6 | 0.14-0.20 | 6.1-7.3 | 0-0 | High------ | 0.32 | | | |
| 5: | | | | | | | | | | | | |
| Almota---------- | 0-17 | 18-22 | 1.15-1.35 | 0.6-2.0 | 0.17-0.22 | 6.6-7.8 | 0-0 | Low------- | 0.43 | 2 | 5 | 2-4 |
| | 17-24 | 18-22 | 1.25-1.45 | 0.6-2.0 | 0.15-0.20 | 6.6-7.8 | 0-0 | Low------- | 0.37 | | | |
| | 24-35 | 18-22 | 1.25-1.45 | 0.6-2.0 | 0.14-0.16 | 7.9-8.4 | 0-2 | Low------- | 0.32 | | | |
| | 35-39 | 18-22 | 1.25-1.45 | 0.6-2.0 | 0.10-0.12 | 7.9-8.4 | 0-2 | Low------- | 0.20 | | | |
| | 39 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Athena---------- | 0-14 | 16-22 | 1.15-1.30 | 0.6-2.0 | 0.19-0.21 | 6.1-7.3 | 0-0 | Low------- | 0.37 | 5 | 5 | 2-4 |
| | 14-44 | 18-25 | 1.20-1.40 | 0.6-2.0 | 0.17-0.20 | 6.6-7.8 | 0-0 | Low------- | 0.49 | | | |
| | 44-64 | 14-22 | 1.25-1.50 | 0.6-2.0 | 0.16-0.18 | 7.4-8.4 | 0-0 | Low------- | 0.49 | | | |
| Hatwai---------- | 0-13 | 14-22 | 1.20-1.30 | 0.6-2.0 | 0.18-0.20 | 6.1-7.3 | --- | Low------- | 0.43 | 2 | 5 | 2-3 |
| | 13-16 | 10-18 | 1.20-1.30 | 0.6-2.0 | 0.18-0.20 | 6.6-7.8 | --- | Low------- | 0.55 | | | |
| | 16-28 | 22-34 | 1.25-1.40 | 0.06-0.2 | 0.10-0.16 | 7.9-9.0 | 0-2 | Moderate | 0.49 | | | |
| | 28-60 | 16-30 | 1.20-1.40 | 0.2-0.6 | 0.10-0.16 | 7.9-9.6 | 2-4 | Low------- | 0.55 | | | |
| 6: | | | | | | | | | | | | |
| Almota---------- | 0-17 | 18-22 | 1.15-1.35 | 0.6-2.0 | 0.17-0.22 | 6.6-7.8 | 0-0 | Low------- | 0.43 | 2 | 5 | 2-4 |
| | 17-24 | 18-22 | 1.25-1.45 | 0.6-2.0 | 0.15-0.20 | 6.6-7.8 | 0-0 | Low------- | 0.37 | | | |
| | 24-35 | 18-22 | 1.25-1.45 | 0.6-2.0 | 0.14-0.16 | 7.9-8.4 | 0-2 | Low------- | 0.32 | | | |
| | 35-39 | 18-22 | 1.25-1.45 | 0.6-2.0 | 0.10-0.12 | 7.9-8.4 | 0-2 | Low------- | 0.20 | | | |
| | 39 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Linville-------- | 0-19 | 15-25 | 1.15-1.25 | 0.6-2.0 | 0.17-0.20 | 6.6-7.8 | --- | Low------- | 0.37 | 5 | 5 | 2-4 |
| | 19-67 | 20-27 | 1.20-1.40 | 0.6-2.0 | 0.14-0.17 | 7.4-8.4 | --- | Low------- | 0.32 | | | |
| 7, 8: | | | | | | | | | | | | |
| Alpowa---------- | 0-8 | 15-18 | 1.15-1.25 | 0.6-2.0 | 0.12-0.18 | 7.4-7.8 | <2 | Low------- | 0.24 | 5 | 5 | 2-4 |
| | 8-13 | 15-18 | 1.25-1.45 | 0.6-2.0 | 0.08-0.12 | 7.4-7.8 | <2 | Low------- | 0.20 | | | |
| | 13-60 | 15-18 | 1.25-1.45 | 0.6-2.0 | 0.07-0.12 | 7.4-9.0 | <2 | Low------- | 0.17 | | | |
| Lickskillet----- | 0-5 | 22-27 | 1.15-1.35 | 0.6-2.0 | 0.12-0.15 | 6.6-7.8 | 0-0 | Moderate | 0.17 | 1 | 8 | 1-2 |
| | 5-16 | 23-33 | 1.30-1.40 | 0.6-2.0 | 0.06-0.09 | 6.6-8.4 | 0-2 | Moderate | 0.10 | | | |
| | 16 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 9---------- Aquolls | 0-3 | 20-27 | 1.00-1.20 | 0.6-2.0 | 0.19-0.22 | 5.6-6.0 | 0-0 | Moderate | 0.20 | 4 | 6 | 5-7 |
| | 3-10 | 20-40 | 1.00-1.20 | 0.2-2.0 | 0.19-0.22 | 5.6-6.0 | 0-0 | Moderate | 0.20 | | | |
| | 10-18 | 10-24 | 1.30-1.50 | 0.6-2.0 | 0.19-0.22 | 5.6-6.5 | 0-0 | Moderate | 0.49 | | | |
| | 18-38 | 20-45 | 1.30-1.50 | 0.2-0.6 | 0.12-0.20 | 5.6-6.5 | 0-0 | High------ | 0.37 | | | |
| | 38-42 | 20-40 | 1.30-1.50 | 0.2-0.6 | 0.08-0.12 | 5.6-6.5 | 0-0 | High------ | 0.10 | | | |
| | 42 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 10---------- Athena | 0-14 | 16-22 | 1.15-1.30 | 0.6-2.0 | 0.19-0.21 | 6.1-7.3 | 0-0 | Low------- | 0.37 | 5 | 5 | 2-4 |
| | 14-44 | 18-25 | 1.20-1.40 | 0.6-2.0 | 0.17-0.20 | 6.6-7.8 | 0-0 | Low------- | 0.49 | | | |
| | 44-64 | 14-22 | 1.25-1.50 | 0.6-2.0 | 0.16-0.18 | 7.4-8.4 | 0-0 | Low------- | 0.49 | | | |
| 11: | | | | | | | | | | | | |
| Bakeoven-------- | 0-3 | 15-25 | 1.25-1.35 | 0.2-0.6 | 0.06-0.14 | 6.1-7.8 | 0-0 | Low------- | 0.10 | 1 | 8 | 1-3 |
| | 3-6 | 18-33 | 1.30-1.40 | 0.2-0.6 | 0.05-0.14 | 6.6-7.8 | 0-0 | Low------- | 0.10 | | | |
| | 6 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Watama---------- | 0-11 | 18-27 | 1.10-1.25 | 0.6-2.0 | 0.18-0.21 | 6.6-7.3 | 0-0 | Moderate | 0.32 | 2 | 6 | 3-5 |
| | 11-34 | 18-27 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | 0-0 | Moderate | 0.37 | | | |
| | 34-38 | 18-27 | 1.20-1.40 | 0.6-2.0 | 0.14-0.18 | 6.6-7.8 | 0-0 | Moderate | 0.32 | | | |
| | 38 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 12: | | | | | | | | | | | | |
| Boles---------- | 0-13 | 14-26 | 1.15-1.25 | 0.6-2.0 | 0.19-0.25 | 5.1-6.5 | --- | Low------- | 0.37 | 5 | 6 | 4-9 |
| | 13-17 | 14-20 | 1.30-1.50 | 0.6-2.0 | 0.19-0.25 | 6.1-6.5 | --- | Low------- | 0.55 | | | |
| | 17-45 | 40-52 | 1.45-1.65 | 0.06-0.2 | 0.10-0.18 | 6.1-7.3 | --- | Very high | 0.32 | | | |
| | 45-70 | 36-50 | 1.45-1.65 | 0.06-0.2 | 0.10-0.18 | 6.6-7.8 | 0-2 | Very high | 0.32 | | | |
| Joel---------- | 0-18 | 20-27 | 1.20-1.35 | 0.6-2.0 | 0.16-0.20 | 5.6-7.3 | 0-0 | Low------- | 0.32 | 5 | 6 | 2-5 |
| | 18-24 | 20-27 | 1.25-1.40 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | 0-0 | Low------- | 0.43 | | | |
| | 24-60 | 24-35 | 1.30-1.50 | 0.2-0.6 | 0.15-0.19 | 5.6-7.3 | 0-0 | Moderate | 0.49 | | | |
| 13: | | | | | | | | | | | | |
| Bridgewater----- | 0-16 | 10-18 | 1.25-1.45 | 2.0-6.0 | 0.04-0.07 | 6.1-7.3 | <2 | Low------- | 0.05 | 3 | 3 | 2-4 |
| | 16-34 | 10-22 | 1.45-1.55 | 0.6-6.0 | 0.04-0.07 | 6.6-7.8 | <2 | Low------- | 0.05 | | | |
| | 34-60 | 0-5 | 1.50-1.65 | >20 | 0.02-0.05 | 6.6-7.8 | <2 | Low------- | 0.05 | | | |
| Joseph---------- | 0-10 | 0-8 | 1.55-1.70 | 6.0-20 | 0.01-0.05 | 6.6-7.3 | 0-0 | Low------- | 0.05 | 5 | 8 | .5-1 |
| | 10-60 | 0-5 | 1.55-1.75 | >20 | 0.01-0.05 | 6.6-7.3 | 0-0 | Low------- | 0.05 | | | |
| 14, 15---------- Broadax | 0-16 | 18-24 | 1.20-1.40 | 0.6-2.0 | 0.18-0.20 | 5.6-7.3 | 0-0 | Moderate | 0.43 | 5 | 6 | 2-4 |
| | 16-33 | 24-35 | 1.20-1.40 | 0.2-0.6 | 0.12-0.20 | 7.4-7.8 | 0-0 | Moderate | 0.43 | | | |
| | 33-37 | 18-25 | 1.20-1.40 | 0.6-2.0 | 0.12-0.20 | 7.4-8.4 | 0-0 | Moderate | 0.49 | | | |
| | 37-65 | 15-25 | 1.20-1.40 | 0.6-2.0 | 0.16-0.20 | 7.9-9.0 | 0-2 | Moderate | 0.49 | | | |
| 16, 17: | | | | | | | | | | | | |
| Broadax--------- | 0-16 | 18-24 | 1.20-1.40 | 0.6-2.0 | 0.18-0.20 | 5.6-7.3 | 0-0 | Moderate | 0.43 | 5 | 6 | 2-4 |
| | 16-33 | 24-35 | 1.20-1.40 | 0.2-0.6 | 0.12-0.20 | 7.4-7.8 | 0-0 | Moderate | 0.43 | | | |
| | 33-37 | 18-25 | 1.20-1.40 | 0.6-2.0 | 0.12-0.20 | 7.4-8.4 | 0-0 | Moderate | 0.49 | | | |
| | 37-65 | 15-25 | 1.20-1.40 | 0.6-2.0 | 0.16-0.20 | 7.9-9.0 | 0-2 | Moderate | 0.49 | | | |
| Hatwai---------- | 0-13 | 14-22 | 1.20-1.30 | 0.6-2.0 | 0.18-0.20 | 6.1-7.3 | --- | Low------- | 0.43 | 2 | 5 | 2-3 |
| | 13-21 | 10-18 | 1.20-1.30 | 0.6-2.0 | 0.18-0.20 | 6.6-7.8 | --- | Low------- | 0.55 | | | |
| | 21-36 | 22-34 | 1.25-1.40 | 0.06-0.2 | 0.10-0.16 | 7.9-9.0 | 0-2 | Moderate | 0.49 | | | |
| | 36-66 | 16-30 | 1.20-1.40 | 0.2-0.6 | 0.10-0.16 | 7.9-9.6 | 2-4 | Low------- | 0.55 | | | |
| 18: | | | | | | | | | | | | |
| Caldwell-------- | 0-26 | 18-27 | 1.10-1.30 | 0.6-2.0 | 0.19-0.21 | 5.6-7.3 | <2 | Moderate | 0.37 | 5 | 6 | 4-8 |
| | 26-60 | 20-35 | 1.25-1.40 | 0.2-0.6 | 0.19-0.21 | 6.1-7.3 | <2 | Moderate | 0.37 | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 18: | | | | | | | | | | | | |
| Latah---------- | 0-19 | 20-27 | 1.10-1.25 | 0.6-2.0 | 0.19-0.21 | 6.6-7.8 | 0-0 | Low-------- | 0.32 | 3 | 6 | 3-5 |
| | 19-30 | 15-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.20 | 6.6-7.8 | 0-0 | Low-------- | 0.43 | | | |
| | 30-60 | 35-60 | 1.20-1.35 | 0.00-0.06 | 0.14-0.16 | 6.6-7.8 | 0-0 | High------- | 0.32 | | | |
| 19: | | | | | | | | | | | | |
| Calouse--------- | 0-10 | 18-22 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 5.6-7.3 | 0-0 | Moderate | 0.43 | 5 | 5 | 2-3 |
| | 10-23 | 18-23 | 1.20-1.30 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | 0-0 | Moderate | 0.49 | | | |
| | 23-32 | 18-23 | 1.20-1.30 | 0.6-2.0 | 0.18-0.21 | 6.6-8.4 | 0-0 | Moderate | 0.49 | | | |
| | 32-68 | 15-22 | 1.25-1.45 | 0.6-2.0 | 0.14-0.20 | 7.9-9.0 | 0-2 | Moderate | 0.55 | | | |
| Almota---------- | 0-17 | 18-22 | 1.15-1.35 | 0.6-2.0 | 0.17-0.22 | 6.6-7.8 | 0-0 | Low-------- | 0.43 | 2 | 5 | 2-4 |
| | 17-24 | 18-22 | 1.25-1.45 | 0.6-2.0 | 0.15-0.20 | 6.6-7.8 | 0-0 | Low-------- | 0.37 | | | |
| | 24-35 | 18-22 | 1.25-1.45 | 0.6-2.0 | 0.14-0.16 | 7.9-8.4 | 0-2 | Low-------- | 0.32 | | | |
| | 35-39 | 18-22 | 1.25-1.45 | 0.6-2.0 | 0.10-0.12 | 7.9-8.4 | 0-2 | Low-------- | 0.20 | | | |
| | 39 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 20: | | | | | | | | | | | | |
| Calouse--------- | 0-10 | 18-22 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 5.6-7.3 | 0-0 | Moderate | 0.43 | 5 | 5 | 2-3 |
| | 10-23 | 18-23 | 1.20-1.30 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | 0-0 | Moderate | 0.49 | | | |
| | 23-32 | 18-23 | 1.20-1.30 | 0.6-2.0 | 0.18-0.21 | 6.6-8.4 | 0-0 | Moderate | 0.49 | | | |
| | 32-68 | 15-22 | 1.25-1.45 | 0.6-2.0 | 0.14-0.20 | 7.9-9.0 | 0-2 | Moderate | 0.55 | | | |
| Endicott-------- | 0-15 | 14-18 | 1.20-1.40 | 0.6-2.0 | 0.15-0.17 | 6.1-7.8 | <2 | Low-------- | 0.43 | 2 | 5 | 2-3 |
| | 15-22 | 14-18 | 1.20-1.40 | 0.6-2.0 | 0.15-0.17 | 6.6-8.4 | <2 | Low-------- | 0.49 | | | |
| | 22-29 | 14-18 | 1.20-1.40 | 0.6-2.0 | 0.15-0.17 | 7.9-9.0 | <2 | Low-------- | 0.49 | | | |
| | 29-38 | 10-16 | 1.20-1.40 | 0.6-2.0 | 0.10-0.15 | 7.9-9.0 | <2 | Low-------- | 0.24 | | | |
| | 38-60 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Bryden---------- | 0-10 | 12-16 | 1.20-1.40 | 0.6-2.0 | 0.15-0.17 | 6.1-7.8 | <2 | Low-------- | 0.49 | 2 | 5 | 2-3 |
| | 10-19 | 18-30 | 1.20-1.40 | 0.2-0.6 | 0.15-0.17 | 6.6-8.4 | 2-4 | Moderate | 0.43 | | | |
| | 19-31 | 18-26 | 1.20-1.40 | 0.2-0.6 | 0.15-0.17 | 7.9-9.0 | 2-4 | Moderate | 0.49 | | | |
| | 31-37 | 12-18 | 1.20-1.40 | 0.6-2.0 | 0.10-0.15 | >8.4 | 2-4 | Low-------- | 0.20 | | | |
| | 37-60 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 21, 22---------- Carlinton | 0-8 | 10-20 | 1.15-1.30 | 0.6-2.0 | 0.18-0.24 | 5.1-6.5 | 0-0 | Low-------- | 0.37 | 3 | 5 | 2-4 |
| | 8-22 | 18-22 | 1.25-1.40 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | 0-0 | Low-------- | 0.49 | | | |
| | 22-28 | 18-26 | 1.25-1.45 | 0.6-2.0 | 0.18-0.22 | 5.6-7.3 | 0-0 | Low-------- | 0.49 | | | |
| | 28-50 | 28-34 | 1.60-1.70 | 0.00-0.06 | 0.04-0.08 | 5.6-7.3 | 0-0 | Moderate | 0.49 | | | |
| | 50-61 | 28-34 | 1.50-1.60 | 0.06-0.2 | 0.06-0.10 | 6.1-7.8 | 0-0 | Moderate | 0.49 | | | |
| 23: | | | | | | | | | | | | |
| Carlinton-------- | 0-5 | 10-20 | 1.15-1.30 | 0.6-2.0 | 0.18-0.24 | 5.1-6.5 | 0-0 | Low-------- | 0.37 | 3 | 5 | 2-4 |
| | 5-32 | 18-22 | 1.25-1.40 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | 0-0 | Low-------- | 0.49 | | | |
| | 32-36 | 18-26 | 1.25-1.45 | 0.6-2.0 | 0.18-0.22 | 5.6-7.3 | 0-0 | Low-------- | 0.49 | | | |
| | 36-55 | 28-34 | 1.60-1.70 | 0.00-0.06 | 0.04-0.08 | 5.6-7.3 | 0-0 | Moderate | 0.49 | | | |
| | 55-60 | 28-34 | 1.50-1.60 | 0.06-0.2 | 0.06-0.10 | 6.1-7.8 | 0-0 | Moderate | 0.49 | | | |
| Talmaks---------- | 0-3 | 16-22 | 0.85-1.10 | 0.6-2.0 | 0.19-0.22 | 5.6-6.5 | --- | Low-------- | 0.43 | 5 | 5 | 3-6 |
| | 3-16 | 18-24 | 0.95-1.20 | 0.6-2.0 | 0.18-0.22 | 5.6-6.5 | --- | Low-------- | 0.49 | | | |
| | 16-47 | 24-36 | 1.30-1.50 | 0.2-0.6 | 0.14-0.18 | 5.6-6.5 | --- | Low-------- | 0.43 | | | |
| | 47-70 | 28-40 | 1.30-1.50 | 0.2-0.6 | 0.14-0.18 | 5.6-6.5 | --- | Low-------- | 0.49 | | | |
| 24: | | | | | | | | | | | | |
| Cavendish-------- | 0-8 | 18-25 | 1.15-1.35 | 0.6-2.0 | 0.19-0.21 | 5.6-7.3 | 0-0 | Low-------- | 0.37 | 4 | 6 | 1-3 |
| | 8-30 | 25-33 | 1.30-1.45 | 0.2-0.6 | 0.19-0.21 | 5.1-7.3 | 0-0 | Moderate | 0.24 | | | |
| | 30-43 | 30-34 | 1.25-1.40 | 0.2-0.6 | 0.13-0.19 | 5.1-7.3 | 0-0 | Moderate | 0.17 | | | |
| | 43 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 24: | | | | | | | | | | | | |
| Taney---------- | 0-14 | 20-27 | 1.15-1.45 | 0.6-2.0 | 0.18-0.24 | 5.1-6.5 | 0-0 | Moderate | 0.49 | 3 | 6 | 2-5 |
| | 14-23 | 18-27 | 1.25-1.55 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | 0-0 | Moderate | 0.49 | | | |
| | 23-29 | 10-20 | 1.40-1.55 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | 0-0 | Low-------- | 0.55 | | | |
| | 29-36 | 23-35 | 1.60-1.75 | 0.00-0.06 | 0.04-0.08 | 5.6-6.5 | 0-0 | Moderate | 0.43 | | | |
| | 36-63 | 28-42 | 1.45-1.65 | 0.2-0.6 | 0.06-0.10 | 5.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| 25, 26, 27------- Chard | 0-15 | 8-14 | 1.15-1.30 | 0.6-2.0 | 0.16-0.18 | 6.6-7.8 | 0-0 | Low-------- | 0.43 | 4 | 5 | 1-2 |
| | 15-32 | 6-12 | 1.20-1.35 | 0.6-2.0 | 0.16-0.18 | 6.6-8.4 | 0-0 | Low-------- | 0.55 | | | |
| | 32-55 | 4-10 | 1.30-1.45 | 2.0-6.0 | 0.13-0.17 | 7.9-9.0 | 0-2 | Low-------- | 0.43 | | | |
| | 55-62 | 0-5 | 1.50-1.65 | 6.0-20 | 0.05-0.10 | 8.5-9.6 | 0-2 | Low-------- | 0.20 | | | |
| 28: | | | | | | | | | | | | |
| Chard---------- | 0-15 | 8-14 | 1.15-1.30 | 0.6-2.0 | 0.16-0.18 | 6.6-7.8 | 0-0 | Low-------- | 0.43 | 4 | 5 | 1-2 |
| | 15-32 | 6-12 | 1.20-1.35 | 0.6-2.0 | 0.16-0.18 | 6.6-8.4 | 0-0 | Low-------- | 0.55 | | | |
| | 32-55 | 4-10 | 1.30-1.45 | 2.0-6.0 | 0.13-0.17 | 7.9-9.0 | 0-2 | Low-------- | 0.43 | | | |
| | 55-62 | 0-5 | 1.50-1.65 | 6.0-20 | 0.05-0.10 | 8.5-9.6 | 0-2 | Low-------- | 0.20 | | | |
| Chard, moist---- | 0-15 | 8-14 | 1.15-1.30 | 0.6-2.0 | 0.16-0.18 | 6.6-7.8 | 0-0 | Low-------- | 0.43 | 4 | 5 | 1-2 |
| | 15-32 | 6-12 | 1.20-1.35 | 0.6-2.0 | 0.16-0.18 | 6.6-8.4 | 0-0 | Low-------- | 0.55 | | | |
| | 32-55 | 4-10 | 1.30-1.45 | 2.0-6.0 | 0.13-0.17 | 7.9-9.0 | 0-2 | Low-------- | 0.43 | | | |
| | 55-62 | 0-5 | 1.50-1.65 | 6.0-20 | 0.05-0.10 | 8.5-9.6 | 0-2 | Low-------- | 0.20 | | | |
| 29: | | | | | | | | | | | | |
| Chard---------- | 0-15 | 8-14 | 1.15-1.30 | 0.6-2.0 | 0.16-0.18 | 6.6-7.8 | 0-0 | Low-------- | 0.43 | 4 | 5 | 1-2 |
| | 15-32 | 6-12 | 1.20-1.35 | 0.6-2.0 | 0.16-0.18 | 6.6-8.4 | 0-0 | Low-------- | 0.55 | | | |
| | 32-55 | 4-10 | 1.30-1.45 | 2.0-6.0 | 0.13-0.17 | 7.9-9.0 | 0-2 | Low-------- | 0.43 | | | |
| | 55-62 | 0-5 | 1.50-1.65 | 6.0-20 | 0.05-0.10 | 8.5-9.6 | 0-2 | Low-------- | 0.20 | | | |
| Tammany--------- | 0-4 | 14-22 | 1.15-1.30 | 0.6-2.0 | 0.16-0.20 | 6.6-7.8 | --- | Low-------- | 0.32 | 5 | 5 | 2-3 |
| | 4-10 | 14-22 | 1.25-1.40 | 0.6-2.0 | 0.07-0.10 | 6.6-7.8 | --- | Low-------- | 0.17 | | | |
| | 10-17 | 14-22 | 1.25-1.40 | 0.6-2.0 | 0.07-0.10 | 6.6-7.8 | --- | Low-------- | 0.15 | | | |
| | 17-29 | 8-16 | 1.35-1.50 | 2.0-6.0 | 0.05-0.09 | 7.9-8.4 | 0-2 | Low-------- | 0.05 | | | |
| | 29-60 | 2-6 | 1.50-1.60 | >20 | 0.02-0.04 | 7.9-8.4 | 0-2 | Low-------- | 0.02 | | | |
| 30: | | | | | | | | | | | | |
| Chard---------- | 0-15 | 8-14 | 1.15-1.30 | 0.6-2.0 | 0.16-0.18 | 6.6-7.8 | 0-0 | Low-------- | 0.43 | 4 | 5 | 1-2 |
| | 15-32 | 6-12 | 1.20-1.35 | 0.6-2.0 | 0.16-0.18 | 6.6-8.4 | 0-0 | Low-------- | 0.55 | | | |
| | 32-55 | 4-10 | 1.30-1.45 | 2.0-6.0 | 0.13-0.17 | 7.9-9.0 | 0-2 | Low-------- | 0.43 | | | |
| | 55-62 | 0-5 | 1.50-1.65 | 6.0-20 | 0.05-0.10 | 8.5-9.6 | 0-2 | Low-------- | 0.20 | | | |
| Urban land. | | | | | | | | | | | | |
| 31---------- Cramont | 0-2 | 14-20 | 0.90-1.10 | 0.6-2.0 | 0.19-0.24 | 5.6-7.3 | 0-0 | Low-------- | 0.43 | 5 | 6 | 2-5 |
| | 2-14 | 14-24 | 1.15-1.40 | 0.6-2.0 | 0.18-0.24 | 5.1-6.5 | 0-0 | Low-------- | 0.55 | | | |
| | 14-44 | 32-42 | 1.35-1.50 | 0.06-0.2 | 0.10-0.18 | 5.1-6.5 | 0-0 | Moderate | 0.43 | | | |
| | 44-65 | 32-40 | 1.35-1.50 | 0.06-0.2 | 0.10-0.18 | 5.1-6.5 | 0-0 | Moderate | 0.43 | | | |
| 32: | | | | | | | | | | | | |
| Cramont--------- | 0-2 | 14-20 | 0.90-1.10 | 0.6-2.0 | 0.19-0.24 | 5.6-7.3 | 0-0 | Low-------- | 0.43 | 5 | 6 | 2-5 |
| | 2-14 | 14-24 | 1.15-1.40 | 0.6-2.0 | 0.18-0.24 | 5.1-6.5 | 0-0 | Low-------- | 0.55 | | | |
| | 14-44 | 32-42 | 1.35-1.50 | 0.06-0.2 | 0.10-0.18 | 5.1-6.5 | 0-0 | Moderate | 0.43 | | | |
| | 44-65 | 32-40 | 1.35-1.50 | 0.06-0.2 | 0.10-0.18 | 5.1-6.5 | 0-0 | Moderate | 0.43 | | | |
| Culdesac-------- | 0-3 | --- | 0.75-0.95 | 0.6-2.0 | 0.20-0.24 | 5.6-7.3 | 0-0 | Low-------- | 0.20 | 5 | 5 | 4-6 |
| | 3-18 | --- | 0.75-0.95 | 0.6-2.0 | 0.20-0.24 | 5.6-6.5 | 0-0 | Low-------- | 0.20 | | | |
| | 18-54 | 28-38 | 1.30-1.50 | 0.2-0.6 | 0.10-0.18 | 5.6-7.3 | 0-0 | Moderate | 0.37 | | | |
| | 54-60 | 28-38 | 1.30-1.50 | 0.2-0.6 | 0.06-0.12 | 5.6-7.3 | 0-0 | Moderate | 0.28 | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 33: | | | | | | | | | | | | |
| Cramont | 0-2 | 14-20 | 0.90-1.10 | 0.6-2.0 | 0.19-0.24 | 5.6-7.3 | 0-0 | Low | 0.43 | 5 | 6 | 2-5 |
| | 2-14 | 14-24 | 1.15-1.40 | 0.6-2.0 | 0.18-0.24 | 5.1-6.5 | 0-0 | Low | 0.55 | | | |
| | 14-44 | 32-42 | 1.35-1.50 | 0.06-0.2 | 0.10-0.18 | 5.1-6.5 | 0-0 | Moderate | 0.43 | | | |
| | 44-65 | 32-40 | 1.35-1.50 | 0.06-0.2 | 0.10-0.18 | 5.1-6.5 | 0-0 | Moderate | 0.43 | | | |
| Seddow | 0-4 | 14-24 | 0.75-1.10 | 0.6-2.0 | 0.19-0.24 | 5.6-6.5 | --- | Low | 0.43 | 3 | 5 | 2-6 |
| | 4-13 | 14-24 | 0.90-1.20 | 0.6-2.0 | 0.17-0.24 | 5.1-6.0 | --- | Low | 0.43 | | | |
| | 13-29 | 24-38 | 1.25-1.45 | 0.2-0.6 | 0.12-0.18 | 5.1-6.0 | --- | Moderate | 0.20 | | | |
| | 29-48 | 35-40 | 1.25-1.40 | 0.2-0.6 | 0.07-0.10 | 5.6-6.5 | --- | Moderate | 0.05 | | | |
| | 48 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| 34 Crowers | 0-10 | 12-16 | 1.00-1.15 | 0.6-2.0 | 0.19-0.21 | 6.6-7.8 | <2 | Low | 0.28 | 5 | 5 | 4-6 |
| | 10-27 | 12-16 | 1.05-1.20 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | <2 | Low | 0.32 | | | |
| | 27-31 | 16-22 | 1.20-1.40 | 0.6-2.0 | 0.14-0.20 | 6.6-7.8 | <2 | Moderate | 0.32 | | | |
| | 31-41 | 16-24 | 1.25-1.45 | 0.6-2.0 | 0.09-0.13 | 7.9-8.4 | <2 | Moderate | 0.15 | | | |
| | 41-62 | 16-24 | 1.25-1.45 | 0.6-2.0 | 0.13-0.18 | 7.9-8.4 | <2 | Moderate | 0.28 | | | |
| 35 Driscoll | 0-13 | 18-26 | 1.30-1.50 | 0.6-2.0 | 0.19-0.24 | 5.6-7.3 | 0-0 | Low | 0.32 | 5 | 5 | 3-5 |
| | 13-31 | 12-26 | 1.45-1.55 | 0.6-2.0 | 0.19-0.24 | 5.6-7.3 | 0-0 | Low | 0.55 | | | |
| | 31-46 | 38-55 | 1.50-1.55 | 0.06-0.2 | 0.15-0.20 | 5.6-7.3 | 0-0 | High | 0.37 | | | |
| | 46-60 | 32-38 | 1.40-1.50 | 0.06-0.2 | 0.19-0.21 | 6.1-7.3 | 0-0 | High | 0.43 | | | |
| 36: | | | | | | | | | | | | |
| Driscoll | 0-13 | 18-26 | 1.30-1.50 | 0.6-2.0 | 0.19-0.24 | 5.6-7.3 | 0-0 | Low | 0.32 | 5 | 5 | 3-5 |
| | 13-31 | 12-26 | 1.45-1.55 | 0.6-2.0 | 0.19-0.24 | 5.6-7.3 | 0-0 | Low | 0.55 | | | |
| | 31-46 | 38-55 | 1.50-1.55 | 0.06-0.2 | 0.15-0.20 | 5.6-7.3 | 0-0 | High | 0.37 | | | |
| | 46-60 | 32-38 | 1.40-1.50 | 0.06-0.2 | 0.19-0.21 | 6.1-7.3 | 0-0 | High | 0.43 | | | |
| Larkin | 0-19 | 15-24 | 1.15-1.30 | 0.6-2.0 | 0.19-0.21 | 5.6-7.3 | 0-0 | Low | 0.32 | 5 | 6 | 3-5 |
| | 19-61 | 24-35 | 1.20-1.40 | 0.2-0.6 | 0.19-0.21 | 5.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| 37, 38: | | | | | | | | | | | | |
| Endicott | 0-12 | 14-18 | 1.20-1.40 | 0.6-2.0 | 0.15-0.17 | 6.1-7.8 | <2 | Low | 0.43 | 2 | 5 | 2-3 |
| | 12-20 | 14-18 | 1.20-1.40 | 0.6-2.0 | 0.15-0.17 | 6.6-8.4 | <2 | Low | 0.49 | | | |
| | 20-30 | 14-18 | 1.20-1.40 | 0.6-2.0 | 0.15-0.17 | 7.9-9.0 | <2 | Low | 0.49 | | | |
| | 30-36 | 10-16 | 1.20-1.40 | 0.6-2.0 | 0.10-0.15 | 7.9-9.0 | <2 | Low | 0.24 | | | |
| | 36-60 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| Bryden | 0-10 | 12-16 | 1.20-1.40 | 0.6-2.0 | 0.15-0.17 | 6.1-7.8 | <2 | Low | 0.49 | 2 | 5 | 2-3 |
| | 10-19 | 18-30 | 1.20-1.40 | 0.2-0.6 | 0.15-0.17 | 6.6-8.4 | 2-4 | Moderate | 0.43 | | | |
| | 19-31 | 18-26 | 1.20-1.40 | 0.2-0.6 | 0.15-0.17 | 7.9-9.0 | 2-4 | Moderate | 0.49 | | | |
| | 31-37 | 12-18 | 1.20-1.40 | 0.6-2.0 | 0.10-0.15 | >8.4 | 2-4 | Low | 0.20 | | | |
| | 37-60 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| 39: | | | | | | | | | | | | |
| Endicott | 0-12 | 14-18 | 1.20-1.40 | 0.6-2.0 | 0.15-0.17 | 6.1-7.8 | <2 | Low | 0.43 | 2 | 5 | 2-3 |
| | 12-20 | 14-18 | 1.20-1.40 | 0.6-2.0 | 0.15-0.17 | 6.6-8.4 | <2 | Low | 0.49 | | | |
| | 20-30 | 14-18 | 1.20-1.40 | 0.6-2.0 | 0.15-0.17 | 7.9-9.0 | <2 | Low | 0.49 | | | |
| | 30-36 | 10-16 | 1.20-1.40 | 0.6-2.0 | 0.10-0.15 | 7.9-9.0 | <2 | Low | 0.24 | | | |
| | 36-60 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| Oliphant | 0-16 | 12-18 | 1.15-1.35 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | <2 | Low | 0.43 | 5 | 5 | 2-4 |
| | 16-24 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.4-8.4 | <2 | Low | 0.49 | | | |
| | 24-29 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.4-8.4 | <2 | Low | 0.55 | | | |
| | 29-62 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.9-9.0 | <2 | Low | 0.55 | | | |
| 40 Entic Haploxerolls | 0-8 | 10-22 | 1.10-1.25 | 0.6-2.0 | 0.14-0.18 | 7.9-8.4 | 0-2 | Low | 0.37 | 1 | 5 | 1-3 |
| | 8-17 | 10-22 | 1.15-1.25 | 0.6-2.0 | 0.08-0.18 | 7.9-8.4 | 0-2 | Low | 0.43 | | | |
| | 17-28 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| | 28 | --- | --- | --- | --- | --- | --- | --- | --- | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea-bility | Available water capacity | Soil reaction | Salinity | Shrink-swell potential | Erosion factors K | Erosion factors T | Wind erodi-bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 41: | | | | | | | | | | | | |
| Gwin---------- | 0-6 | 20-27 | 1.20-1.35 | 0.6-2.0 | 0.10-0.15 | 6.1-7.3 | 0-0 | Moderate | 0.15 | 1 | 8 | 2-3 |
| | 6-12 | 24-35 | 1.20-1.40 | 0.2-0.6 | 0.08-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.10 | | | |
| | 12 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Vollmer--------- | 0-12 | 18-24 | 1.20-1.30 | 0.6-2.0 | 0.19-0.21 | 6.1-7.3 | <2 | Low-------- | 0.37 | 2 | 5 | 2-5 |
| | 12-28 | 24-35 | 1.25-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Low-------- | 0.43 | | | |
| | 28-36 | 24-35 | 1.25-1.35 | 0.2-0.6 | 0.15-0.19 | 6.1-7.3 | <2 | Low-------- | 0.32 | | | |
| | 36 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 42---------- Haploxerolls | 0-14 | 28-40 | 1.15-1.25 | 0.2-0.6 | 0.18-0.21 | 6.6-7.8 | 0-0 | Moderate | 0.28 | 2 | 4 | 1-3 |
| | 14-23 | 24-40 | 1.20-1.30 | 0.2-2.0 | 0.14-0.21 | 7.4-8.4 | 0-2 | Moderate | 0.20 | | | |
| | 23-60 | 24-40 | 1.20-1.40 | 0.2-2.0 | 0.12-0.21 | 7.9-9.6 | 2-4 | Moderate | 0.28 | | | |
| 43---------- Hooverton | 0-11 | 18-25 | 1.10-1.20 | 0.6-2.0 | 0.12-0.14 | 6.1-7.3 | <2 | Moderate | 0.20 | 2 | 6 | 2-5 |
| | 11-17 | 20-27 | 1.15-1.30 | 0.6-2.0 | 0.10-0.12 | 6.1-7.3 | <2 | Moderate | 0.15 | | | |
| | 17-35 | 24-34 | 1.35-1.45 | 0.2-0.6 | 0.02-0.10 | 6.1-7.3 | <2 | Moderate | 0.05 | | | |
| | 35 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 44---------- Immig | 0-5 | 27-35 | 1.15-1.35 | 0.2-0.6 | 0.10-0.14 | 6.6-7.3 | 0-0 | Moderate | 0.20 | 2 | 8 | 2-4 |
| | 5-10 | 27-36 | 1.15-1.35 | 0.2-0.6 | 0.10-0.17 | 6.6-7.3 | 0-0 | Moderate | 0.28 | | | |
| | 10-29 | 40-50 | 1.30-1.50 | 0.06-0.2 | 0.02-0.05 | 6.6-7.3 | 0-0 | High------ | 0.17 | | | |
| | 29 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 45, 46---------- Jacket | 0-7 | 22-26 | 1.10-1.30 | 0.6-2.0 | 0.19-0.23 | 6.1-7.3 | <2 | Low-------- | 0.32 | 5 | 6 | 4-6 |
| | 7-27 | 27-35 | 1.20-1.40 | 0.2-0.6 | 0.16-0.21 | 6.1-7.3 | <2 | Moderate | 0.49 | | | |
| | 27-56 | 35-50 | 1.30-1.50 | 0.06-0.2 | 0.13-0.16 | 6.6-7.8 | <2 | High------ | 0.43 | | | |
| | 56-63 | 35-50 | 1.30-1.50 | 0.06-0.2 | 0.13-0.16 | 6.6-7.8 | <2 | High------ | 0.37 | | | |
| 47: | | | | | | | | | | | | |
| Jacket---------- | 0-7 | 22-26 | 1.10-1.30 | 0.6-2.0 | 0.19-0.23 | 6.1-7.3 | 0-0 | Low-------- | 0.32 | 5 | 6 | 4-6 |
| | 7-27 | 27-35 | 1.20-1.40 | 0.2-0.6 | 0.16-0.21 | 6.1-7.3 | 0-0 | High------ | 0.49 | | | |
| | 27-56 | 35-50 | 1.30-1.50 | 0.06-0.2 | 0.13-0.16 | 6.6-7.8 | 0-0 | High------ | 0.43 | | | |
| | 56-63 | 35-50 | 1.30-1.50 | 0.06-0.2 | 0.13-0.16 | 6.6-7.8 | 0-0 | High------ | 0.37 | | | |
| Larkin---------- | 0-19 | 15-24 | 1.15-1.30 | 0.6-2.0 | 0.19-0.21 | 5.6-7.3 | 0-0 | Low-------- | 0.32 | 5 | 6 | 3-5 |
| | 19-61 | 24-35 | 1.20-1.40 | 0.2-0.6 | 0.19-0.21 | 5.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| 48, 49---------- Joel | 0-18 | 20-27 | 1.20-1.35 | 0.6-2.0 | 0.16-0.20 | 5.6-7.3 | 0-0 | Low-------- | 0.32 | 5 | 6 | 2-5 |
| | 18-24 | 20-27 | 1.25-1.40 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | 0-0 | Low-------- | 0.43 | | | |
| | 24-60 | 24-35 | 1.30-1.50 | 0.2-0.6 | 0.15-0.19 | 5.6-7.3 | 0-0 | Moderate | 0.49 | | | |
| 50, 51: | | | | | | | | | | | | |
| Joel---------- | 0-18 | 20-27 | 1.20-1.35 | 0.6-2.0 | 0.16-0.20 | 5.6-7.3 | 0-0 | Low-------- | 0.32 | 5 | 6 | 2-5 |
| | 18-25 | 20-27 | 1.25-1.40 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | 0-0 | Low-------- | 0.43 | | | |
| | 25-66 | 24-35 | 1.30-1.50 | 0.2-0.6 | 0.15-0.19 | 5.6-7.3 | 0-0 | Moderate | 0.49 | | | |
| Setters---------- | 0-12 | 20-26 | 1.15-1.45 | 0.6-2.0 | 0.18-0.22 | 5.1-6.5 | --- | Moderate | 0.43 | 2 | 6 | 2-5 |
| | 12-17 | 15-26 | 1.25-1.55 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | --- | Moderate | 0.55 | | | |
| | 17-19 | 15-20 | 1.40-1.55 | 0.6-2.0 | 0.18-0.22 | 5.6-6.5 | --- | Low-------- | 0.55 | | | |
| | 19-61 | 35-50 | 1.30-1.40 | 0.06-0.2 | 0.15-0.20 | 5.6-7.3 | --- | Very high | 0.37 | | | |
| 52---------- Johnson | 0-10 | 15-25 | 1.15-1.25 | 0.6-2.0 | 0.14-0.18 | 5.6-7.3 | 0-0 | Low-------- | 0.32 | 5 | 5 | 2-4 |
| | 10-63 | 20-35 | 1.40-1.50 | 0.2-0.6 | 0.12-0.20 | 5.6-7.3 | 0-0 | Moderate | 0.28 | | | |
| 53: | | | | | | | | | | | | |
| Johnson---------- | 0-10 | 15-25 | 1.15-1.25 | 0.6-2.0 | 0.14-0.18 | 5.6-7.3 | 0-0 | Low-------- | 0.32 | 5 | 5 | 2-4 |
| | 10-63 | 20-35 | 1.40-1.50 | 0.2-0.6 | 0.12-0.20 | 5.6-7.3 | 0-0 | Moderate | 0.28 | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 53: | | | | | | | | | | | | |
| Dragnot--------- | 0-4 | 14-20 | 1.15-1.35 | 0.6-2.0 | 0.14-0.18 | 6.1-7.3 | 0-0 | Low------- | 0.24 | 2 | 5 | 2-4 |
| | 4-11 | 14-20 | 1.15-1.35 | 0.6-2.0 | 0.14-0.18 | 6.1-7.3 | 0-0 | Low------- | 0.24 | | | |
| | 11-18 | 18-24 | 1.20-1.40 | 0.6-2.0 | 0.14-0.18 | 6.1-7.3 | 0-0 | Moderate | 0.28 | | | |
| | 18-31 | 5-15 | 1.30-1.50 | 2.0-6.0 | 0.06-0.10 | 6.1-7.3 | 0-0 | Low------- | 0.10 | | | |
| | 31 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Dragnot, dry---- | 0-4 | 14-20 | 1.15-1.35 | 0.6-2.0 | 0.14-0.18 | 6.1-7.3 | --- | Low------- | 0.24 | 2 | 5 | 2-4 |
| | 4-11 | 14-20 | 1.15-1.35 | 0.6-2.0 | 0.14-0.18 | 6.1-7.3 | --- | Low------- | 0.24 | | | |
| | 11-18 | 18-24 | 1.20-1.40 | 0.6-2.0 | 0.14-0.18 | 6.1-7.3 | --- | Moderate | 0.28 | | | |
| | 18-31 | 5-15 | 1.30-1.50 | 2.0-6.0 | 0.06-0.10 | 6.1-7.3 | --- | Low------- | 0.10 | | | |
| | 31 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 54: | | | | | | | | | | | | |
| Johnson--------- | 0-13 | 15-25 | 1.15-1.25 | 0.6-2.0 | 0.14-0.18 | 5.6-7.3 | 0-0 | Low------- | 0.32 | 5 | 5 | 2-4 |
| | 13-60 | 20-35 | 1.40-1.50 | 0.2-0.6 | 0.12-0.20 | 5.6-7.3 | 0-0 | Moderate | 0.28 | | | |
| Kruse---------- | 0-16 | 16-24 | 1.25-1.35 | 0.6-2.0 | 0.16-0.18 | 5.6-6.5 | <2 | Low------- | 0.49 | 5 | 5 | 1-2 |
| | 16-49 | 24-34 | 1.40-1.50 | 0.2-0.6 | 0.15-0.19 | 6.1-7.3 | <2 | Moderate | 0.43 | | | |
| | 49-65 | 14-20 | 1.40-1.50 | 2.0-6.0 | 0.10-0.14 | 6.6-7.3 | <2 | Low------- | 0.20 | | | |
| 55: | | | | | | | | | | | | |
| Johnson--------- | 0-13 | 15-25 | 1.15-1.25 | 0.6-2.0 | 0.14-0.18 | 5.6-7.3 | 0-0 | Low------- | 0.32 | 5 | 5 | 2-4 |
| | 13-60 | 20-35 | 1.40-1.50 | 0.2-0.6 | 0.12-0.20 | 5.6-7.3 | 0-0 | Moderate | 0.28 | | | |
| Labuck---------- | 0-4 | 8-16 | 1.10-1.30 | 2.0-6.0 | 0.08-0.12 | 6.1-7.3 | 0-0 | Low------- | 0.20 | 2 | 3 | .5-2 |
| | 4-15 | 8-16 | 1.25-1.45 | 2.0-6.0 | 0.08-0.12 | 5.6-7.3 | 0-0 | Low------- | 0.20 | | | |
| | 15-26 | 10-18 | 1.40-1.60 | 2.0-6.0 | 0.07-0.10 | 5.6-6.5 | 0-0 | Low------- | 0.15 | | | |
| | 26 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 56: | | | | | | | | | | | | |
| Joseph---------- | 0-10 | 0-8 | 1.55-1.70 | 6.0-20 | 0.01-0.05 | 6.6-7.3 | 0-0 | Low------- | 0.05 | 5 | 8 | .5-1 |
| | 10-60 | 0-5 | 1.55-1.75 | >20 | 0.01-0.05 | 6.6-7.3 | 0-0 | Low------- | 0.05 | | | |
| Tombeall-------- | 0-7 | 15-20 | 1.15-1.25 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | 0-0 | Low------- | 0.32 | 5 | 5 | 2-5 |
| | 7-28 | 15-20 | 1.20-1.40 | 0.6-2.0 | 0.11-0.13 | 6.6-7.8 | 0-0 | Low------- | 0.28 | | | |
| | 28-35 | 5-15 | 1.25-1.45 | 2.0-6.0 | 0.06-0.10 | 6.6-7.8 | 0-0 | Low------- | 0.05 | | | |
| | 35-60 | 5-15 | 1.35-1.55 | 2.0-6.0 | 0.02-0.05 | 6.6-7.8 | 0-0 | Low------- | 0.02 | | | |
| 57: | | | | | | | | | | | | |
| Kettenbach------ | 0-4 | 20-27 | 1.10-1.30 | 0.6-2.0 | 0.14-0.16 | 6.1-7.3 | 0-0 | Moderate | 0.24 | 2 | 8 | 2-4 |
| | 4-10 | 20-30 | 1.15-1.35 | 0.2-0.6 | 0.10-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.28 | | | |
| | 10-25 | 24-35 | 1.25-1.45 | 0.2-0.6 | 0.06-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.10 | | | |
| | 25 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Kettenbach, moist---------- | 0-5 | 20-27 | 1.10-1.30 | 0.6-2.0 | 0.14-0.16 | 6.1-7.3 | 0-0 | Moderate | 0.24 | 2 | 8 | 2-4 |
| | 5-15 | 20-30 | 1.15-1.35 | 0.2-0.6 | 0.10-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.28 | | | |
| | 15-30 | 24-35 | 1.25-1.45 | 0.2-0.6 | 0.06-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.10 | | | |
| | 30 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Gwin---------- | 0-6 | 20-27 | 1.20-1.35 | 0.6-2.0 | 0.10-0.15 | 6.1-7.3 | 0-0 | Moderate | 0.15 | 1 | 8 | 2-3 |
| | 6-12 | 24-35 | 1.20-1.40 | 0.2-0.6 | 0.08-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.10 | | | |
| | 12 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 58: | | | | | | | | | | | | |
| Kettenbach------ | 0-4 | 20-27 | 1.10-1.30 | 0.6-2.0 | 0.14-0.16 | 6.1-7.3 | 0-0 | Moderate | 0.24 | 2 | 8 | 2-4 |
| | 4-10 | 20-30 | 1.15-1.35 | 0.2-0.6 | 0.10-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.28 | | | |
| | 10-25 | 24-35 | 1.25-1.45 | 0.2-0.6 | 0.06-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.10 | | | |
| | 25 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 58: | | | | | | | | | | | | |
| Keuterville----- | 0-13 | 18-25 | 1.20-1.35 | 0.6-2.0 | 0.12-0.14 | 6.1-7.3 | 0-0 | Low------- | 0.24 | 5 | 8 | 4-6 |
| | 13-49 | 26-35 | 1.40-1.55 | 0.2-0.6 | 0.06-0.10 | 6.1-7.3 | 0-0 | Low------- | 0.10 | | | |
| | 49-61 | 20-30 | 1.40-1.55 | 0.2-0.6 | 0.06-0.08 | 6.1-7.3 | 0-0 | Low------- | 0.10 | | | |
| 59: | | | | | | | | | | | | |
| Kettenbach------ | 0-4 | 20-27 | 1.10-1.30 | 0.6-2.0 | 0.14-0.16 | 6.1-7.3 | 0-0 | Moderate | 0.24 | 2 | 8 | 2-4 |
| | 4-10 | 20-30 | 1.15-1.35 | 0.2-0.6 | 0.10-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.28 | | | |
| | 10-25 | 24-35 | 1.25-1.45 | 0.2-0.6 | 0.06-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.10 | | | |
| | 25 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| Rock outcrop. | | | | | | | | | | | | |
| 60, 61---------- Keuterville | 0-13 | 18-25 | 1.20-1.35 | 0.6-2.0 | 0.12-0.14 | 6.1-7.3 | 0-0 | Low------- | 0.24 | 5 | 8 | 4-6 |
| | 13-49 | 26-35 | 1.40-1.55 | 0.2-0.6 | 0.06-0.10 | 6.1-7.3 | 0-0 | Low------- | 0.10 | | | |
| | 49-61 | 20-30 | 1.40-1.55 | 0.2-0.6 | 0.06-0.08 | 6.1-7.3 | 0-0 | Low------- | 0.10 | | | |
| 62: | | | | | | | | | | | | |
| Keuterville----- | 0-13 | 18-25 | 1.20-1.35 | 0.6-2.0 | 0.12-0.14 | 6.1-7.3 | 0-0 | Low------- | 0.24 | 5 | 8 | 4-6 |
| | 13-49 | 26-35 | 1.40-1.55 | 0.2-0.6 | 0.06-0.10 | 6.1-7.3 | 0-0 | Low------- | 0.10 | | | |
| | 49-61 | 20-30 | 1.40-1.55 | 0.2-0.6 | 0.06-0.08 | 6.1-7.3 | 0-0 | Low------- | 0.10 | | | |
| Rock outcrop. | | | | | | | | | | | | |
| 63, 64---------- Klickson | 0-7 | 18-26 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.6-7.3 | 0-0 | Moderate | 0.37 | 5 | 7 | 2-4 |
| | 7-15 | 18-26 | 1.15-1.30 | 0.6-2.0 | 0.10-0.18 | 6.1-7.3 | 0-0 | Moderate | 0.20 | | | |
| | 15-36 | 24-36 | 1.25-1.45 | 0.2-0.6 | 0.07-0.14 | 6.1-7.3 | 0-0 | Moderate | 0.15 | | | |
| | 36-61 | 24-36 | 1.25-1.45 | 0.2-0.6 | 0.05-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.10 | | | |
| 65: | | | | | | | | | | | | |
| Klickson-------- | 0-7 | 18-26 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.6-7.3 | 0-0 | Moderate | 0.37 | 5 | 7 | 2-4 |
| | 7-15 | 18-26 | 1.15-1.30 | 0.6-2.0 | 0.10-0.18 | 6.1-7.3 | 0-0 | Moderate | 0.20 | | | |
| | 15-36 | 24-36 | 1.25-1.45 | 0.2-0.6 | 0.07-0.14 | 6.1-7.3 | 0-0 | Moderate | 0.15 | | | |
| | 36-61 | 24-36 | 1.25-1.45 | 0.2-0.6 | 0.05-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.10 | | | |
| Agatha---------- | 0-15 | 12-24 | 1.40-1.45 | 0.6-2.0 | 0.16-0.20 | 5.6-7.3 | 0-0 | Low------- | 0.32 | 3 | 6 | 1-3 |
| | 15-23 | 18-30 | 1.45-1.55 | 0.2-2.0 | 0.13-0.17 | 5.6-6.5 | 0-0 | Low------- | 0.20 | | | |
| | 23-47 | 24-35 | 1.45-1.50 | 0.2-0.6 | 0.04-0.09 | 5.6-6.5 | 0-0 | Low------- | 0.10 | | | |
| | 47 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| 66: | | | | | | | | | | | | |
| Klickson-------- | 0-7 | 18-26 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.6-7.3 | 0-0 | Moderate | 0.37 | 5 | 7 | 2-4 |
| | 7-15 | 18-26 | 1.15-1.30 | 0.6-2.0 | 0.10-0.18 | 6.1-7.3 | 0-0 | Moderate | 0.20 | | | |
| | 15-36 | 24-36 | 1.25-1.45 | 0.2-0.6 | 0.07-0.14 | 6.1-7.3 | 0-0 | Moderate | 0.15 | | | |
| | 36-61 | 24-36 | 1.25-1.45 | 0.2-0.6 | 0.05-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.10 | | | |
| Hooverton------- | 0-11 | 18-25 | 1.10-1.20 | 0.6-2.0 | 0.12-0.14 | 6.1-7.3 | <2 | Moderate | 0.20 | 2 | 6 | 2-5 |
| | 11-17 | 20-27 | 1.15-1.30 | 0.6-2.0 | 0.10-0.12 | 6.1-7.3 | <2 | Moderate | 0.15 | | | |
| | 17-35 | 24-34 | 1.35-1.45 | 0.2-0.6 | 0.02-0.10 | 6.1-7.3 | <2 | Moderate | 0.05 | | | |
| | 35 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| 67: | | | | | | | | | | | | |
| Klickson-------- | 0-7 | 18-26 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.6-7.3 | 0-0 | Moderate | 0.37 | 5 | 7 | 2-4 |
| | 7-15 | 18-26 | 1.15-1.30 | 0.6-2.0 | 0.10-0.18 | 6.1-7.3 | 0-0 | Moderate | 0.20 | | | |
| | 15-36 | 24-36 | 1.25-1.45 | 0.2-0.6 | 0.07-0.14 | 6.1-7.3 | 0-0 | Moderate | 0.15 | | | |
| | 36-61 | 24-36 | 1.25-1.45 | 0.2-0.6 | 0.05-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.10 | | | |
| Rock outcrop. | | | | | | | | | | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 68: | | | | | | | | | | | | |
| Klickson-------- | 0-7 | 18-26 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.6-7.3 | 0-0 | Moderate | 0.37 | 5 | 7 | 2-4 |
| | 7-15 | 18-26 | 1.15-1.30 | 0.6-2.0 | 0.10-0.18 | 6.1-7.3 | 0-0 | Moderate | 0.20 | | | |
| | 15-36 | 24-36 | 1.25-1.45 | 0.2-0.6 | 0.07-0.14 | 6.1-7.3 | 0-0 | Moderate | 0.15 | | | |
| | 36-61 | 24-36 | 1.25-1.45 | 0.2-0.6 | 0.05-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.10 | | | |
| Uptmor---------- | 0-6 | 20-26 | 1.15-1.35 | 0.6-2.0 | 0.18-0.21 | 5.6-6.5 | 0-0 | Moderate | 0.43 | 3 | 6 | 2-4 |
| | 6-15 | 27-32 | 1.20-1.40 | 0.2-0.6 | 0.17-0.21 | 5.6-6.5 | 0-0 | Moderate | 0.28 | | | |
| | 15-26 | 35-60 | 1.40-1.60 | 0.06-0.2 | 0.12-0.16 | 5.6-6.5 | 0-0 | Very high | 0.24 | | | |
| | 26-47 | 35-60 | 1.40-1.60 | 0.06-0.2 | 0.09-0.14 | 5.6-6.5 | 0-0 | Very high | 0.17 | | | |
| | 47 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| 69---------- Kruse | 0-16 | 16-24 | 1.25-1.35 | 0.6-2.0 | 0.16-0.18 | 5.6-6.5 | <2 | Low-------- | 0.49 | 5 | 5 | 1-2 |
| | 16-49 | 24-34 | 1.40-1.50 | 0.2-0.6 | 0.15-0.19 | 6.1-7.3 | <2 | Moderate | 0.43 | | | |
| | 49-65 | 14-20 | 1.40-1.50 | 2.0-6.0 | 0.10-0.14 | 6.6-7.3 | <2 | Low-------- | 0.20 | | | |
| 70: | | | | | | | | | | | | |
| Lapwai---------- | 0-9 | 10-20 | 1.25-1.35 | 0.6-2.0 | 0.16-0.19 | 6.6-7.8 | <2 | Low-------- | 0.32 | 5 | 5 | 3-6 |
| | 9-28 | 10-20 | 1.30-1.40 | 0.6-2.0 | 0.16-0.19 | 6.6-7.8 | <2 | Low-------- | 0.32 | | | |
| | 28-35 | 10-20 | 1.30-1.45 | 0.6-2.0 | 0.14-0.19 | 6.6-7.8 | <2 | Low-------- | 0.43 | | | |
| | 35-60 | 5-15 | 1.35-1.55 | 2.0-6.0 | 0.05-0.08 | 7.4-8.4 | 0-2 | Low-------- | 0.10 | | | |
| Bridgewater----- | 0-16 | 10-18 | 1.25-1.45 | 2.0-6.0 | 0.04-0.07 | 6.1-7.3 | <2 | Low-------- | 0.05 | 3 | 3 | 2-4 |
| | 16-34 | 10-22 | 1.45-1.55 | 0.6-6.0 | 0.04-0.07 | 6.6-7.8 | <2 | Low-------- | 0.05 | | | |
| | 34-60 | 0-5 | 1.50-1.65 | >20 | 0.02-0.05 | 6.6-7.8 | <2 | Low-------- | 0.05 | | | |
| 71---------- Larabee | 0-4 | 18-26 | 1.20-1.40 | 0.6-2.0 | 0.17-0.20 | 6.1-6.5 | 0-0 | Moderate | 0.32 | 2 | 6 | 4-6 |
| | 4-10 | 18-24 | 1.25-1.45 | 0.6-2.0 | 0.14-0.18 | 5.6-6.0 | 0-0 | Moderate | 0.24 | | | |
| | 10-20 | 24-32 | 1.30-1.50 | 0.2-0.6 | 0.10-0.15 | 5.6-6.0 | 0-0 | Moderate | 0.15 | | | |
| | 20-29 | 30-40 | 1.30-1.50 | 0.2-0.6 | 0.04-0.12 | 5.6-6.0 | 0-0 | High------ | 0.05 | | | |
| | 29 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| 72: | | | | | | | | | | | | |
| Larabee--------- | 0-4 | 18-26 | 1.20-1.40 | 0.6-2.0 | 0.17-0.20 | 6.1-6.5 | 0-0 | Moderate | 0.32 | 2 | 6 | 4-6 |
| | 4-10 | 18-24 | 1.25-1.45 | 0.6-2.0 | 0.14-0.18 | 5.6-6.0 | 0-0 | Moderate | 0.24 | | | |
| | 10-20 | 24-32 | 1.30-1.50 | 0.2-0.6 | 0.10-0.15 | 5.6-6.0 | 0-0 | Moderate | 0.15 | | | |
| | 20-29 | 30-40 | 1.30-1.50 | 0.2-0.6 | 0.04-0.12 | 5.6-6.0 | 0-0 | High------ | 0.05 | | | |
| | 29 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| Gwin---------- | 0-6 | 20-27 | 1.20-1.35 | 0.6-2.0 | 0.10-0.15 | 6.1-7.3 | 0-0 | Moderate | 0.15 | 1 | 8 | 2-3 |
| | 6-12 | 24-35 | 1.20-1.40 | 0.2-0.6 | 0.08-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.10 | | | |
| | 12 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| 73: | | | | | | | | | | | | |
| Larabee--------- | 0-4 | 18-26 | 1.20-1.40 | 0.6-2.0 | 0.17-0.20 | 6.1-6.5 | 0-0 | Moderate | 0.32 | 2 | 6 | 4-6 |
| | 4-10 | 18-24 | 1.25-1.45 | 0.6-2.0 | 0.14-0.18 | 5.6-6.0 | 0-0 | Moderate | 0.24 | | | |
| | 10-20 | 24-32 | 1.30-1.50 | 0.2-0.6 | 0.10-0.15 | 5.6-6.0 | 0-0 | Moderate | 0.15 | | | |
| | 20-29 | 30-40 | 1.30-1.50 | 0.2-0.6 | 0.04-0.12 | 5.6-6.0 | 0-0 | High------ | 0.05 | | | |
| | 29 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| Zaza---------- | 0-4 | 10-18 | 1.15-1.35 | 0.6-2.0 | 0.10-0.15 | 5.6-6.5 | <2 | Low-------- | 0.20 | 1 | 5 | .5-4 |
| | 4-8 | 10-18 | 1.20-1.40 | 0.6-2.0 | 0.10-0.15 | 5.6-6.5 | <2 | Low-------- | 0.15 | | | |
| | 8-14 | 10-18 | 1.20-1.40 | 0.6-2.0 | 0.08-0.14 | 5.6-6.5 | <2 | Low-------- | 0.10 | | | |
| | 14 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| Seddow---------- | 0-4 | 14-24 | 0.75-1.10 | 0.6-2.0 | 0.19-0.24 | 5.6-6.5 | --- | Low-------- | 0.43 | 3 | 5 | 2-6 |
| | 4-13 | 14-24 | 0.90-1.20 | 0.6-2.0 | 0.17-0.24 | 5.1-6.0 | --- | Low-------- | 0.43 | | | |
| | 13-29 | 24-38 | 1.25-1.45 | 0.2-0.6 | 0.12-0.18 | 5.1-6.0 | --- | Moderate | 0.20 | | | |
| | 29-48 | 35-40 | 1.25-1.40 | 0.2-0.6 | 0.07-0.10 | 5.6-6.5 | --- | Moderate | 0.05 | | | |
| | 48 | --- | --- | --- | --- | --- | --- | --- | --- | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 74: | | | | | | | | | | | | |
| Larkin---------- | 0-19 | 15-24 | 1.15-1.30 | 0.6-2.0 | 0.19-0.21 | 5.6-7.3 | 0-0 | Low-------- | 0.32 | 5 | 6 | 3-5 |
| | 19-61 | 24-35 | 1.20-1.40 | 0.2-0.6 | 0.19-0.21 | 5.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| Driscoll-------- | 0-13 | 18-26 | 1.30-1.50 | 0.6-2.0 | 0.19-0.24 | 5.6-7.3 | 0-0 | Low-------- | 0.32 | 5 | 5 | 3-5 |
| | 13-31 | 12-26 | 1.45-1.55 | 0.6-2.0 | 0.19-0.24 | 5.6-7.3 | 0-0 | Low-------- | 0.55 | | | |
| | 31-46 | 38-55 | 1.50-1.55 | 0.06-0.2 | 0.15-0.20 | 5.6-7.3 | 0-0 | High------- | 0.37 | | | |
| | 46-60 | 32-38 | 1.40-1.50 | 0.06-0.2 | 0.19-0.21 | 6.1-7.3 | 0-0 | High------- | 0.43 | | | |
| 75: | | | | | | | | | | | | |
| Latahco---------- | 0-13 | 15-25 | 1.15-1.35 | 0.6-2.0 | 0.19-0.21 | 6.1-7.3 | 0-0 | Moderate | 0.32 | 5 | 6 | 4-7 |
| | 13-22 | 15-25 | 1.15-1.35 | 0.6-2.0 | 0.19-0.21 | 6.1-7.3 | 0-0 | Moderate | 0.37 | | | |
| | 22-35 | 8-16 | 1.30-1.40 | 0.6-2.0 | 0.16-0.18 | 6.1-7.3 | 0-0 | Low-------- | 0.55 | | | |
| | 35-60 | 25-35 | 1.30-1.50 | 0.2-0.6 | 0.17-0.19 | 7.4-8.4 | 0-0 | Moderate | 0.49 | | | |
| Thatuna---------- | 0-16 | 18-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Moderate | 0.32 | 5 | 6 | 3-6 |
| | 16-31 | 18-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Moderate | 0.37 | | | |
| | 31-37 | 10-18 | 1.20-1.45 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Low-------- | 0.55 | | | |
| | 37-61 | 27-35 | 1.60-1.70 | 0.06-0.2 | 0.12-0.18 | 6.6-7.3 | 0-0 | Moderate | 0.49 | | | |
| 76: | | | | | | | | | | | | |
| Lauby---------- | 0-17 | 20-26 | 1.20-1.30 | 0.2-2.0 | 0.19-0.24 | 5.6-6.5 | --- | Low-------- | 0.32 | 5 | 6 | 3-5 |
| | 17-24 | 20-30 | 1.30-1.40 | 0.6-2.0 | 0.19-0.21 | 6.1-7.3 | --- | Low-------- | 0.37 | | | |
| | 24-50 | 28-37 | 1.30-1.40 | 0.2-0.6 | 0.19-0.21 | 6.1-7.3 | --- | Moderate | 0.32 | | | |
| | 50-60 | 10-18 | 1.30-1.50 | 0.6-2.0 | 0.13-0.17 | 6.1-7.3 | --- | Low-------- | 0.37 | | | |
| Southwick-------- | 0-9 | 18-26 | 1.15-1.45 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | --- | Moderate | 0.32 | 5 | 5 | 2-5 |
| | 9-26 | 20-27 | 1.25-1.50 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | --- | Moderate | 0.49 | | | |
| | 26-32 | 12-20 | 1.35-1.55 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | --- | Low-------- | 0.55 | | | |
| | 32-46 | 27-34 | 1.60-1.70 | 0.00-0.06 | 0.08-0.18 | 5.6-6.5 | --- | Moderate | 0.43 | | | |
| | 46-64 | 30-38 | 1.45-1.65 | 0.2-0.6 | 0.10-0.20 | 5.6-7.3 | --- | Moderate | 0.43 | | | |
| 77: | | | | | | | | | | | | |
| Lickskillet------ | 0-5 | 22-27 | 1.15-1.35 | 0.6-2.0 | 0.12-0.15 | 6.6-7.8 | 0-0 | Moderate | 0.17 | 1 | 8 | 1-2 |
| | 5-16 | 23-33 | 1.30-1.40 | 0.6-2.0 | 0.06-0.09 | 6.6-8.4 | 0-2 | Moderate | 0.10 | | | |
| | 16 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| Alpowa---------- | 0-8 | 15-18 | 1.15-1.25 | 0.6-2.0 | 0.12-0.18 | 7.4-7.8 | <2 | Low-------- | 0.24 | 5 | 5 | 2-4 |
| | 8-13 | 15-18 | 1.25-1.45 | 0.6-2.0 | 0.08-0.12 | 7.4-7.8 | <2 | Low-------- | 0.20 | | | |
| | 13-60 | 15-18 | 1.25-1.45 | 0.6-2.0 | 0.07-0.12 | 7.4-9.0 | <2 | Low-------- | 0.17 | | | |
| Rock outcrop. | | | | | | | | | | | | |
| 78---------- Limekiln | 0-8 | 18-24 | 1.10-1.30 | 0.6-2.0 | 0.10-0.14 | 6.6-7.8 | <2 | Low-------- | 0.17 | 1 | 6 | 1-3 |
| | 8-13 | 18-24 | 1.25-1.45 | 0.6-2.0 | 0.08-0.12 | 7.9-8.4 | 0-2 | Low-------- | 0.17 | | | |
| | 13-16 | 18-24 | 1.25-1.45 | 0.6-2.0 | 0.06-0.12 | 7.9-9.0 | 0-2 | Low-------- | 0.10 | | | |
| | 16 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| 79: | | | | | | | | | | | | |
| Limekiln-------- | 0-8 | 18-24 | 1.10-1.30 | 0.6-2.0 | 0.10-0.14 | 6.6-7.8 | <2 | Low-------- | 0.17 | 1 | 6 | 1-3 |
| | 8-13 | 18-24 | 1.25-1.45 | 0.6-2.0 | 0.08-0.12 | 7.9-8.4 | 0-2 | Low-------- | 0.17 | | | |
| | 13-16 | 18-24 | 1.25-1.45 | 0.6-2.0 | 0.06-0.12 | 7.9-9.0 | 0-2 | Low-------- | 0.10 | | | |
| | 16 | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| Crowers---------- | 0-10 | 12-16 | 1.00-1.15 | 0.6-2.0 | 0.19-0.21 | 6.6-7.8 | <2 | Low-------- | 0.28 | 5 | 5 | 4-6 |
| | 10-27 | 12-16 | 1.05-1.20 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | <2 | Low-------- | 0.32 | | | |
| | 27-31 | 16-22 | 1.20-1.40 | 0.6-2.0 | 0.14-0.20 | 6.6-7.8 | <2 | Moderate | 0.32 | | | |
| | 31-41 | 16-24 | 1.25-1.45 | 0.6-2.0 | 0.09-0.13 | 7.9-8.4 | <2 | Moderate | 0.15 | | | |
| | 41-62 | 16-24 | 1.25-1.45 | 0.6-2.0 | 0.13-0.18 | 7.9-8.4 | <2 | Moderate | 0.28 | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 80---------- Linville | 0-19 | 15-25 | 1.15-1.25 | 0.6-2.0 | 0.17-0.20 | 6.6-7.8 | --- | Low------- | 0.37 | 5 | 5 | 2-4 |
| | 19-67 | 20-27 | 1.20-1.40 | 0.6-2.0 | 0.14-0.17 | 7.4-8.4 | --- | Low------- | 0.32 | | | |
| 81: | | | | | | | | | | | | |
| Linville-------- | 0-19 | 15-25 | 1.15-1.25 | 0.6-2.0 | 0.17-0.20 | 6.6-7.8 | --- | Low------- | 0.37 | 5 | 5 | 2-4 |
| | 19-67 | 20-27 | 1.20-1.40 | 0.6-2.0 | 0.14-0.17 | 7.4-8.4 | --- | Low------- | 0.32 | | | |
| Kettenbach------ | 0-4 | 20-27 | 1.10-1.30 | 0.6-2.0 | 0.14-0.16 | 6.1-7.3 | 0-0 | Moderate | 0.24 | 2 | 8 | 2-4 |
| | 4-10 | 20-30 | 1.15-1.35 | 0.2-0.6 | 0.10-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.28 | | | |
| | 10-25 | 24-35 | 1.25-1.45 | 0.2-0.6 | 0.06-0.12 | 6.1-7.3 | 0-0 | Moderate | 0.10 | | | |
| | 25 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 82: | | | | | | | | | | | | |
| Linville-------- | 0-19 | 15-25 | 1.15-1.25 | 0.6-2.0 | 0.17-0.20 | 6.6-7.8 | --- | Low------- | 0.37 | 5 | 5 | 2-4 |
| | 19-67 | 20-27 | 1.20-1.40 | 0.6-2.0 | 0.14-0.17 | 7.4-8.4 | --- | Low------- | 0.32 | | | |
| Waha---------- | 0-13 | 20-25 | 1.15-1.25 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | 0-0 | Low------- | 0.43 | 2 | 6 | 2-3 |
| | 13-29 | 24-35 | 1.20-1.30 | 0.2-0.6 | 0.17-0.19 | 6.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| | 29-34 | 27-38 | 1.20-1.30 | 0.2-0.6 | 0.13-0.17 | 6.6-7.3 | 0-0 | Moderate | 0.20 | | | |
| | 34 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 83: | | | | | | | | | | | | |
| Mallory--------- | 0-7 | 20-27 | 1.15-1.35 | 0.6-2.0 | 0.09-0.13 | 6.1-7.3 | <2 | Moderate | 0.15 | 2 | 8 | 4-5 |
| | 7-15 | 28-40 | 1.20-1.40 | 0.2-0.6 | 0.09-0.13 | 6.1-7.3 | <2 | High------ | 0.10 | | | |
| | 15-34 | 36-45 | 1.20-1.40 | 0.06-0.2 | 0.05-0.10 | 6.1-7.3 | <2 | High------ | 0.05 | | | |
| | 34 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Jacket---------- | 0-7 | 22-26 | 1.10-1.30 | 0.6-2.0 | 0.19-0.23 | 6.1-7.3 | <2 | Low------- | 0.32 | 5 | 6 | 4-6 |
| | 7-27 | 27-35 | 1.20-1.40 | 0.2-0.6 | 0.16-0.21 | 6.1-7.3 | <2 | Moderate | 0.49 | | | |
| | 27-56 | 35-50 | 1.30-1.50 | 0.06-0.2 | 0.13-0.16 | 6.6-7.8 | <2 | High------ | 0.43 | | | |
| | 56-63 | 35-50 | 1.30-1.50 | 0.06-0.2 | 0.13-0.16 | 6.6-7.8 | <2 | High------ | 0.37 | | | |
| 84: | | | | | | | | | | | | |
| Maloney--------- | 0-5 | 16-24 | 0.95-1.15 | 0.6-2.0 | 0.13-0.18 | 6.1-6.5 | 0-0 | Low------- | 0.24 | 2 | 5 | 3-6 |
| | 5-25 | 18-24 | 1.05-1.25 | 0.6-2.0 | 0.13-0.18 | 5.6-6.5 | 0-0 | Low------- | 0.28 | | | |
| | 25 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Zaza---------- | 0-4 | 10-18 | 1.15-1.35 | 0.6-2.0 | 0.10-0.15 | 5.6-6.5 | <2 | Low------- | 0.20 | 1 | 5 | .5-4 |
| | 4-8 | 10-18 | 1.20-1.40 | 0.6-2.0 | 0.10-0.15 | 5.6-6.5 | <2 | Low------- | 0.15 | | | |
| | 8-14 | 10-18 | 1.20-1.40 | 0.6-2.0 | 0.08-0.14 | 5.6-6.5 | <2 | Low------- | 0.10 | | | |
| | 14 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 85: | | | | | | | | | | | | |
| Meland---------- | 0-16 | 18-27 | 1.30-1.50 | 0.6-2.0 | 0.19-0.21 | 5.6-6.5 | 0-0 | Low------- | 0.37 | 2 | 5 | 4-6 |
| | 16-35 | 27-35 | 1.40-1.60 | 0.2-0.6 | 0.18-0.20 | 5.6-6.5 | 0-0 | Moderate | 0.24 | | | |
| | 35 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Jacket---------- | 0-7 | 22-26 | 1.10-1.30 | 0.6-2.0 | 0.19-0.23 | 6.1-7.3 | 0-0 | Low------- | 0.32 | 5 | 6 | 4-6 |
| | 7-27 | 27-35 | 1.20-1.40 | 0.2-0.6 | 0.16-0.21 | 6.1-7.3 | 0-0 | High------ | 0.49 | | | |
| | 27-56 | 35-50 | 1.30-1.50 | 0.06-0.2 | 0.13-0.16 | 6.6-7.8 | 0-0 | High------ | 0.43 | | | |
| | 56-63 | 35-50 | 1.30-1.50 | 0.06-0.2 | 0.13-0.16 | 6.6-7.8 | 0-0 | High------ | 0.37 | | | |
| 86: | | | | | | | | | | | | |
| Meland---------- | 0-16 | 18-27 | 1.30-1.50 | 0.6-2.0 | 0.19-0.21 | 5.6-6.5 | 0-0 | Low------- | 0.37 | 2 | 5 | 4-6 |
| | 16-35 | 27-35 | 1.40-1.60 | 0.2-0.6 | 0.18-0.20 | 5.6-6.5 | 0-0 | Moderate | 0.24 | | | |
| | 35 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Keuterville----- | 0-13 | 18-25 | 1.20-1.35 | 0.6-2.0 | 0.12-0.14 | 6.1-7.3 | 0-0 | Low------- | 0.24 | 5 | 8 | 4-6 |
| | 13-49 | 26-35 | 1.40-1.55 | 0.2-0.6 | 0.06-0.10 | 6.1-7.3 | 0-0 | Low------- | 0.10 | | | |
| | 49-61 | 20-30 | 1.40-1.55 | 0.2-0.6 | 0.06-0.08 | 6.1-7.3 | 0-0 | Low------- | 0.10 | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 87: | | | | | | | | | | | | |
| Mohler---------- | 0-11 | 27-30 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 5.6-7.3 | 0-0 | Low-------- | 0.32 | 5 | 6 | 4-7 |
| | 11-23 | 20-27 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | 0-0 | Low-------- | 0.43 | | | |
| | 23-29 | 24-34 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | 0-0 | Moderate | 0.49 | | | |
| | 29-68 | 28-35 | 1.25-1.50 | 0.2-0.6 | 0.17-0.20 | 6.6-7.8 | 0-0 | Moderate | 0.43 | | | |
| Nez Perce-------- | 0-11 | 27-32 | 1.10-1.25 | 0.6-2.0 | 0.19-0.25 | 5.6-7.3 | 0-0 | Low-------- | 0.32 | 5 | 7 | 5-7 |
| | 11-15 | 16-24 | 1.10-1.25 | 0.6-2.0 | 0.19-0.25 | 6.1-7.3 | 0-0 | Moderate | 0.49 | | | |
| | 15-21 | 10-20 | 1.30-1.50 | 0.6-2.0 | 0.19-0.25 | 6.1-7.3 | 0-0 | Low-------- | 0.55 | | | |
| | 21-31 | 40-55 | 1.20-1.30 | 0.06-0.2 | 0.12-0.18 | 6.6-8.4 | 0-2 | Very high | 0.32 | | | |
| | 31-66 | 30-55 | 1.25-1.40 | 0.06-0.2 | 0.15-0.18 | 7.9-9.0 | 0-2 | Very high | 0.32 | | | |
| Uhlorn---------- | 0-7 | 20-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 5.6-7.3 | <2 | Low-------- | 0.37 | 5 | 6 | 4-7 |
| | 7-17 | 20-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 5.6-7.3 | <2 | Low-------- | 0.43 | | | |
| | 17-23 | 24-32 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |
| | 23-55 | 28-34 | 1.25-1.50 | 0.2-0.6 | 0.17-0.20 | 6.6-7.8 | <2 | Moderate | 0.43 | | | |
| | 55-69 | 35-38 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.6-7.8 | <2 | High------ | 0.43 | | | |
| 88---------- Naff | 0-18 | 15-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | <2 | Low-------- | 0.37 | 5 | 6 | 2-4 |
| | 18-25 | 26-35 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Moderate | 0.43 | | | |
| | 25-60 | 30-35 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |
| 89, 90: | | | | | | | | | | | | |
| Naff---------- | 0-18 | 15-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | <2 | Low-------- | 0.37 | 5 | 6 | 2-4 |
| | 18-25 | 26-35 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Moderate | 0.43 | | | |
| | 25-60 | 30-35 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |
| Palouse--------- | 0-15 | 18-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | 0-0 | Low-------- | 0.32 | 5 | 6 | 2-4 |
| | 15-27 | 18-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | 0-0 | Low-------- | 0.43 | | | |
| | 27-50 | 20-27 | 1.20-1.40 | 0.6-2.0 | 0.18-0.20 | 6.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| | 50-63 | 24-30 | 1.20-1.45 | 0.6-2.0 | 0.16-0.20 | 6.6-7.8 | 0-0 | Moderate | 0.49 | | | |
| 91: | | | | | | | | | | | | |
| Naff---------- | 0-12 | 15-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | <2 | Low-------- | 0.37 | 5 | 6 | 2-4 |
| | 12-20 | 26-35 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Moderate | 0.43 | | | |
| | 20-60 | 30-35 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |
| Palouse--------- | 0-15 | 18-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | 0-0 | Low-------- | 0.32 | 5 | 6 | 2-4 |
| | 15-27 | 18-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | 0-0 | Low-------- | 0.43 | | | |
| | 27-50 | 20-27 | 1.20-1.40 | 0.6-2.0 | 0.18-0.20 | 6.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| | 50-63 | 24-30 | 1.20-1.45 | 0.6-2.0 | 0.16-0.20 | 6.6-7.8 | 0-0 | Moderate | 0.49 | | | |
| 92: | | | | | | | | | | | | |
| Naff---------- | 0-12 | 15-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | <2 | Low-------- | 0.37 | 5 | 6 | 2-4 |
| | 12-20 | 26-35 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Moderate | 0.43 | | | |
| | 20-60 | 30-35 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |
| Palouse--------- | 0-15 | 18-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | 0-0 | Low-------- | 0.32 | 5 | 6 | 2-4 |
| | 15-27 | 18-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | 0-0 | Low-------- | 0.43 | | | |
| | 27-50 | 20-27 | 1.20-1.40 | 0.6-2.0 | 0.18-0.20 | 6.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| | 50-63 | 24-30 | 1.20-1.45 | 0.6-2.0 | 0.16-0.20 | 6.6-7.8 | 0-0 | Moderate | 0.49 | | | |
| Garfield-------- | 0-4 | 30-40 | 1.15-1.35 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Moderate | 0.32 | 3 | 4 | 2-3 |
| | 4-29 | 35-55 | 1.25-1.50 | 0.06-0.2 | 0.14-0.16 | 6.6-8.4 | <2 | High------ | 0.28 | | | |
| | 29-61 | 25-40 | 1.20-1.45 | 0.2-0.6 | 0.18-0.21 | 6.6-8.4 | <2 | Moderate | 0.32 | | | |
| 93: | | | | | | | | | | | | |
| Naff---------- | 0-18 | 15-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | <2 | Low-------- | 0.37 | 5 | 6 | 2-4 |
| | 18-25 | 26-35 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Moderate | 0.43 | | | |
| | 25-60 | 30-35 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea-bility | Available water capacity | Soil reaction | Salinity | Shrink-swell potential | Erosion factors K | Erosion factors T | Wind erodi-bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 93: | | | | | | | | | | | | |
| Thatuna--------- | 0-16 | 18-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Moderate | 0.32 | 5 | 6 | 3-6 |
| | 16-31 | 18-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Moderate | 0.37 | | | |
| | 31-37 | 10-18 | 1.20-1.45 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Low------- | 0.55 | | | |
| | 37-61 | 27-35 | 1.60-1.70 | 0.06-0.2 | 0.12-0.18 | 6.6-7.3 | 0-0 | Moderate | 0.49 | | | |
| 94, 95, 96: | | | | | | | | | | | | |
| Naff---------- | 0-18 | 15-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | <2 | Low------- | 0.37 | 5 | 6 | 2-4 |
| | 18-25 | 26-35 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Moderate | 0.43 | | | |
| | 25-60 | 30-35 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |
| Waha---------- | 0-13 | 20-25 | 1.15-1.25 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | 0-0 | Low------- | 0.43 | 2 | 6 | 2-3 |
| | 13-29 | 24-35 | 1.20-1.30 | 0.2-0.6 | 0.17-0.19 | 6.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| | 29-34 | 27-38 | 1.20-1.30 | 0.2-0.6 | 0.13-0.17 | 6.6-7.3 | 0-0 | Moderate | 0.20 | | | |
| | 34 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 97---------- Nez Perce | 0-11 | 27-32 | 1.10-1.25 | 0.6-2.0 | 0.19-0.25 | 5.6-7.3 | 0-0 | Low------- | 0.32 | 5 | 7 | 5-7 |
| | 11-15 | 16-24 | 1.10-1.25 | 0.6-2.0 | 0.19-0.25 | 6.1-7.3 | 0-0 | Moderate | 0.49 | | | |
| | 15-21 | 10-20 | 1.30-1.50 | 0.6-2.0 | 0.19-0.25 | 6.1-7.3 | 0-0 | Low------- | 0.55 | | | |
| | 21-31 | 40-55 | 1.20-1.30 | 0.06-0.2 | 0.12-0.18 | 6.6-8.4 | 0-2 | Very high | 0.32 | | | |
| | 31-66 | 30-55 | 1.25-1.40 | 0.06-0.2 | 0.15-0.18 | 7.9-9.0 | 0-2 | Very high | 0.32 | | | |
| 98---------- Nez Perce | 0-9 | 27-32 | 1.10-1.25 | 0.6-2.0 | 0.19-0.25 | 5.6-7.3 | 0-0 | Low------- | 0.32 | 5 | 7 | 5-7 |
| | 9-15 | 16-24 | 1.10-1.25 | 0.6-2.0 | 0.19-0.25 | 6.1-7.3 | 0-0 | Moderate | 0.49 | | | |
| | 15-19 | 10-20 | 1.30-1.50 | 0.6-2.0 | 0.19-0.25 | 6.1-7.3 | 0-0 | Low------- | 0.55 | | | |
| | 19-31 | 40-55 | 1.20-1.30 | 0.06-0.2 | 0.12-0.18 | 6.6-8.4 | 0-2 | Very high | 0.32 | | | |
| | 31-67 | 30-55 | 1.25-1.40 | 0.06-0.2 | 0.15-0.18 | 7.9-9.0 | 0-2 | Very high | 0.32 | | | |
| 99: | | | | | | | | | | | | |
| Nez Perce------- | 0-11 | 27-32 | 1.10-1.25 | 0.6-2.0 | 0.19-0.25 | 5.6-7.3 | 0-0 | Low------- | 0.32 | 5 | 7 | 5-7 |
| | 11-15 | 16-24 | 1.10-1.25 | 0.6-2.0 | 0.19-0.25 | 6.1-7.3 | 0-0 | Moderate | 0.49 | | | |
| | 15-21 | 10-20 | 1.30-1.50 | 0.6-2.0 | 0.19-0.25 | 6.1-7.3 | 0-0 | Low------- | 0.55 | | | |
| | 21-31 | 40-55 | 1.20-1.30 | 0.06-0.2 | 0.12-0.18 | 6.6-8.4 | 0-2 | Very high | 0.32 | | | |
| | 31-66 | 30-55 | 1.25-1.40 | 0.06-0.2 | 0.15-0.18 | 7.9-9.0 | 0-2 | Very high | 0.32 | | | |
| Uhlorn---------- | 0-7 | 20-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 5.6-7.3 | <2 | Low------- | 0.37 | 5 | 6 | 4-7 |
| | 7-17 | 20-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 5.6-7.3 | <2 | Low------- | 0.43 | | | |
| | 17-23 | 24-32 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |
| | 23-55 | 28-34 | 1.25-1.50 | 0.2-0.6 | 0.17-0.20 | 6.6-7.8 | <2 | Moderate | 0.43 | | | |
| | 55-69 | 35-38 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.6-7.8 | <2 | High------ | 0.43 | | | |
| 100, 101--------- Oliphant | 0-16 | 12-18 | 1.15-1.35 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | <2 | Low------- | 0.43 | 5 | 5 | 2-4 |
| | 16-24 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.4-8.4 | <2 | Low------- | 0.49 | | | |
| | 24-29 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.4-8.4 | <2 | Low------- | 0.55 | | | |
| | 29-62 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.9-9.0 | <2 | Low------- | 0.55 | | | |
| 102---------- Oliphant, gravelly substratum | 0-8 | 12-18 | 1.15-1.35 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | 0-0 | Low------- | 0.43 | 5 | 5 | 2-4 |
| | 8-26 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.4-8.4 | 0-0 | Low------- | 0.49 | | | |
| | 26-36 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.4-8.4 | 0-0 | Low------- | 0.55 | | | |
| | 36-62 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.10-0.18 | 8.5-9.0 | 0-2 | Low------- | 0.20 | | | |
| 103: | | | | | | | | | | | | |
| Oliphant-------- | 0-16 | 12-18 | 1.15-1.35 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | <2 | Low------- | 0.43 | 5 | 5 | 2-4 |
| | 16-24 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.4-8.4 | <2 | Low------- | 0.49 | | | |
| | 24-29 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.4-8.4 | <2 | Low------- | 0.55 | | | |
| | 29-62 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.9-9.0 | <2 | Low------- | 0.55 | | | |
| Alpowa---------- | 0-12 | 10-15 | 1.20-1.30 | 2.0-6.0 | 0.16-0.18 | 7.4-8.4 | 0-0 | Low------- | 0.43 | 2 | 6 | 1-3 |
| | 12-60 | 10-15 | 1.30-1.40 | 0.6-6.0 | 0.04-0.10 | 7.9-8.4 | 0-2 | Low------- | 0.15 | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 104: | | | | | | | | | | | | |
| Oliphant-------- | 0-16 | 12-18 | 1.15-1.35 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | <2 | Low-------- | 0.43 | 5 | 5 | 2-4 |
| | 16-24 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.4-8.4 | <2 | Low-------- | 0.49 | | | |
| | 24-29 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.4-8.4 | <2 | Low-------- | 0.55 | | | |
| | 29-62 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.9-9.0 | <2 | Low-------- | 0.55 | | | |
| Hatwai---------- | 0-13 | 14-22 | 1.20-1.30 | 0.6-2.0 | 0.18-0.20 | 6.1-7.3 | --- | Low-------- | 0.43 | 2 | 5 | 2-3 |
| | 13-21 | 10-18 | 1.20-1.30 | 0.6-2.0 | 0.18-0.20 | 6.6-7.8 | --- | Low-------- | 0.55 | | | |
| | 21-36 | 22-34 | 1.25-1.40 | 0.06-0.2 | 0.10-0.16 | 7.9-9.0 | 0-2 | Moderate | 0.49 | | | |
| | 36-66 | 16-30 | 1.20-1.40 | 0.2-0.6 | 0.10-0.16 | 7.9-9.6 | 2-4 | Low-------- | 0.55 | | | |
| 105: | | | | | | | | | | | | |
| Oliphant-------- | 0-8 | 12-18 | 1.15-1.35 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | 0-0 | Low-------- | 0.43 | 5 | 5 | 2-4 |
| | 8-26 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.4-8.4 | 0-0 | Low-------- | 0.49 | | | |
| | 26-36 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.18-0.21 | 7.4-8.4 | 0-0 | Low-------- | 0.55 | | | |
| | 36-62 | 12-18 | 1.25-1.45 | 0.6-2.0 | 0.10-0.18 | 8.5-9.0 | 0-2 | Low-------- | 0.20 | | | |
| Stember--------- | 0-9 | 18-25 | 1.15-1.30 | 0.6-2.0 | 0.16-0.18 | 7.9-8.4 | 0-2 | Low-------- | 0.37 | 2 | 5 | 2-3 |
| | 9-13 | 18-25 | 1.25-1.45 | 0.6-2.0 | 0.10-0.15 | 7.9-8.4 | 0-2 | Low-------- | 0.20 | | | |
| | 13-30 | 18-23 | 1.25-1.45 | 0.6-2.0 | 0.05-0.12 | 8.5-9.0 | 2-4 | Low-------- | 0.10 | | | |
| | 30 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 106, 107: | | | | | | | | | | | | |
| Palouse--------- | 0-15 | 18-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | 0-0 | Low-------- | 0.32 | 5 | 6 | 2-4 |
| | 15-27 | 18-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | 0-0 | Low-------- | 0.43 | | | |
| | 27-50 | 20-27 | 1.20-1.40 | 0.6-2.0 | 0.18-0.20 | 6.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| | 50-63 | 24-30 | 1.20-1.45 | 0.6-2.0 | 0.16-0.20 | 6.6-7.8 | 0-0 | Moderate | 0.49 | | | |
| Athena---------- | 0-14 | 16-22 | 1.15-1.30 | 0.6-2.0 | 0.19-0.21 | 6.1-7.3 | 0-0 | Low-------- | 0.37 | 5 | 5 | 2-4 |
| | 14-44 | 18-25 | 1.20-1.40 | 0.6-2.0 | 0.17-0.20 | 6.6-7.8 | 0-0 | Low-------- | 0.49 | | | |
| | 44-64 | 14-22 | 1.25-1.50 | 0.6-2.0 | 0.16-0.18 | 7.4-8.4 | 0-0 | Low-------- | 0.49 | | | |
| 108. | | | | | | | | | | | | |
| Pits, gravel | | | | | | | | | | | | |
| 109---------- | 0-12 | 18-24 | 1.30-1.50 | 0.6-2.0 | 0.17-0.19 | 5.1-6.5 | 0-2 | Low-------- | 0.37 | 2 | 5 | 3-4 |
| Redmore | 12-19 | 30-45 | 1.30-1.50 | 0.06-0.2 | 0.10-0.15 | 7.4-9.0 | 0-2 | High------ | 0.43 | | | |
| | 19-35 | 26-35 | 1.30-1.50 | 0.2-0.6 | 0.15-0.19 | 8.5-9.6 | 0-4 | Moderate | 0.55 | | | |
| | 35-42 | 14-25 | 1.30-1.50 | 0.6-2.0 | 0.16-0.18 | 8.5-9.6 | 2-4 | Low-------- | 0.43 | | | |
| | 42-46 | 10-14 | 1.30-1.50 | 0.6-2.0 | 0.07-0.11 | 8.5-9.6 | 2-4 | Low-------- | 0.17 | | | |
| | 46-60 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 110: | | | | | | | | | | | | |
| Riverwash. | | | | | | | | | | | | |
| Aquents--------- | 0-2 | 10-18 | 1.40-1.60 | 2.0-6.0 | 0.12-0.17 | 6.1-7.3 | 0-0 | Low-------- | 0.05 | 5 | 8 | .5-2 |
| | 2-60 | 0-20 | 1.40-1.60 | 6.0-20 | 0.02-0.08 | 6.1-7.3 | 0-0 | Low-------- | 0.02 | | | |
| 111: | | | | | | | | | | | | |
| Rock outcrop. | | | | | | | | | | | | |
| Flybow---------- | 0-4 | 15-25 | 1.25-1.40 | 0.6-2.0 | 0.08-0.12 | 6.1-7.3 | <2 | Low-------- | 0.15 | 1 | 8 | <1 |
| | 4 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 112---------- | 0-4 | 14-24 | 0.75-1.10 | 0.6-2.0 | 0.19-0.24 | 5.6-6.5 | --- | Low-------- | 0.43 | 3 | 5 | 2-6 |
| Seddow | 4-13 | 14-24 | 0.90-1.20 | 0.6-2.0 | 0.17-0.24 | 5.1-6.0 | --- | Low-------- | 0.43 | | | |
| | 13-29 | 24-38 | 1.25-1.45 | 0.2-0.6 | 0.12-0.18 | 5.1-6.0 | --- | Moderate | 0.20 | | | |
| | 29-48 | 35-40 | 1.25-1.40 | 0.2-0.6 | 0.07-0.10 | 5.6-6.5 | --- | Moderate | 0.05 | | | |
| | 48 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 113---------- Setters | 0-12 | 20-26 | 1.15-1.45 | 0.6-2.0 | 0.18-0.22 | 5.1-6.5 | --- | Moderate | 0.43 | 2 | 6 | 2-5 |
| | 12-17 | 15-26 | 1.25-1.55 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | --- | Moderate | 0.55 | | | |
| | 17-19 | 15-20 | 1.40-1.55 | 0.6-2.0 | 0.18-0.22 | 5.6-6.5 | --- | Low-------- | 0.55 | | | |
| | 19-61 | 35-50 | 1.30-1.40 | 0.06-0.2 | 0.15-0.20 | 5.6-7.3 | --- | Very high | 0.37 | | | |
| 114---------- Shilla | 0-1 | --- | 0.75-0.90 | 0.6-2.0 | 0.16-0.24 | 5.6-6.5 | --- | Low-------- | 0.20 | 4 | 5 | 4-8 |
| | 1-16 | --- | 0.75-0.90 | 0.6-2.0 | 0.16-0.24 | 5.6-6.5 | --- | Low-------- | 0.24 | | | |
| | 16-24 | 24-30 | 1.35-1.45 | 0.2-0.6 | 0.15-0.20 | 5.6-6.5 | --- | Moderate | 0.37 | | | |
| | 24-53 | 28-38 | 1.35-1.45 | 0.2-0.6 | 0.07-0.15 | 5.6-7.3 | --- | Moderate | 0.05 | | | |
| | 53 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 115: | | | | | | | | | | | | |
| Shilla---------- | 0-1 | --- | 0.75-0.90 | 0.6-2.0 | 0.16-0.24 | 5.6-6.5 | --- | Low-------- | 0.20 | 4 | 5 | 4-8 |
| | 1-16 | --- | 0.75-0.90 | 0.6-2.0 | 0.16-0.24 | 5.6-6.5 | --- | Low-------- | 0.24 | | | |
| | 16-24 | 24-30 | 1.35-1.45 | 0.2-0.6 | 0.15-0.20 | 5.6-6.5 | --- | Moderate | 0.37 | | | |
| | 24-53 | 28-38 | 1.35-1.45 | 0.2-0.6 | 0.07-0.15 | 5.6-7.3 | --- | Moderate | 0.05 | | | |
| | 53 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Seddow---------- | 0-4 | 14-24 | 0.75-1.10 | 0.6-2.0 | 0.19-0.24 | 5.6-6.5 | --- | Low-------- | 0.43 | 3 | 5 | 2-6 |
| | 4-13 | 14-24 | 0.90-1.20 | 0.6-2.0 | 0.17-0.24 | 5.1-6.0 | --- | Low-------- | 0.43 | | | |
| | 13-29 | 24-38 | 1.25-1.45 | 0.2-0.6 | 0.12-0.18 | 5.1-6.0 | --- | Moderate | 0.20 | | | |
| | 29-48 | 35-40 | 1.25-1.40 | 0.2-0.6 | 0.07-0.10 | 5.6-6.5 | --- | Moderate | 0.05 | | | |
| | 48 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 116---------- Slickpoo | 0-12 | 18-26 | 1.10-1.25 | 0.6-2.0 | 0.18-0.22 | 6.1-6.5 | <2 | Moderate | 0.43 | 3 | 6 | 2-4 |
| | 12-22 | 22-32 | 1.20-1.40 | 0.2-0.6 | 0.15-0.18 | 6.6-7.8 | <2 | Moderate | 0.37 | | | |
| | 22-37 | 28-36 | 1.30-1.50 | 0.2-0.6 | 0.12-0.18 | 6.6-7.8 | <2 | Moderate | 0.24 | | | |
| | 37-45 | 20-27 | 1.30-1.50 | 0.6-2.0 | 0.10-0.15 | 7.9-8.4 | <2 | Moderate | 0.10 | | | |
| | 45 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 117: | | | | | | | | | | | | |
| Slickpoo-------- | 0-12 | 18-26 | 1.10-1.25 | 0.6-2.0 | 0.18-0.22 | 6.1-6.5 | <2 | Moderate | 0.43 | 3 | 6 | 2-4 |
| | 12-22 | 22-32 | 1.20-1.40 | 0.2-0.6 | 0.15-0.18 | 6.6-7.8 | <2 | Moderate | 0.37 | | | |
| | 22-37 | 28-36 | 1.30-1.50 | 0.2-0.6 | 0.12-0.18 | 6.6-7.8 | <2 | Moderate | 0.24 | | | |
| | 37-45 | 20-27 | 1.30-1.50 | 0.6-2.0 | 0.10-0.15 | 7.9-8.4 | <2 | Moderate | 0.10 | | | |
| | 45 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Broadax--------- | 0-16 | 18-24 | 1.20-1.40 | 0.6-2.0 | 0.18-0.20 | 5.6-7.3 | 0-0 | Moderate | 0.43 | 5 | 6 | 2-4 |
| | 16-33 | 24-35 | 1.20-1.40 | 0.2-0.6 | 0.12-0.20 | 7.4-7.8 | 0-0 | Moderate | 0.43 | | | |
| | 33-37 | 18-25 | 1.20-1.40 | 0.6-2.0 | 0.12-0.20 | 7.4-8.4 | 0-0 | Moderate | 0.49 | | | |
| | 37-65 | 15-25 | 1.20-1.40 | 0.6-2.0 | 0.16-0.20 | 7.9-9.0 | 0-2 | Moderate | 0.49 | | | |
| 118---------- Southwick | 0-9 | 18-26 | 1.15-1.45 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | --- | Moderate | 0.32 | 5 | 5 | 2-5 |
| | 9-26 | 20-27 | 1.25-1.50 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | --- | Moderate | 0.49 | | | |
| | 26-32 | 12-20 | 1.35-1.55 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | --- | Low-------- | 0.55 | | | |
| | 32-46 | 27-34 | 1.60-1.70 | 0.00-0.06 | 0.08-0.18 | 5.6-6.5 | --- | Moderate | 0.43 | | | |
| | 46-64 | 30-38 | 1.45-1.65 | 0.2-0.6 | 0.10-0.20 | 5.6-7.3 | --- | Moderate | 0.43 | | | |
| 119: | | | | | | | | | | | | |
| Southwick-------- | 0-9 | 18-26 | 1.15-1.45 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | --- | Moderate | 0.32 | 5 | 5 | 2-5 |
| | 9-26 | 20-27 | 1.25-1.50 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | --- | Moderate | 0.49 | | | |
| | 26-32 | 12-20 | 1.35-1.55 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | --- | Low-------- | 0.55 | | | |
| | 32-46 | 27-34 | 1.60-1.70 | 0.00-0.06 | 0.08-0.18 | 5.6-6.5 | --- | Moderate | 0.43 | | | |
| | 46-64 | 30-38 | 1.45-1.65 | 0.2-0.6 | 0.10-0.20 | 5.6-7.3 | --- | Moderate | 0.43 | | | |
| Bluesprin-------- | 0-14 | 20-27 | 1.30-1.45 | 0.6-2.0 | 0.19-0.21 | 5.6-7.3 | <2 | Low-------- | 0.37 | 2 | 6 | 2-4 |
| | 14-22 | 25-32 | 1.50-1.65 | 0.2-0.6 | 0.10-0.12 | 6.1-7.3 | <2 | Moderate | 0.15 | | | |
| | 22-28 | 28-34 | 1.50-1.65 | 0.2-0.6 | 0.06-0.08 | 6.1-7.3 | <2 | Moderate | 0.10 | | | |
| | 28 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 120, 121: | | | | | | | | | | | | |
| Southwick------- | 0-9 | 18-26 | 1.15-1.45 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | --- | Moderate | 0.32 | 5 | 5 | 2-5 |
| | 9-26 | 20-27 | 1.25-1.50 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | --- | Moderate | 0.49 | | | |
| | 26-32 | 12-20 | 1.35-1.55 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | --- | Low------- | 0.55 | | | |
| | 32-46 | 27-34 | 1.60-1.70 | 0.00-0.06 | 0.08-0.18 | 5.6-6.5 | --- | Moderate | 0.43 | | | |
| | 46-64 | 30-38 | 1.45-1.65 | 0.2-0.6 | 0.10-0.20 | 5.6-7.3 | --- | Moderate | 0.43 | | | |
| Driscoll-------- | 0-13 | 18-26 | 1.30-1.50 | 0.6-2.0 | 0.19-0.24 | 5.6-7.3 | 0-0 | Low------- | 0.32 | 5 | 5 | 3-5 |
| | 13-31 | 12-26 | 1.45-1.55 | 0.6-2.0 | 0.19-0.24 | 5.6-7.3 | 0-0 | Low------- | 0.55 | | | |
| | 31-46 | 38-55 | 1.50-1.55 | 0.06-0.2 | 0.15-0.20 | 5.6-7.3 | 0-0 | High------ | 0.37 | | | |
| | 46-60 | 32-38 | 1.40-1.50 | 0.06-0.2 | 0.19-0.21 | 6.1-7.3 | 0-0 | High------ | 0.43 | | | |
| 122: | | | | | | | | | | | | |
| Southwick------- | 0-9 | 18-26 | 1.15-1.45 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | --- | Moderate | 0.32 | 5 | 5 | 2-5 |
| | 9-26 | 20-27 | 1.25-1.50 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | --- | Moderate | 0.49 | | | |
| | 26-32 | 12-20 | 1.35-1.55 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | --- | Low------- | 0.55 | | | |
| | 32-46 | 27-34 | 1.60-1.70 | 0.00-0.06 | 0.08-0.18 | 5.6-6.5 | --- | Moderate | 0.43 | | | |
| | 46-64 | 30-38 | 1.45-1.65 | 0.2-0.6 | 0.10-0.20 | 5.6-7.3 | --- | Moderate | 0.43 | | | |
| Larkin---------- | 0-19 | 15-24 | 1.15-1.30 | 0.6-2.0 | 0.19-0.21 | 5.6-7.3 | 0-0 | Low------- | 0.32 | 5 | 6 | 3-5 |
| | 19-61 | 24-35 | 1.20-1.40 | 0.2-0.6 | 0.19-0.21 | 5.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| 123: | | | | | | | | | | | | |
| Sweiting-------- | 0-12 | 20-27 | 1.15-1.25 | 0.6-2.0 | 0.19-0.25 | 5.6-6.5 | 0-0 | Low------- | 0.37 | 2 | 6 | 3-6 |
| | 12-23 | 27-40 | 1.25-1.45 | 0.2-0.6 | 0.14-0.18 | 6.1-6.5 | 0-0 | Moderate | 0.37 | | | |
| | 23-31 | 40-50 | 1.45-1.65 | 0.06-0.2 | 0.06-0.12 | 6.1-7.3 | 0-0 | Very high | 0.15 | | | |
| | 31 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Joel---------- | 0-18 | 20-27 | 1.20-1.35 | 0.6-2.0 | 0.16-0.20 | 5.6-7.3 | 0-0 | Low------- | 0.32 | 5 | 6 | 2-5 |
| | 18-24 | 20-27 | 1.25-1.40 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | 0-0 | Low------- | 0.43 | | | |
| | 24-60 | 24-35 | 1.30-1.50 | 0.2-0.6 | 0.15-0.19 | 5.6-7.3 | 0-0 | Moderate | 0.49 | | | |
| 124, 125--------- | 0-3 | 16-22 | 0.85-1.10 | 0.6-2.0 | 0.19-0.22 | 5.6-6.5 | --- | Low------- | 0.43 | 5 | 5 | 3-6 |
| Talmaks | 3-16 | 18-24 | 0.95-1.20 | 0.6-2.0 | 0.18-0.22 | 5.6-6.5 | --- | Low------- | 0.49 | | | |
| | 16-47 | 24-36 | 1.30-1.50 | 0.2-0.6 | 0.14-0.18 | 5.6-6.5 | --- | Low------- | 0.43 | | | |
| | 47-70 | 28-40 | 1.30-1.50 | 0.2-0.6 | 0.14-0.18 | 5.6-6.5 | --- | Low------- | 0.49 | | | |
| 126: | | | | | | | | | | | | |
| Talmaks--------- | 0-3 | 16-22 | 0.85-1.10 | 0.6-2.0 | 0.19-0.22 | 5.6-6.5 | --- | Low------- | 0.43 | 5 | 5 | 3-6 |
| | 3-16 | 18-24 | 0.95-1.20 | 0.6-2.0 | 0.18-0.22 | 5.6-6.5 | --- | Low------- | 0.49 | | | |
| | 16-47 | 24-36 | 1.30-1.50 | 0.2-0.6 | 0.14-0.18 | 5.6-6.5 | --- | Low------- | 0.43 | | | |
| | 47-70 | 28-40 | 1.30-1.50 | 0.2-0.6 | 0.14-0.18 | 5.6-6.5 | --- | Low------- | 0.49 | | | |
| Seddow---------- | 0-4 | 14-24 | 0.75-1.10 | 0.6-2.0 | 0.19-0.24 | 5.6-6.5 | --- | Low------- | 0.43 | 3 | 5 | 2-6 |
| | 4-13 | 14-24 | 0.90-1.20 | 0.6-2.0 | 0.17-0.24 | 5.1-6.0 | --- | Low------- | 0.43 | | | |
| | 13-29 | 24-38 | 1.25-1.45 | 0.2-0.6 | 0.12-0.18 | 5.1-6.0 | --- | Moderate | 0.20 | | | |
| | 29-48 | 35-40 | 1.25-1.40 | 0.2-0.6 | 0.07-0.10 | 5.6-6.5 | --- | Moderate | 0.05 | | | |
| | 48 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 127: | | | | | | | | | | | | |
| Tammany--------- | 0-4 | 14-22 | 1.15-1.30 | 0.6-2.0 | 0.16-0.20 | 6.6-7.8 | --- | Low------- | 0.32 | 5 | 5 | 2-3 |
| | 4-10 | 14-22 | 1.25-1.40 | 0.6-2.0 | 0.07-0.10 | 6.6-7.8 | --- | Low------- | 0.17 | | | |
| | 10-17 | 14-22 | 1.25-1.40 | 0.6-2.0 | 0.07-0.10 | 6.6-7.8 | --- | Low------- | 0.15 | | | |
| | 17-29 | 8-16 | 1.35-1.50 | 2.0-6.0 | 0.05-0.09 | 7.9-8.4 | 0-2 | Low------- | 0.05 | | | |
| | 29-60 | 2-6 | 1.50-1.60 | >20 | 0.02-0.04 | 7.9-8.4 | 0-2 | Low------- | 0.02 | | | |
| Chard---------- | 0-15 | 8-14 | 1.15-1.30 | 0.6-2.0 | 0.16-0.18 | 6.6-7.8 | 0-0 | Low------- | 0.43 | 4 | 5 | 1-2 |
| | 15-32 | 6-12 | 1.20-1.35 | 0.6-2.0 | 0.16-0.18 | 6.6-8.4 | 0-0 | Low------- | 0.55 | | | |
| | 32-55 | 4-10 | 1.30-1.45 | 2.0-6.0 | 0.13-0.17 | 7.9-9.0 | 0-2 | Low------- | 0.43 | | | |
| | 55-62 | 0-5 | 1.50-1.65 | 6.0-20 | 0.05-0.10 | 8.5-9.6 | 0-2 | Low------- | 0.20 | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 127: | | | | | | | | | | | | |
| Rock outcrop. | | | | | | | | | | | | |
| 128---------- | 0-14 | 20-27 | 1.15-1.45 | 0.6-2.0 | 0.18-0.24 | 5.1-6.5 | 0-0 | Moderate | 0.49 | 3 | 6 | 2-5 |
| Taney | 14-23 | 18-27 | 1.25-1.55 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | 0-0 | Moderate | 0.49 | | | |
| | 23-29 | 10-20 | 1.40-1.55 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | 0-0 | Low-------- | 0.55 | | | |
| | 29-36 | 23-35 | 1.60-1.75 | 0.00-0.06 | 0.04-0.08 | 5.6-6.5 | 0-0 | Moderate | 0.43 | | | |
| | 36-63 | 28-42 | 1.45-1.65 | 0.2-0.6 | 0.06-0.10 | 5.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| 129, 130: | | | | | | | | | | | | |
| Taney---------- | 0-14 | 20-27 | 1.15-1.45 | 0.6-2.0 | 0.18-0.24 | 5.1-6.5 | 0-0 | Moderate | 0.49 | 3 | 6 | 2-5 |
| | 14-23 | 18-27 | 1.25-1.55 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | 0-0 | Moderate | 0.49 | | | |
| | 23-29 | 10-20 | 1.40-1.55 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | 0-0 | Low-------- | 0.55 | | | |
| | 29-36 | 23-35 | 1.60-1.75 | 0.00-0.06 | 0.04-0.08 | 5.6-6.5 | 0-0 | Moderate | 0.43 | | | |
| | 36-63 | 28-42 | 1.45-1.65 | 0.2-0.6 | 0.06-0.10 | 5.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| Joel---------- | 0-18 | 20-27 | 1.20-1.35 | 0.6-2.0 | 0.16-0.20 | 5.6-7.3 | 0-0 | Low-------- | 0.32 | 5 | 6 | 2-5 |
| | 18-24 | 20-27 | 1.25-1.40 | 0.6-2.0 | 0.18-0.24 | 5.6-7.3 | 0-0 | Low-------- | 0.43 | | | |
| | 24-60 | 24-35 | 1.30-1.50 | 0.2-0.6 | 0.15-0.19 | 5.6-7.3 | 0-0 | Moderate | 0.49 | | | |
| 131, 132: | | | | | | | | | | | | |
| Taney---------- | 0-14 | 20-27 | 1.15-1.45 | 0.6-2.0 | 0.18-0.24 | 5.1-6.5 | 0-0 | Moderate | 0.49 | 3 | 6 | 2-5 |
| | 14-23 | 18-27 | 1.25-1.55 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | 0-0 | Moderate | 0.49 | | | |
| | 23-29 | 10-20 | 1.40-1.55 | 0.6-2.0 | 0.18-0.24 | 5.6-6.5 | 0-0 | Low-------- | 0.55 | | | |
| | 29-36 | 23-35 | 1.60-1.75 | 0.00-0.06 | 0.04-0.08 | 5.6-6.5 | 0-0 | Moderate | 0.43 | | | |
| | 36-63 | 28-42 | 1.45-1.65 | 0.2-0.6 | 0.06-0.10 | 5.6-7.3 | 0-0 | Moderate | 0.43 | | | |
| Setters---------- | 0-12 | 20-26 | 1.15-1.45 | 0.6-2.0 | 0.18-0.22 | 5.1-6.5 | --- | Moderate | 0.43 | 2 | 6 | 2-5 |
| | 12-17 | 15-26 | 1.25-1.55 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | --- | Moderate | 0.55 | | | |
| | 17-19 | 15-20 | 1.40-1.55 | 0.6-2.0 | 0.18-0.22 | 5.6-6.5 | --- | Low-------- | 0.55 | | | |
| | 19-61 | 35-50 | 1.30-1.40 | 0.06-0.2 | 0.15-0.20 | 5.6-7.3 | --- | Very high | 0.37 | | | |
| 133: | | | | | | | | | | | | |
| Thatuna---------- | 0-16 | 18-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Moderate | 0.32 | 5 | 6 | 3-6 |
| | 16-31 | 18-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Moderate | 0.37 | | | |
| | 31-37 | 10-18 | 1.20-1.45 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Low-------- | 0.55 | | | |
| | 37-61 | 27-35 | 1.60-1.70 | 0.06-0.2 | 0.12-0.18 | 6.6-7.3 | 0-0 | Moderate | 0.49 | | | |
| Naff---------- | 0-18 | 15-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | <2 | Low-------- | 0.37 | 5 | 6 | 2-4 |
| | 18-25 | 26-35 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Moderate | 0.43 | | | |
| | 25-60 | 30-35 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |
| 134: | | | | | | | | | | | | |
| Thatuna---------- | 0-16 | 18-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Moderate | 0.32 | 5 | 6 | 3-6 |
| | 16-31 | 18-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Moderate | 0.37 | | | |
| | 31-37 | 10-18 | 1.20-1.45 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Low-------- | 0.55 | | | |
| | 37-61 | 27-35 | 1.60-1.70 | 0.06-0.2 | 0.12-0.18 | 6.6-7.3 | 0-0 | Moderate | 0.49 | | | |
| Naff---------- | 0-12 | 15-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | <2 | Low-------- | 0.37 | 5 | 6 | 2-4 |
| | 12-20 | 26-35 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Moderate | 0.43 | | | |
| | 20-60 | 30-35 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |
| 135: | | | | | | | | | | | | |
| Thatuna---------- | 0-16 | 18-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Moderate | 0.32 | 5 | 6 | 3-6 |
| | 16-31 | 18-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Moderate | 0.37 | | | |
| | 31-37 | 10-18 | 1.20-1.45 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Low-------- | 0.55 | | | |
| | 37-61 | 27-35 | 1.60-1.70 | 0.06-0.2 | 0.12-0.18 | 6.6-7.3 | 0-0 | Moderate | 0.49 | | | |
| Naff---------- | 0-18 | 15-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | <2 | Low-------- | 0.37 | 5 | 6 | 2-4 |
| | 18-25 | 26-35 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Moderate | 0.43 | | | |
| | 25-60 | 30-35 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea- bility | Available water capacity | Soil reaction | Salinity | Shrink- swell potential | Erosion factors K | Erosion factors T | Wind erodi- bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 136: | | | | | | | | | | | | |
| Thatuna--------- | 0-16 | 18-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Moderate | 0.32 | 5 | 6 | 3-6 |
| | 16-31 | 18-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Moderate | 0.37 | | | |
| | 31-37 | 10-18 | 1.20-1.45 | 0.6-2.0 | 0.18-0.22 | 6.1-7.3 | 0-0 | Low-------- | 0.55 | | | |
| | 37-61 | 27-35 | 1.60-1.70 | 0.06-0.2 | 0.12-0.18 | 6.6-7.3 | 0-0 | Moderate | 0.49 | | | |
| Naff---------- | 0-18 | 15-25 | 1.15-1.30 | 0.6-2.0 | 0.18-0.21 | 6.1-7.3 | <2 | Low-------- | 0.37 | 5 | 6 | 2-4 |
| | 18-25 | 26-35 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Moderate | 0.43 | | | |
| | 25-60 | 30-35 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |
| Tilma---------- | 0-25 | 20-25 | 1.35-1.45 | 0.6-2.0 | 0.19-0.20 | 5.6-7.3 | 0-0 | Low-------- | 0.32 | 3 | 6 | 3-5 |
| | 25-60 | 35-50 | 1.50-1.60 | 0.06-0.2 | 0.14-0.17 | 5.6-7.3 | 0-0 | High------- | 0.32 | | | |
| 137---------- Tombeall | 0-7 | 15-20 | 1.15-1.25 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | 0-0 | Low-------- | 0.32 | 5 | 5 | 2-5 |
| | 7-28 | 15-20 | 1.20-1.40 | 0.6-2.0 | 0.11-0.13 | 6.6-7.8 | 0-0 | Low-------- | 0.28 | | | |
| | 28-35 | 5-15 | 1.25-1.45 | 2.0-6.0 | 0.06-0.10 | 6.6-7.8 | 0-0 | Low-------- | 0.05 | | | |
| | 35-60 | 5-15 | 1.35-1.55 | 2.0-6.0 | 0.02-0.05 | 6.6-7.8 | 0-0 | Low-------- | 0.02 | | | |
| 138, 139, 140---- Uhlig | 0-15 | 10-18 | 1.15-1.30 | 0.6-2.0 | 0.16-0.22 | 6.1-7.3 | 0-0 | Low-------- | 0.37 | 5 | 5 | 2-4 |
| | 15-39 | 10-18 | 1.25-1.45 | 0.6-2.0 | 0.16-0.20 | 6.6-7.3 | 0-0 | Low-------- | 0.37 | | | |
| | 39-68 | 5-15 | 1.30-1.50 | 2.0-6.0 | 0.12-0.18 | 6.6-7.8 | 0-0 | Low-------- | 0.49 | | | |
| 141---------- Uhlorn | 0-7 | 20-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 5.6-7.3 | <2 | Low-------- | 0.37 | 5 | 6 | 4-7 |
| | 7-17 | 20-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 5.6-7.3 | <2 | Low-------- | 0.43 | | | |
| | 17-23 | 24-32 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |
| | 23-55 | 28-34 | 1.25-1.50 | 0.2-0.6 | 0.17-0.20 | 6.6-7.8 | <2 | Moderate | 0.43 | | | |
| | 55-69 | 35-38 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.6-7.8 | <2 | High------- | 0.43 | | | |
| 142, 143: | | | | | | | | | | | | |
| Uhlorn---------- | 0-7 | 20-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 5.6-7.3 | <2 | Low-------- | 0.37 | 5 | 6 | 4-7 |
| | 7-17 | 20-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 5.6-7.3 | <2 | Low-------- | 0.43 | | | |
| | 17-23 | 24-32 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |
| | 23-55 | 28-34 | 1.25-1.50 | 0.2-0.6 | 0.17-0.20 | 6.6-7.8 | <2 | Moderate | 0.43 | | | |
| | 55-69 | 35-38 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.6-7.8 | <2 | High------- | 0.43 | | | |
| Nez Perce------- | 0-11 | 27-32 | 1.10-1.25 | 0.6-2.0 | 0.19-0.25 | 5.6-7.3 | 0-0 | Low-------- | 0.32 | 5 | 7 | 5-7 |
| | 11-15 | 16-24 | 1.10-1.25 | 0.6-2.0 | 0.19-0.25 | 6.1-7.3 | 0-0 | Moderate | 0.49 | | | |
| | 15-21 | 10-20 | 1.30-1.50 | 0.6-2.0 | 0.19-0.25 | 6.1-7.3 | 0-0 | Low-------- | 0.55 | | | |
| | 21-31 | 40-55 | 1.20-1.30 | 0.06-0.2 | 0.12-0.18 | 6.6-8.4 | 0-2 | Very high | 0.32 | | | |
| | 31-66 | 30-55 | 1.25-1.40 | 0.06-0.2 | 0.15-0.18 | 7.9-9.0 | 0-2 | Very high | 0.32 | | | |
| 144: | | | | | | | | | | | | |
| Uhlorn---------- | 0-7 | 20-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 5.6-7.3 | <2 | Low-------- | 0.37 | 5 | 6 | 4-7 |
| | 7-17 | 20-25 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 5.6-7.3 | <2 | Low-------- | 0.43 | | | |
| | 17-23 | 24-32 | 1.20-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.8 | <2 | Moderate | 0.49 | | | |
| | 23-55 | 28-34 | 1.25-1.50 | 0.2-0.6 | 0.17-0.20 | 6.6-7.8 | <2 | Moderate | 0.43 | | | |
| | 55-69 | 35-38 | 1.25-1.50 | 0.2-0.6 | 0.16-0.18 | 6.6-7.8 | <2 | High------- | 0.43 | | | |
| Vollmer--------- | 0-12 | 18-24 | 1.20-1.30 | 0.6-2.0 | 0.19-0.21 | 6.1-7.3 | <2 | Low-------- | 0.37 | 2 | 5 | 2-5 |
| | 12-28 | 24-35 | 1.25-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Low-------- | 0.43 | | | |
| | 28-36 | 24-35 | 1.25-1.35 | 0.2-0.6 | 0.15-0.19 | 6.1-7.3 | <2 | Low-------- | 0.32 | | | |
| | 36 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 145: | | | | | | | | | | | | |
| Urban land. | | | | | | | | | | | | |
| Wistona--------- | 0-8 | 5-12 | 1.10-1.30 | 0.6-2.0 | 0.15-0.17 | 6.6-7.8 | --- | Low-------- | 0.49 | 5 | 3 | 1-3 |
| | 8-45 | 5-12 | 1.20-1.40 | 0.6-2.0 | 0.13-0.17 | 7.4-8.4 | --- | Low-------- | 0.49 | | | |
| | 45-64 | 4-10 | 1.20-1.40 | 0.6-2.0 | 0.13-0.17 | 7.9-9.0 | 0-2 | Low-------- | 0.49 | | | |

Table 16.--Physical and Chemical Properties of the Soils--Continued

| Soil name and map symbol | Depth | Clay | Moist bulk density | Permea-bility | Available water capacity | Soil reaction | Salinity | Shrink-swell potential | Erosion factors K | Erosion factors T | Wind erodi-bility group | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | G/cc | In/hr | In/in | pH | mmhos/cm | | | | | Pct |
| 146---------- Uvi | 0-4 | 15-20 | 1.40-1.55 | 0.6-2.0 | 0.18-0.20 | 5.6-6.5 | 0-0 | Low-------- | 0.37 | 5 | 5 | 1-3 |
| | 4-55 | 12-20 | 1.45-1.55 | 0.6-2.0 | 0.12-0.16 | 5.6-6.5 | 0-0 | Low-------- | 0.32 | | | |
| | 55-65 | 5-12 | 1.45-1.60 | 0.6-6.0 | 0.08-0.12 | 5.6-6.5 | 0-0 | Low-------- | 0.17 | | | |
| 147, 148--------- Vollmer | 0-12 | 18-24 | 1.20-1.30 | 0.6-2.0 | 0.19-0.21 | 6.1-7.3 | <2 | Low-------- | 0.37 | 2 | 5 | 2-5 |
| | 12-28 | 24-35 | 1.25-1.40 | 0.2-0.6 | 0.17-0.20 | 6.1-7.3 | <2 | Low-------- | 0.43 | | | |
| | 28-36 | 24-35 | 1.25-1.35 | 0.2-0.6 | 0.15-0.19 | 6.1-7.3 | <2 | Low-------- | 0.32 | | | |
| | 36 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 149: | | | | | | | | | | | | |
| Watama---------- | 0-11 | 18-27 | 1.10-1.25 | 0.6-2.0 | 0.18-0.21 | 6.6-7.3 | 0-0 | Moderate | 0.32 | 2 | 6 | 3-5 |
| | 11-34 | 18-27 | 1.10-1.30 | 0.6-2.0 | 0.18-0.21 | 6.6-7.8 | 0-0 | Moderate | 0.37 | | | |
| | 34-38 | 18-27 | 1.20-1.40 | 0.6-2.0 | 0.14-0.18 | 6.6-7.8 | 0-0 | Moderate | 0.32 | | | |
| | 38 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Flybow---------- | 0-4 | 15-25 | 1.25-1.40 | 0.6-2.0 | 0.08-0.12 | 6.1-7.3 | <2 | Low-------- | 0.15 | 1 | 8 | <1 |
| | 4 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 150: | | | | | | | | | | | | |
| Webbridge-------- | 0-3 | --- | 0.75-0.90 | 0.6-2.0 | 0.16-0.24 | 6.1-7.3 | 0-0 | Low-------- | 0.20 | 3 | 5 | 4-8 |
| | 3-17 | --- | 0.75-0.90 | 0.6-2.0 | 0.16-0.24 | 5.6-6.5 | 0-0 | Low-------- | 0.20 | | | |
| | 17-34 | 25-32 | 1.25-1.40 | 0.2-0.6 | 0.08-0.16 | 5.6-6.5 | 0-0 | Moderate | 0.20 | | | |
| | 34-53 | 25-32 | 1.25-1.40 | 0.2-0.6 | 0.03-0.13 | 5.6-7.3 | 0-0 | Moderate | 0.05 | | | |
| | 53 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Agatha---------- | 0-15 | 12-24 | 1.40-1.45 | 0.6-2.0 | 0.16-0.20 | 5.6-7.3 | 0-0 | Low-------- | 0.32 | 3 | 6 | 1-3 |
| | 15-23 | 18-30 | 1.45-1.55 | 0.2-2.0 | 0.13-0.17 | 5.6-6.5 | 0-0 | Low-------- | 0.20 | | | |
| | 23-47 | 24-35 | 1.45-1.50 | 0.2-0.6 | 0.04-0.09 | 5.6-6.5 | 0-0 | Low-------- | 0.10 | | | |
| | 47 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| 151: | | | | | | | | | | | | |
| Westlake--------- | 0-10 | 20-26 | 1.15-1.35 | 0.6-2.0 | 0.19-0.22 | 6.6-7.3 | <2 | Moderate | 0.37 | 5 | 6 | 4-7 |
| | 10-21 | 20-26 | 1.15-1.35 | 0.6-2.0 | 0.19-0.22 | 6.6-7.3 | <2 | Moderate | 0.37 | | | |
| | 21-49 | 25-34 | 1.30-1.50 | 0.2-0.6 | 0.18-0.20 | 6.6-7.8 | <2 | Moderate | 0.43 | | | |
| | 49-64 | 20-32 | 1.30-1.50 | 0.2-0.6 | 0.18-0.20 | 6.6-7.8 | <2 | Moderate | 0.49 | | | |
| Latahco---------- | 0-13 | 15-25 | 1.15-1.35 | 0.6-2.0 | 0.19-0.21 | 6.1-7.3 | 0-0 | Moderate | 0.32 | 5 | 6 | 4-7 |
| | 13-22 | 15-25 | 1.15-1.35 | 0.6-2.0 | 0.19-0.21 | 6.1-7.3 | 0-0 | Moderate | 0.37 | | | |
| | 22-35 | 8-16 | 1.30-1.40 | 0.6-2.0 | 0.16-0.18 | 6.1-7.3 | 0-0 | Low-------- | 0.55 | | | |
| | 35-60 | 25-35 | 1.30-1.50 | 0.2-0.6 | 0.17-0.19 | 7.4-8.4 | 0-0 | Moderate | 0.49 | | | |
| 152---------- Wilkins | 0-15 | 18-27 | 1.10-1.25 | 0.6-2.0 | 0.18-0.22 | 5.6-7.3 | 0-0 | Moderate | 0.32 | 3 | 6 | 3-6 |
| | 15-20 | 10-20 | 1.30-1.50 | 0.6-2.0 | 0.18-0.22 | 5.6-7.3 | 0-0 | Low-------- | 0.55 | | | |
| | 20-52 | 40-50 | 1.20-1.30 | <0.06 | 0.12-0.18 | 6.1-7.3 | 0-0 | Very high | 0.32 | | | |
| | 52-64 | 27-40 | 1.25-1.40 | 0.2-0.6 | 0.16-0.21 | 6.6-7.3 | 0-0 | Moderate | 0.37 | | | |
| 153---------- Wistona | 0-8 | 5-12 | 1.10-1.30 | 0.6-2.0 | 0.15-0.17 | 6.6-7.8 | --- | Low-------- | 0.49 | 5 | 3 | 1-3 |
| | 8-45 | 5-12 | 1.20-1.40 | 0.6-2.0 | 0.13-0.17 | 7.4-8.4 | --- | Low-------- | 0.49 | | | |
| | 45-64 | 4-10 | 1.20-1.40 | 0.6-2.0 | 0.13-0.17 | 7.9-9.0 | 0-2 | Low-------- | 0.49 | | | |
| 154: | | | | | | | | | | | | |
| Zaza---------- | 0-4 | 10-18 | 1.15-1.35 | 0.6-2.0 | 0.10-0.15 | 5.6-6.5 | <2 | Low-------- | 0.20 | 1 | 5 | .5-4 |
| | 4-8 | 10-18 | 1.20-1.40 | 0.6-2.0 | 0.10-0.15 | 5.6-6.5 | <2 | Low-------- | 0.15 | | | |
| | 8-14 | 10-18 | 1.20-1.40 | 0.6-2.0 | 0.08-0.14 | 5.6-6.5 | <2 | Low-------- | 0.10 | | | |
| | 14 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |
| Sweiting--------- | 0-12 | 20-27 | 1.15-1.25 | 0.6-2.0 | 0.19-0.25 | 5.6-6.5 | 0-0 | Low-------- | 0.37 | 2 | 6 | 3-6 |
| | 12-23 | 27-40 | 1.25-1.45 | 0.2-0.6 | 0.14-0.18 | 6.1-6.5 | 0-0 | Moderate | 0.37 | | | |
| | 23-31 | 40-50 | 1.45-1.65 | 0.06-0.2 | 0.06-0.12 | 6.1-7.3 | 0-0 | Very high | 0.15 | | | |
| | 31 | --- | --- | --- | --- | --- | --- | ---------- | ---- | | | |

Table 17.--Water Features

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

| Soil name and map symbol | Hydrologic group | Flooding | | | High water table | | |
|---|---|---|---|---|---|---|---|
| | | Frequency | Duration | Months | Depth | Kind | Months |
| | | | | | Ft | | |
| 1, 2 Agatha | B | None | --- | --- | >6.0 | --- | --- |
| 3: | | | | | | | |
| Agatha | B | None | --- | --- | >6.0 | --- | --- |
| Rock outcrop. | | | | | | | |
| 4 Ahsahka | C | None | --- | --- | >6.0 | --- | --- |
| 5: | | | | | | | |
| Almota | C | None | --- | --- | >6.0 | --- | --- |
| Athena | B | None | --- | --- | >6.0 | --- | --- |
| Hatwai | C | None | --- | --- | >6.0 | --- | --- |
| 6: | | | | | | | |
| Almota | C | None | --- | --- | >6.0 | --- | --- |
| Linville | B | None | --- | --- | >6.0 | --- | --- |
| 7, 8: | | | | | | | |
| Alpowa | B | None | --- | --- | >6.0 | --- | --- |
| Lickskillet | D | None | --- | --- | >6.0 | --- | --- |
| 9 Aquolls | D | Occasional | Brief | Mar-Jun | +0.5-1.5 | Apparent | Mar-Jun |
| 10 Athena | B | None | --- | --- | >6.0 | --- | --- |
| 11: | | | | | | | |
| Bakeoven | D | None | --- | --- | >6.0 | --- | --- |
| Watama | C | None | --- | --- | >6.0 | --- | --- |
| 12: | | | | | | | |
| Boles | D | None | --- | --- | 1.0-1.5 | Perched | Feb-Apr |
| Joel | B | None | --- | --- | >6.0 | --- | --- |
| 13: | | | | | | | |
| Bridgewater | B | Rare | --- | --- | >6.0 | --- | --- |
| Joseph | C | Frequent | Long | Dec-Jun | 3.0-5.0 | Apparent | Dec-Jun |
| 14, 15 Broadax | B | None | --- | --- | >6.0 | --- | --- |
| 16, 17: | | | | | | | |
| Broadax | B | None | --- | --- | >6.0 | --- | --- |
| Hatwai | C | None | --- | --- | >6.0 | --- | --- |

Table 17.--Water Features--Continued

| Soil name and map symbol | Hydrologic group | Flooding | | | High water table | | |
|---|---|---|---|---|---|---|---|
| | | Frequency | Duration | Months | Depth | Kind | Months |
| | | | | | Ft | | |
| 18: | | | | | | | |
| Caldwell | C | Occasional | Very brief | Jan-May | 3.0-5.0 | Apparent | Nov-Jun |
| Latah | D | Occasional | Brief | Dec-Apr | 0.5-2.5 | Perched | Dec-Apr |
| 19: | | | | | | | |
| Calouse | B | None | --- | --- | >6.0 | --- | --- |
| Almota | C | None | --- | --- | >6.0 | --- | --- |
| 20: | | | | | | | |
| Calouse | B | None | --- | --- | >6.0 | --- | --- |
| Endicott | C | None | --- | --- | >6.0 | --- | --- |
| Bryden | C | None | --- | --- | >6.0 | --- | --- |
| 21, 22 Carlinton | C | None | --- | --- | 1.5-3.0 | Perched | Feb-May |
| 23: | | | | | | | |
| Carlinton | C | None | --- | --- | 1.5-3.0 | Perched | Feb-May |
| Talmaks | B | None | --- | --- | >6.0 | --- | --- |
| 24: | | | | | | | |
| Cavendish | B | None | --- | --- | >6.0 | --- | --- |
| Taney | C | None | --- | --- | 2.0-2.5 | Perched | Feb-Apr |
| 25, 26, 27 Chard | B | None | --- | --- | >6.0 | --- | --- |
| 28: | | | | | | | |
| Chard | B | None | --- | --- | >6.0 | --- | --- |
| Chard, moist | B | None | --- | --- | >6.0 | --- | --- |
| 29: | | | | | | | |
| Chard | B | None | --- | --- | >6.0 | --- | --- |
| Tammany | B | None | --- | --- | >6.0 | --- | --- |
| 30: | | | | | | | |
| Chard | B | None | --- | --- | >6.0 | --- | --- |
| Urban land. | | | | | | | |
| 31 Cramont | C | None | --- | --- | >6.0 | --- | --- |
| 32: | | | | | | | |
| Cramont | C | None | --- | --- | >6.0 | --- | --- |
| Culdesac | B | None | --- | --- | >6.0 | --- | --- |
| 33: | | | | | | | |
| Cramont | C | None | --- | --- | >6.0 | --- | --- |
| Seddow | B | None | --- | --- | >6.0 | --- | --- |

Table 17.--Water Features--Continued

| Soil name and map symbol | Hydrologic group | Flooding | | | High water table | | |
|---|---|---|---|---|---|---|---|
| | | Frequency | Duration | Months | Depth | Kind | Months |
| | | | | | Ft | | |
| 34---------- Crowers | B | None---------- | --- | --- | >6.0 | --- | --- |
| 35---------- Driscoll | C | None---------- | --- | --- | 1.5-2.5 | Perched | Jan-Apr |
| 36: | | | | | | | |
| Driscoll---------- | C | None---------- | --- | --- | 1.5-2.5 | Perched | Jan-Apr |
| Larkin---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| 37, 38: | | | | | | | |
| Endicott---------- | C | None---------- | --- | --- | >6.0 | --- | --- |
| Bryden---------- | C | None---------- | --- | --- | >6.0 | --- | --- |
| 39: | | | | | | | |
| Endicott---------- | C | None---------- | --- | --- | >6.0 | --- | --- |
| Oliphant---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| 40---------- Entic Haploxerolls | C | None---------- | --- | --- | >6.0 | --- | --- |
| 41: | | | | | | | |
| Gwin---------- | D | None---------- | --- | --- | >6.0 | --- | --- |
| Vollmer---------- | C | None---------- | --- | --- | >6.0 | --- | --- |
| 42---------- Haploxerolls | C | None---------- | --- | --- | >6.0 | --- | --- |
| 43---------- Hooverton | C | None---------- | --- | --- | >6.0 | --- | --- |
| 44---------- Immig | C | None---------- | --- | --- | >6.0 | --- | --- |
| 45, 46---------- Jacket | C | None---------- | --- | --- | >6.0 | --- | --- |
| 47: | | | | | | | |
| Jacket---------- | C | None---------- | --- | --- | >6.0 | --- | --- |
| Larkin---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| 48, 49---------- Joel | B | None---------- | --- | --- | >6.0 | --- | --- |
| 50, 51: | | | | | | | |
| Joel---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| Setters---------- | C | None---------- | --- | --- | 1.0-2.0 | Perched | Feb-Apr |
| 52---------- Johnson | B | None---------- | --- | --- | >6.0 | --- | --- |
| 53: | | | | | | | |
| Johnson---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| Dragnot---------- | C | None---------- | --- | --- | >6.0 | --- | --- |

Table 17.--Water Features--Continued

| Soil name and map symbol | Hydrologic group | Flooding | | | High water table | | |
|---|---|---|---|---|---|---|---|
| | | Frequency | Duration | Months | Depth | Kind | Months |
| | | | | | Ft | | |
| 53: | | | | | | | |
| Dragnot, dry | C | None | --- | --- | >6.0 | --- | --- |
| 54: | | | | | | | |
| Johnson | B | None | --- | --- | >6.0 | --- | --- |
| Kruse | B | None | --- | --- | >6.0 | --- | --- |
| 55: | | | | | | | |
| Johnson | B | None | --- | --- | >6.0 | --- | --- |
| Labuck | B | None | --- | --- | >6.0 | --- | --- |
| 56: | | | | | | | |
| Joseph | C | Occasional | Long | Dec-Jun | 3.0-5.0 | Apparent | Dec-Jun |
| Tombeall | D | Occasional | Brief | Dec-Jun | 1.0-2.5 | Apparent | Feb-Apr |
| 57: | | | | | | | |
| Kettenbach | C | None | --- | --- | >6.0 | --- | --- |
| Kettenbach, moist | C | None | --- | --- | >6.0 | --- | --- |
| Gwin | D | None | --- | --- | >6.0 | --- | --- |
| 58: | | | | | | | |
| Kettenbach | C | None | --- | --- | >6.0 | --- | --- |
| Keuterville | B | None | --- | --- | >6.0 | --- | --- |
| 59: | | | | | | | |
| Kettenbach | C | None | --- | --- | >6.0 | --- | --- |
| Rock outcrop. | | | | | | | |
| 60, 61 Keuterville | B | None | --- | --- | >6.0 | --- | --- |
| 62: | | | | | | | |
| Keuterville | B | None | --- | --- | >6.0 | --- | --- |
| Rock outcrop. | | | | | | | |
| 63, 64 Klickson | B | None | --- | --- | >6.0 | --- | --- |
| 65: | | | | | | | |
| Klickson | B | None | --- | --- | >6.0 | --- | --- |
| Agatha | B | None | --- | --- | >6.0 | --- | --- |
| 66: | | | | | | | |
| Klickson | B | None | --- | --- | >6.0 | --- | --- |
| Hooverton | C | None | --- | --- | >6.0 | --- | --- |
| 67: | | | | | | | |
| Klickson | B | None | --- | --- | >6.0 | --- | --- |
| Rock outcrop. | | | | | | | |

Table 17.--Water Features--Continued

| Soil name and map symbol | Hydrologic group | Flooding: Frequency | Flooding: Duration | Flooding: Months | High water table: Depth | High water table: Kind | High water table: Months |
|---|---|---|---|---|---|---|---|
| | | | | | Ft | | |
| 68: | | | | | | | |
| Klickson | B | None | --- | --- | >6.0 | --- | --- |
| Uptmor | C | None | --- | --- | >6.0 | --- | --- |
| 69 Kruse | B | None | --- | --- | >6.0 | --- | --- |
| 70: | | | | | | | |
| Lapwai | B | Rare | --- | --- | >6.0 | --- | --- |
| Bridgewater | B | Rare | --- | --- | >6.0 | --- | --- |
| 71 Larabee | C | None | --- | --- | >6.0 | --- | --- |
| 72: | | | | | | | |
| Larabee | C | None | --- | --- | >6.0 | --- | --- |
| Gwin | D | None | --- | --- | >6.0 | --- | --- |
| 73: | | | | | | | |
| Larabee | C | None | --- | --- | >6.0 | --- | --- |
| Zaza | D | None | --- | --- | >6.0 | --- | --- |
| Seddow | B | None | --- | --- | >6.0 | --- | --- |
| 74: | | | | | | | |
| Larkin | B | None | --- | --- | >6.0 | --- | --- |
| Driscoll | C | None | --- | --- | 1.5-2.5 | Perched | Jan-Apr |
| 75: | | | | | | | |
| Latahco | C | Occasional | Brief | Feb-Apr | 1.5-3.0 | Perched | Feb-May |
| Thatuna | C | None | --- | --- | 2.0-3.0 | Perched | Feb-Apr |
| 76: | | | | | | | |
| Lauby | B | None | --- | --- | >6.0 | --- | --- |
| Southwick | C | None | --- | --- | 1.5-3.0 | Perched | Feb-Apr |
| 77: | | | | | | | |
| Lickskillet | D | None | --- | --- | >6.0 | --- | --- |
| Alpowa | B | None | --- | --- | >6.0 | --- | --- |
| Rock outcrop. | | | | | | | |
| 78 Limekiln | D | None | --- | --- | >6.0 | --- | --- |
| 79: | | | | | | | |
| Limekiln | D | None | --- | --- | >6.0 | --- | --- |
| Crowers | B | None | --- | --- | >6.0 | --- | --- |
| 80 Linville | B | None | --- | --- | >6.0 | --- | --- |

Table 17.--Water Features--Continued

| Soil name and map symbol | Hydrologic group | Flooding | | | High water table | | |
|---|---|---|---|---|---|---|---|
| | | Frequency | Duration | Months | Depth | Kind | Months |
| | | | | | Ft | | |
| 81: | | | | | | | |
| Linville | B | None | --- | --- | >6.0 | --- | --- |
| Kettenbach | C | None | --- | --- | >6.0 | --- | --- |
| 82: | | | | | | | |
| Linville | B | None | --- | --- | >6.0 | --- | --- |
| Waha | C | None | --- | --- | >6.0 | --- | --- |
| 83: | | | | | | | |
| Mallory | C | None | --- | --- | >6.0 | --- | --- |
| Jacket | C | None | --- | --- | >6.0 | --- | --- |
| 84: | | | | | | | |
| Maloney | C | None | --- | --- | >6.0 | --- | --- |
| Zaza | D | None | --- | --- | >6.0 | --- | --- |
| 85: | | | | | | | |
| Meland | C | None | --- | --- | >6.0 | --- | --- |
| Jacket | C | None | --- | --- | >6.0 | --- | --- |
| 86: | | | | | | | |
| Meland | C | None | --- | --- | >6.0 | --- | --- |
| Keuterville | B | None | --- | --- | >6.0 | --- | --- |
| 87: | | | | | | | |
| Mohler | B | None | --- | --- | >6.0 | --- | --- |
| Nez Perce | D | None | --- | --- | 1.0-1.5 | Perched | Feb-Apr |
| Uhlorn | B | None | --- | --- | >6.0 | --- | --- |
| 88 Naff | B | None | --- | --- | >6.0 | --- | --- |
| 89, 90: | | | | | | | |
| Naff | B | None | --- | --- | >6.0 | --- | --- |
| Palouse | B | None | --- | --- | >6.0 | --- | --- |
| 91: | | | | | | | |
| Naff | B | None | --- | --- | >6.0 | --- | --- |
| Palouse | B | None | --- | --- | >6.0 | --- | --- |
| 92: | | | | | | | |
| Naff | B | None | --- | --- | >6.0 | --- | --- |
| Palouse | B | None | --- | --- | >6.0 | --- | --- |
| Garfield | C | None | --- | --- | >6.0 | --- | --- |
| 93: | | | | | | | |
| Naff | B | None | --- | --- | >6.0 | --- | --- |
| Thatuna | C | None | --- | --- | 2.0-3.0 | Perched | Feb-Apr |

Table 17.--Water Features--Continued

| Soil name and map symbol | Hydrologic group | Flooding: Frequency | Flooding: Duration | Flooding: Months | High water table: Depth | High water table: Kind | High water table: Months |
|---|---|---|---|---|---|---|---|
| | | | | | Ft | | |
| 94, 95, 96: | | | | | | | |
| Naff | B | None | --- | --- | >6.0 | --- | --- |
| Waha | C | None | --- | --- | >6.0 | --- | --- |
| 97, 98 Nez Perce | D | None | --- | --- | 1.0-1.5 | Perched | Feb-Apr |
| 99: | | | | | | | |
| Nez Perce | D | None | --- | --- | 1.0-1.5 | Perched | Feb-Apr |
| Uhlorn | B | None | --- | --- | >6.0 | --- | --- |
| 100, 101 Oliphant | B | None | --- | --- | >6.0 | --- | --- |
| 102 Oliphant, gravelly substratum | B | None | --- | --- | >6.0 | --- | --- |
| 103: | | | | | | | |
| Oliphant | B | None | --- | --- | >6.0 | --- | --- |
| Alpowa | B | None | --- | --- | >6.0 | --- | --- |
| 104: | | | | | | | |
| Oliphant | B | None | --- | --- | >6.0 | --- | --- |
| Hatwai | C | None | --- | --- | >6.0 | --- | --- |
| 105: | | | | | | | |
| Oliphant | B | None | --- | --- | >6.0 | --- | --- |
| Stember | C | None | --- | --- | >6.0 | --- | --- |
| 106, 107: | | | | | | | |
| Palouse | B | None | --- | --- | >6.0 | --- | --- |
| Athena | B | None | --- | --- | >6.0 | --- | --- |
| 108. Pits, gravel | | | | | | | |
| 109 Redmore | C | None | --- | --- | >6.0 | --- | --- |
| 110: Riverwash. | | | | | | | |
| Aquents | D | Frequent | Long | Dec-Jun | 0.5-2.0 | Apparent | Nov-Jul |
| 111: Rock outcrop. | | | | | | | |
| Flybow | D | None | --- | --- | >6.0 | --- | --- |
| 112 Seddow | B | None | --- | --- | >6.0 | --- | --- |
| 113 Setters | C | None | --- | --- | 1.0-2.0 | Perched | Feb-Apr |

Table 17.--Water Features--Continued

| Soil name and map symbol | Hydrologic group | Flooding | | | High water table | | |
|---|---|---|---|---|---|---|---|
| | | Frequency | Duration | Months | Depth | Kind | Months |
| | | | | | Ft | | |
| 114---------- Shilla | B | None---------- | --- | --- | >6.0 | --- | --- |
| 115: | | | | | | | |
| Shilla---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| Seddow---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| 116---------- Slickpoo | B | None---------- | --- | --- | >6.0 | --- | --- |
| 117: | | | | | | | |
| Slickpoo---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| Broadax---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| 118---------- Southwick | C | None---------- | --- | --- | 1.5-3.0 | Perched | Feb-Apr |
| 119: | | | | | | | |
| Southwick---------- | C | None---------- | --- | --- | 1.5-3.0 | Perched | Feb-Apr |
| Bluesprin---------- | C | None---------- | --- | --- | >6.0 | --- | --- |
| 120, 121: | | | | | | | |
| Southwick---------- | C | None---------- | --- | --- | 1.5-3.0 | Perched | Feb-Apr |
| Driscoll---------- | C | None---------- | --- | --- | 1.5-2.5 | Perched | Jan-Apr |
| 122: | | | | | | | |
| Southwick---------- | C | None---------- | --- | --- | 1.5-3.0 | Perched | Feb-Apr |
| Larkin---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| 123: | | | | | | | |
| Sweiting---------- | C | None---------- | --- | --- | >6.0 | --- | --- |
| Joel---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| 124, 125---------- Talmaks | B | None---------- | --- | --- | >6.0 | --- | --- |
| 126: | | | | | | | |
| Talmaks---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| Seddow---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| 127: | | | | | | | |
| Tammany---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| Chard---------- | B | None---------- | --- | --- | >6.0 | --- | --- |
| Rock outcrop. | | | | | | | |
| 128---------- Taney | C | None---------- | --- | --- | 2.0-2.5 | Perched | Feb-Apr |
| 129, 130: | | | | | | | |
| Taney---------- | C | None---------- | --- | --- | 2.0-2.5 | Perched | Feb-Apr |
| Joel---------- | B | None---------- | --- | --- | >6.0 | --- | --- |

Table 17.--Water Features--Continued

| Soil name and map symbol | Hydrologic group | Flooding | | | High water table | | |
|---|---|---|---|---|---|---|---|
| | | Frequency | Duration | Months | Depth | Kind | Months |
| | | | | | Ft | | |
| 131, 132: | | | | | | | |
| Taney | C | None | --- | --- | 2.0-2.5 | Perched | Feb-Apr |
| Setters | C | None | --- | --- | 1.0-2.0 | Perched | Feb-Apr |
| 133, 134, 135: | | | | | | | |
| Thatuna | C | None | --- | --- | 2.0-3.0 | Perched | Feb-Apr |
| Naff | B | None | --- | --- | >6.0 | --- | --- |
| 136: | | | | | | | |
| Thatuna | C | None | --- | --- | 2.0-3.0 | Perched | Feb-Apr |
| Naff | B | None | --- | --- | >6.0 | --- | --- |
| Tilma | C | None | --- | --- | 1.5-2.5 | Perched | Nov-Apr |
| 137 Tombeall | D | Rare | --- | --- | 1.0-2.5 | Apparent | Feb-Apr |
| 138, 139, 140 Uhlig | B | None | --- | --- | >6.0 | --- | --- |
| 141 Uhlorn | B | None | --- | --- | >6.0 | --- | --- |
| 142, 143: | | | | | | | |
| Uhlorn | B | None | --- | --- | >6.0 | --- | --- |
| Nez Perce | D | None | --- | --- | 1.0-1.5 | Perched | Feb-Apr |
| 144: | | | | | | | |
| Uhlorn | B | None | --- | --- | >6.0 | --- | --- |
| Vollmer | C | None | --- | --- | >6.0 | --- | --- |
| 145: | | | | | | | |
| Urban land. | | | | | | | |
| Wistona | B | Rare | --- | --- | >6.0 | --- | --- |
| 146 Uvi | B | None | --- | --- | >6.0 | --- | --- |
| 147, 148 Vollmer | C | None | --- | --- | >6.0 | --- | --- |
| 149: | | | | | | | |
| Watama | C | None | --- | --- | >6.0 | --- | --- |
| Flybow | D | None | --- | --- | >6.0 | --- | --- |
| 150: | | | | | | | |
| Webbridge | B | None | --- | --- | >6.0 | --- | --- |
| Agatha | B | None | --- | --- | >6.0 | --- | --- |
| 151: | | | | | | | |
| Westlake | C | Occasional | Brief | Feb-Apr | 1.5-2.5 | Apparent | Feb-May |
| Latahco | C | Occasional | Brief | Feb-Apr | 1.5-3.0 | Perched | Feb-May |

Table 17.--Water Features--Continued

| Soil name and map symbol | Hydrologic group | Flooding | | | High water table | | |
|---|---|---|---|---|---|---|---|
| | | Frequency | Duration | Months | Depth | Kind | Months |
| | | | | | Ft | | |
| 152---------- Wilkins | D | Occasional------ | Brief--------- | Mar-May | 1.0-1.5 | Perched | Feb-May |
| 153---------- Wistona | B | Rare---------- | --- | --- | >6.0 | --- | --- |
| 154: | | | | | | | |
| Zaza---------- | D | None---------- | --- | --- | >6.0 | --- | --- |
| Sweiting---------- | C | None---------- | --- | --- | >6.0 | --- | --- |

Table 18.--Soil Features

(The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

| Soil name and map symbol | Bedrock | | Cemented pan | | Potential frost action | Risk of corrosion | |
|---|---|---|---|---|---|---|---|
| | Depth | Hardness | Depth | Thickness | | Uncoated steel | Concrete |
| | In | | In | | | | |
| 1, 2 Agatha | 40-60 | Hard | --- | --- | Moderate | Moderate | Moderate. |
| 3: | | | | | | | |
| Agatha | 40-60 | Hard | --- | --- | Moderate | Moderate | Moderate. |
| Rock outcrop. | | | | | | | |
| 4 Ahsahka | >60 | --- | --- | --- | Moderate | Moderate | Moderate. |
| 5: | | | | | | | |
| Almota | 30-40 | Hard | --- | --- | High | High | Moderate. |
| Athena | >60 | --- | --- | --- | High | High | Low. |
| Hatwai | >60 | --- | --- | --- | High | High | Low. |
| 6: | | | | | | | |
| Almota | 30-40 | Hard | --- | --- | High | High | Moderate. |
| Linville | >60 | --- | --- | --- | Moderate | High | Low. |
| 7, 8: | | | | | | | |
| Alpowa | >60 | --- | --- | --- | High | High | Moderate. |
| Lickskillet | 12-20 | Hard | --- | --- | Moderate | High | Low. |
| 9 Aquolls | >40 | Hard | --- | --- | High | High | Moderate. |
| 10 Athena | >60 | --- | --- | --- | High | High | Low. |
| 11: | | | | | | | |
| Bakeoven | 4-10 | Hard | --- | --- | Moderate | Moderate | Low. |
| Watama | 20-40 | Hard | --- | --- | Moderate | Moderate | Low. |
| 12: | | | | | | | |
| Boles | >60 | --- | --- | --- | High | High | Low. |
| Joel | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 13: | | | | | | | |
| Bridgewater | >60 | --- | --- | --- | Moderate | Low | Low. |
| Joseph | >60 | --- | --- | --- | Low | Moderate | Low. |
| 14, 15 Broadax | >60 | --- | --- | --- | High | High | Low. |
| 16, 17: | | | | | | | |
| Broadax | >60 | --- | --- | --- | High | High | Low. |
| Hatwai | >60 | --- | --- | --- | High | High | Low. |

Table 18.--Soil Features--Continued

| Soil name and map symbol | Bedrock | | Cemented pan | | Potential frost action | Risk of corrosion | |
|---|---|---|---|---|---|---|---|
| | Depth | Hardness | Depth | Thickness | | Uncoated steel | Concrete |
| | In | | In | | | | |
| 18: | | | | | | | |
| Caldwell | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Latah | >60 | --- | --- | --- | High | Moderate | Low. |
| 19: | | | | | | | |
| Calouse | >60 | --- | --- | --- | High | High | Low. |
| Almota | 30-40 | Hard | --- | --- | High | High | Moderate. |
| 20: | | | | | | | |
| Calouse | >60 | --- | --- | --- | High | High | Low. |
| Endicott | >50 | Hard | 28-40 | Thick | High | High | Low. |
| Bryden | >50 | Hard | 25-40 | Thick | High | High | Low. |
| 21, 22 Carlinton | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 23: | | | | | | | |
| Carlinton | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Talmaks | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 24: | | | | | | | |
| Cavendish | 40-60 | Soft | --- | --- | Moderate | Moderate | Moderate. |
| Taney | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 25, 26, 27 Chard | >60 | --- | --- | --- | Moderate | High | Low. |
| 28: | | | | | | | |
| Chard | >60 | --- | --- | --- | Moderate | High | Low. |
| Chard, moist | >60 | --- | --- | --- | Moderate | High | Low. |
| 29: | | | | | | | |
| Chard | >60 | --- | --- | --- | Moderate | High | Low. |
| Tammany | >60 | --- | --- | --- | Moderate | Low | Low. |
| 30: | | | | | | | |
| Chard | >60 | --- | --- | --- | Moderate | High | Low. |
| Urban land. | | | | | | | |
| 31 Cramont | >60 | --- | --- | --- | High | High | Moderate. |
| 32: | | | | | | | |
| Cramont | >60 | --- | --- | --- | High | High | Moderate. |
| Culdesac | >60 | --- | --- | --- | High | High | Moderate. |
| 33: | | | | | | | |
| Cramont | >60 | --- | --- | --- | High | High | Moderate. |
| Seddow | 40-55 | Hard | --- | --- | High | Moderate | Moderate. |

Table 18.--Soil Features--Continued

| Soil name and map symbol | Bedrock | | Cemented pan | | Potential frost action | Risk of corrosion | |
|---|---|---|---|---|---|---|---|
| | Depth | Hardness | Depth | Thickness | | Uncoated steel | Concrete |
| | In | | In | | | | |
| 34 Crowers | >60 | --- | --- | --- | High | Low | Low. |
| 35 Driscoll | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 36: | | | | | | | |
| Driscoll | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Larkin | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 37, 38: | | | | | | | |
| Endicott | >50 | Hard | 28-40 | Thick | High | High | Low. |
| Bryden | >50 | Hard | 25-40 | Thick | High | High | Low. |
| 39: | | | | | | | |
| Endicott | >50 | Hard | 28-40 | Thick | High | High | Low. |
| Oliphant | >60 | --- | --- | --- | Moderate | High | Low. |
| 40 Entic Haploxerolls | 12-30 | Soft | --- | --- | Moderate | Moderate | Low. |
| 41: | | | | | | | |
| Gwin | 10-20 | Hard | --- | --- | Moderate | Moderate | Low. |
| Vollmer | 20-40 | Hard | --- | --- | High | Moderate | Low. |
| 42 Haploxerolls | >30 | Hard | --- | --- | High | High | Low. |
| 43 Hooverton | 24-40 | Hard | --- | --- | Moderate | Moderate | Low. |
| 44 Immig | 26-40 | Hard | --- | --- | Moderate | Moderate | Low. |
| 45, 46 Jacket | >60 | --- | --- | --- | Moderate | Moderate | Moderate. |
| 47: | | | | | | | |
| Jacket | >60 | --- | --- | --- | Moderate | Moderate | Moderate. |
| Larkin | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 48, 49 Joel | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 50, 51: | | | | | | | |
| Joel | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Setters | >60 | --- | --- | --- | High | High | Moderate. |
| 52 Johnson | >60 | --- | --- | --- | Moderate | Moderate | Moderate. |
| 53: | | | | | | | |
| Johnson | >60 | --- | --- | --- | Moderate | Moderate | Moderate. |

Table 18.--Soil Features--Continued

| Soil name and map symbol | Bedrock | | Cemented pan | | Potential frost action | Risk of corrosion | |
|---|---|---|---|---|---|---|---|
| | Depth | Hardness | Depth | Thickness | | Uncoated steel | Concrete |
| | In | | In | | | | |
| 53: | | | | | | | |
| Dragnot | 20-40 | Hard | --- | --- | Moderate | Low | Low. |
| Dragnot, dry | 20-40 | Hard | --- | --- | Moderate | Low | Low. |
| 54: | | | | | | | |
| Johnson | >60 | --- | --- | --- | Moderate | Moderate | Moderate. |
| Kruse | >60 | --- | --- | --- | Moderate | Moderate | Moderate. |
| 55: | | | | | | | |
| Johnson | >60 | --- | --- | --- | Moderate | Moderate | Moderate. |
| Labuck | 20-40 | Soft | --- | --- | Moderate | Moderate | Moderate. |
| 56: | | | | | | | |
| Joseph | >60 | --- | --- | --- | Low | Moderate | Low. |
| Tombeall | >60 | --- | --- | --- | High | High | Low. |
| 57: | | | | | | | |
| Kettenbach | 20-40 | Hard | --- | --- | Moderate | Moderate | Low. |
| Kettenbach, moist | 20-40 | Hard | --- | --- | Moderate | Moderate | Low. |
| Gwin | 10-20 | Hard | --- | --- | Moderate | Moderate | Low. |
| 58: | | | | | | | |
| Kettenbach | 20-40 | Hard | --- | --- | Moderate | Moderate | Low. |
| Keuterville | >60 | --- | --- | --- | Moderate | Moderate | Low. |
| 59: | | | | | | | |
| Kettenbach | 20-40 | Hard | --- | --- | Moderate | Moderate | Low. |
| Rock outcrop. | | | | | | | |
| 60, 61 Keuterville | >60 | --- | --- | --- | Moderate | Moderate | Low. |
| 62: | | | | | | | |
| Keuterville | >60 | --- | --- | --- | Moderate | Moderate | Low. |
| Rock outcrop. | | | | | | | |
| 63, 64 Klickson | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 65: | | | | | | | |
| Klickson | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Agatha | 40-60 | Hard | --- | --- | Moderate | Moderate | Moderate. |
| 66: | | | | | | | |
| Klickson | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Hooverton | 24-40 | Hard | --- | --- | Moderate | Moderate | Low. |

Table 18.--Soil Features--Continued

| Soil name and map symbol | Bedrock | | Cemented pan | | Potential frost action | Risk of corrosion | |
|---|---|---|---|---|---|---|---|
| | Depth | Hardness | Depth | Thickness | | Uncoated steel | Concrete |
| | In | | In | | | | |
| 67: | | | | | | | |
| Klickson | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Rock outcrop. | | | | | | | |
| 68: | | | | | | | |
| Klickson | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Uptmor | 40-60 | Hard | --- | --- | High | High | Moderate. |
| 69 Kruse | >60 | --- | --- | --- | Moderate | Moderate | Moderate. |
| 70: | | | | | | | |
| Lapwai | >60 | --- | --- | --- | High | High | Moderate. |
| Bridgewater | >60 | --- | --- | --- | Moderate | Low | Low. |
| 71 Larabee | 20-36 | Hard | --- | --- | Moderate | Moderate | Moderate. |
| 72: | | | | | | | |
| Larabee | 20-36 | Hard | --- | --- | Moderate | Moderate | Moderate. |
| Gwin | 10-20 | Hard | --- | --- | Moderate | Moderate | Low. |
| 73: | | | | | | | |
| Larabee | 20-36 | Hard | --- | --- | Moderate | Moderate | Moderate. |
| Zaza | 10-20 | Hard | --- | --- | Moderate | Low | Moderate. |
| Seddow | 40-55 | Hard | --- | --- | High | Moderate | Moderate. |
| 74: | | | | | | | |
| Larkin | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Driscoll | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 75: | | | | | | | |
| Latahco | >60 | --- | --- | --- | High | High | Low. |
| Thatuna | >60 | --- | --- | --- | High | High | Low. |
| 76: | | | | | | | |
| Lauby | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Southwick | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 77: | | | | | | | |
| Lickskillet | 12-20 | Hard | --- | --- | Moderate | High | Low. |
| Alpowa | >60 | --- | --- | --- | High | High | Moderate. |
| Rock outcrop. | | | | | | | |
| 78 Limekiln | 12-20 | Hard | --- | --- | High | High | Moderate. |

Table 18.--Soil Features--Continued

| Soil name and map symbol | Bedrock | | Cemented pan | | Potential frost action | Risk of corrosion | |
|---|---|---|---|---|---|---|---|
| | Depth | Hardness | Depth | Thickness | | Uncoated steel | Concrete |
| | In | | In | | | | |
| 79: | | | | | | | |
| Limekiln | 12-20 | Hard | --- | --- | High | High | Moderate. |
| Crowers | >60 | --- | --- | --- | High | Low | Low. |
| 80 Linville | >60 | --- | --- | --- | Moderate | High | Low. |
| 81: | | | | | | | |
| Linville | >60 | --- | --- | --- | Moderate | High | Low. |
| Kettenbach | 20-40 | Hard | --- | --- | Moderate | Moderate | Low. |
| 82: | | | | | | | |
| Linville | >60 | --- | --- | --- | Moderate | High | Low. |
| Waha | 20-40 | Hard | --- | --- | High | Moderate | Low. |
| 83: | | | | | | | |
| Mallory | 20-40 | Hard | --- | --- | Moderate | High | Low. |
| Jacket | >60 | --- | --- | --- | Moderate | Moderate | Moderate. |
| 84: | | | | | | | |
| Maloney | 22-36 | Hard | --- | --- | Moderate | Moderate | Moderate. |
| Zaza | 10-20 | Hard | --- | --- | Moderate | Low | Moderate. |
| 85: | | | | | | | |
| Meland | 20-40 | Hard | --- | --- | Moderate | Moderate | Moderate. |
| Jacket | >60 | --- | --- | --- | Moderate | Moderate | Moderate. |
| 86: | | | | | | | |
| Meland | 20-40 | Hard | --- | --- | Moderate | Moderate | Moderate. |
| Keuterville | >60 | --- | --- | --- | Moderate | Moderate | Low. |
| 87: | | | | | | | |
| Mohler | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Nez Perce | >60 | --- | --- | --- | High | High | Low. |
| Uhlorn | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 88 Naff | >60 | --- | --- | --- | High | Moderate | Low. |
| 89, 90: | | | | | | | |
| Naff | >60 | --- | --- | --- | High | Moderate | Low. |
| Palouse | >60 | --- | --- | --- | High | Moderate | Low. |
| 91: | | | | | | | |
| Naff | >60 | --- | --- | --- | High | Moderate | Low. |
| Palouse | >60 | --- | --- | --- | High | Moderate | Low. |

Table 18.--Soil Features--Continued

| Soil name and map symbol | Bedrock | | Cemented pan | | Potential frost action | Risk of corrosion | |
|---|---|---|---|---|---|---|---|
| | Depth | Hardness | Depth | Thickness | | Uncoated steel | Concrete |
| | In | | In | | | | |
| 92: | | | | | | | |
| Naff | >60 | --- | --- | --- | High | Moderate | Low. |
| Palouse | >60 | --- | --- | --- | High | Moderate | Low. |
| Garfield | >60 | --- | --- | --- | High | Moderate | Low. |
| 93: | | | | | | | |
| Naff | >60 | --- | --- | --- | High | Moderate | Low. |
| Thatuna | >60 | --- | --- | --- | High | High | Low. |
| 94, 95, 96: | | | | | | | |
| Naff | >60 | --- | --- | --- | High | Moderate | Low. |
| Waha | 20-40 | Hard | --- | --- | High | Moderate | Low. |
| 97, 98 Nez Perce | >60 | --- | --- | --- | High | High | Low. |
| 99: | | | | | | | |
| Nez Perce | >60 | --- | --- | --- | High | High | Low. |
| Uhlorn | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 100, 101 Oliphant | >60 | --- | --- | --- | Moderate | High | Low. |
| 102 Oliphant, gravelly substratum | >60 | --- | --- | --- | High | High | Low. |
| 103: | | | | | | | |
| Oliphant | >60 | --- | --- | --- | Moderate | High | Low. |
| Alpowa | >60 | --- | --- | --- | Moderate | High | Low. |
| 104: | | | | | | | |
| Oliphant | >60 | --- | --- | --- | Moderate | High | Low. |
| Hatwai | >60 | --- | --- | --- | High | High | Low. |
| 105: | | | | | | | |
| Oliphant | >60 | --- | --- | --- | High | High | Low. |
| Stember | 20-35 | Hard | --- | --- | High | High | Moderate. |
| 106, 107: | | | | | | | |
| Palouse | >60 | --- | --- | --- | High | Moderate | Low. |
| Athena | >60 | --- | --- | --- | High | High | Low. |
| 108. Pits, gravel | | | | | | | |
| 109 Redmore | >60 | --- | 40-55 | Thick | High | High | High. |

Table 18.--Soil Features--Continued

| Soil name and map symbol | Bedrock | | Cemented pan | | Potential frost action | Risk of corrosion | |
|---|---|---|---|---|---|---|---|
| | Depth | Hardness | Depth | Thickness | | Uncoated steel | Concrete |
| | In | | In | | | | |
| 110: | | | | | | | |
| Riverwash. | | | | | | | |
| Aquents | >60 | --- | --- | --- | Low | High | Moderate. |
| 111: | | | | | | | |
| Rock outcrop. | | | | | | | |
| Flybow | 4-10 | Hard | --- | --- | Low | Moderate | Moderate. |
| 112 Seddow | 40-55 | Hard | --- | --- | High | Moderate | Moderate. |
| 113 Setters | >60 | --- | --- | --- | High | High | Moderate. |
| 114 Shilla | 40-60 | Hard | --- | --- | High | Moderate | Moderate. |
| 115: | | | | | | | |
| Shilla | 40-60 | Hard | --- | --- | High | Moderate | Moderate. |
| Seddow | 40-55 | Hard | --- | --- | High | Moderate | Moderate. |
| 116 Slickpoo | 40-55 | Hard | --- | --- | High | High | Low. |
| 117: | | | | | | | |
| Slickpoo | 40-55 | Hard | --- | --- | High | High | Low. |
| Broadax | >60 | --- | --- | --- | High | High | Low. |
| 118 Southwick | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 119: | | | | | | | |
| Southwick | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Bluesprin | 20-40 | Hard | --- | --- | Moderate | Moderate | Low. |
| 120, 121: | | | | | | | |
| Southwick | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Driscoll | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 122: | | | | | | | |
| Southwick | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Larkin | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 123: | | | | | | | |
| Sweiting | 20-40 | Hard | --- | --- | Moderate | High | Low. |
| Joel | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 124, 125 Talmaks | >60 | --- | --- | --- | High | Moderate | Moderate. |

Table 18.--Soil Features--Continued

| Soil name and map symbol | Bedrock | | Cemented pan | | Potential frost action | Risk of corrosion | |
|---|---|---|---|---|---|---|---|
| | Depth | Hardness | Depth | Thickness | | Uncoated steel | Concrete |
| | In | | In | | | | |
| 126: | | | | | | | |
| Talmaks | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Seddow | 40-55 | Hard | --- | --- | High | Moderate | Moderate. |
| 127: | | | | | | | |
| Tammany | >60 | --- | --- | --- | Moderate | Low | Low. |
| Chard | >60 | --- | --- | --- | Moderate | High | Low. |
| Rock outcrop. | | | | | | | |
| 128 Taney | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 129, 130: | | | | | | | |
| Taney | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Joel | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 131, 132: | | | | | | | |
| Taney | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Setters | >60 | --- | --- | --- | High | High | Moderate. |
| 133, 134, 135: | | | | | | | |
| Thatuna | >60 | --- | --- | --- | High | High | Low. |
| Naff | >60 | --- | --- | --- | High | Moderate | Low. |
| 136: | | | | | | | |
| Thatuna | >60 | --- | --- | --- | High | High | Low. |
| Naff | >60 | --- | --- | --- | High | Moderate | Low. |
| Tilma | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 137 Tombeall | >60 | --- | --- | --- | High | High | Low. |
| 138, 139, 140 Uhlig | >60 | --- | --- | --- | Moderate | Moderate | Moderate. |
| 141 Uhlorn | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 142, 143: | | | | | | | |
| Uhlorn | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Nez Perce | >60 | --- | --- | --- | High | High | Low. |
| 144: | | | | | | | |
| Uhlorn | >60 | --- | --- | --- | High | Moderate | Moderate. |
| Vollmer | 20-40 | Hard | --- | --- | High | Moderate | Low. |
| 145: | | | | | | | |
| Urban land. | | | | | | | |

Table 18.--Soil Features--Continued

| Soil name and map symbol | Bedrock | | Cemented pan | | Potential frost action | Risk of corrosion | |
|---|---|---|---|---|---|---|---|
| | Depth | Hardness | Depth | Thickness | | Uncoated steel | Concrete |
| | In | | In | | | | |
| 145: | | | | | | | |
| Wistona | >60 | --- | --- | --- | Moderate | Moderate | Low. |
| 146 Uvi | >60 | --- | --- | --- | Moderate | Low | Moderate. |
| 147, 148 Vollmer | 20-40 | Hard | --- | --- | High | Moderate | Low. |
| 149: | | | | | | | |
| Watama | 20-40 | Hard | --- | --- | Moderate | Moderate | Low. |
| Flybow | 4-10 | Hard | --- | --- | Low | Moderate | Moderate. |
| 150: | | | | | | | |
| Webbridge | 40-60 | Hard | --- | --- | High | Moderate | Moderate. |
| Agatha | 40-60 | Hard | --- | --- | Moderate | Moderate | Moderate. |
| 151: | | | | | | | |
| Westlake | >60 | --- | --- | --- | High | High | Low. |
| Latahco | >60 | --- | --- | --- | High | High | Low. |
| 152 Wilkins | >60 | --- | --- | --- | High | Moderate | Moderate. |
| 153 Wistona | >60 | --- | --- | --- | Moderate | Moderate | Low. |
| 154: | | | | | | | |
| Zaza | 10-20 | Hard | --- | --- | Moderate | Low | Moderate. |
| Sweiting | 20-40 | Hard | --- | --- | Moderate | High | Low. |

Table 19.--Classification of the Soils

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

| Soil name | Family or higher taxonomic class |
|---|---|
| Agatha | Loamy-skeletal, mixed, frigid Vitrandic Haploxeralfs |
| Ahsahka | Fine-loamy, mixed, mesic Typic Argixerolls |
| Almota | Fine-loamy, mixed, mesic Calcic Haploxerolls |
| Alpowa | Loamy-skeletal, mixed, mesic Calcic Haploxerolls |
| Aquents | Aquents |
| Aquolls | Aquolls |
| Athena | Fine-silty, mixed, mesic Pachic Haploxerolls |
| Bakeoven | Loamy-skeletal, mixed, mesic Lithic Haploxerolls |
| Bluesprin | Loamy-skeletal, mixed, mesic Ultic Argixerolls |
| Boles | Fine, montmorillonitic, frigid Xeric Argialbolls |
| Bridgewater | Loamy-skeletal, mixed, mesic Cumulic Haploxerolls |
| Broadax | Fine-silty, mixed, mesic Calcic Argixerolls |
| Bryden | Fine-silty, mixed, mesic Typic Durixerolls |
| Caldwell | Fine-silty, mixed, mesic Cumulic Haploxerolls |
| Calouse | Fine-silty, mixed, mesic Calcic Pachic Haploxerolls |
| Carlinton | Fine-silty, mixed, frigid Mollic Fragixeralfs |
| Cavendish | Fine-loamy, mixed, frigid Ultic Haploxeralfs |
| Chard | Coarse-loamy, mixed, mesic Calcic Haploxerolls |
| Cramont | Fine, montmorillonitic, frigid Vitrandic Haploxeralfs |
| Crowers | Coarse-loamy, mixed, mesic Calcic Pachic Haploxerolls |
| Culdesac | Ashy over loamy, mixed, frigid Alfic Vitrixerands |
| Dragnot | Fine-loamy, mixed, mesic Typic Argixerolls |
| *Driscoll | Fine, montmorillonitic, mesic Ultic Palexerolls |
| Endicott | Coarse-silty, mixed, mesic Haplic Durixerolls |
| Entic Haploxerolls | Entic Haploxerolls |
| Flybow | Loamy-skeletal, mixed, nonacid, mesic Lithic Xerorthents |
| Garfield | Fine, mixed, mesic Mollic Haploxeralfs |
| Gwin | Loamy-skeletal, mixed, mesic Lithic Argixerolls |
| Haploxerolls | Haploxerolls |
| Hatwai | Fine-silty, mixed, mesic Typic Natrixerolls |
| Hooverton | Loamy-skeletal, mixed, mesic Typic Argixerolls |
| Immig | Clayey-skeletal, montmorillonitic, mesic Typic Argixerolls |
| *Jacket | Fine, montmorillonitic, mesic Pachic Ultic Argixerolls |
| Joel | Fine-silty, mixed, frigid Boralfic Argixerolls |
| Johnson | Fine-loamy, mixed, frigid Ultic Argixerolls |
| Joseph | Sandy-skeletal, mixed, mesic Aquic Xerofluvents |
| Kettenbach | Loamy-skeletal, mixed, mesic Pachic Argixerolls |
| Keuterville | Loamy-skeletal, mixed, mesic Ultic Argixerolls |
| Klickson | Loamy-skeletal, mixed, frigid Vitrandic Argixerolls |
| Kruse | Fine-loamy, mixed, frigid Vitrandic Haploxeralfs |
| *Labuck | Coarse-loamy, mixed, frigid Vitrandic Xerochrepts |
| Lapwai | Coarse-loamy, mixed, mesic Cumulic Haploxerolls |
| Larabee | Loamy-skeletal, mixed, frigid Vitrandic Argixerolls |
| Larkin | Fine-silty, mixed, mesic Ultic Argixerolls |
| Latah | Fine, mixed, mesic Xeric Argialbolls |
| Latahco | Fine-silty, mixed, frigid Argiaquic Xeric Argialbolls |
| Lauby | Fine-loamy, mixed, mesic Pachic Ultic Argixerolls |
| Lickskillet | Loamy-skeletal, mixed, mesic Lithic Haploxerolls |
| Limekiln | Loamy-skeletal, mixed, mesic Lithic Haploxerolls |
| Linville | Fine-loamy, mixed, mesic Pachic Haploxerolls |
| Mallory | Clayey-skeletal, montmorillonitic, mesic Pachic Argixerolls |
| Maloney | Fine-loamy, mixed, frigid Typic Xerochrepts |
| Meland | Fine-loamy, mixed, mesic Ultic Argixerolls |
| Mohler | Fine-silty, mixed, mesic Pachic Argixerolls |
| Naff | Fine-silty, mixed, mesic Ultic Argixerolls |
| Nez Perce | Fine, montmorillonitic, mesic Xeric Argialbolls |
| Oliphant | Coarse-silty, mixed, mesic Calcic Pachic Haploxerolls |

Table 19.--Classification of the Soils--Continued

| Soil name | Family or higher taxonomic class |
|---|---|
| *Palouse | Fine-silty, mixed, mesic Pachic Ultic Haploxerolls |
| Redmore | Fine, montmorillonitic, mesic Typic Natrixerolls |
| Seddow | Fine-loamy, mixed, frigid Vitrandic Haploxeralfs |
| *Setters | Fine, montmorillonitic, frigid Ultic Palexerolls |
| Shilla | Ashy over loamy-skeletal, mixed, frigid Alfic Vitrixerands |
| Slickpoo | Fine-loamy, mixed, mesic Calcic Pachic Argixerolls |
| Southwick | Fine-silty, mixed, mesic Boralfic Argixerolls |
| Stember | Loamy-skeletal, mixed, mesic Typic Calcixerolls |
| Sweiting | Fine, montmorillonitic, frigid Pachic Ultic Argixerolls |
| Talmaks | Fine-silty, mixed, frigid Vitrandic Haploxeralfs |
| Tammany | Loamy-skeletal, mixed, mesic Calcic Haploxerolls |
| Taney | Fine-silty, mixed, frigid Vitrandic Argixerolls |
| Thatuna | Fine-silty, mixed, mesic Boralfic Argixerolls |
| Tilma | Fine, mixed, mesic Xeric Argialbolls |
| Tombeall | Coarse-loamy, mixed, mesic Cumulic Haploxerolls |
| Uhlig | Coarse-loamy, mixed, mesic Pachic Haploxerolls |
| Uhlorn | Fine-silty, mixed, mesic Typic Argixerolls |
| Uptmor | Fine, montmorillonitic, frigid Ultic Argixerolls |
| Uvi | Fine-loamy, mixed, frigid Vitrandic Xerochrepts |
| Vollmer | Fine-loamy, mixed, mesic Typic Argixerolls |
| Waha | Fine-loamy, mixed, mesic Pachic Argixerolls |
| Watama | Fine-loamy, mixed, mesic Pachic Haploxerolls |
| Webbridge | Ashy over loamy-skeletal, mixed Alfic Vitricryands |
| Westlake | Fine-silty, mixed, frigid Cumulic Ultic Haploxerolls |
| Wilkins | Fine, montmorillonitic, frigid Xeric Argialbolls |
| Wistona | Coarse-loamy, mixed, mesic Fluventic Haploxerolls |
| Zaza | Loamy-skeletal, mixed, frigid Lithic Xerochrepts |

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