United States
Department of
Agriculture

Forest Service

and

Natural
Resources
Conservation
Service

Soil Survey of Beaverhead National Forest Area, Montana

The original maps and tables have been deleted from this online version. Since publication of the soil survey, more data on soil properties may have been collected, new interpretations developed, or existing interpretive criteria modified. Maps and current data tables can be accessed through the Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app/).

How to Use This Soil Survey

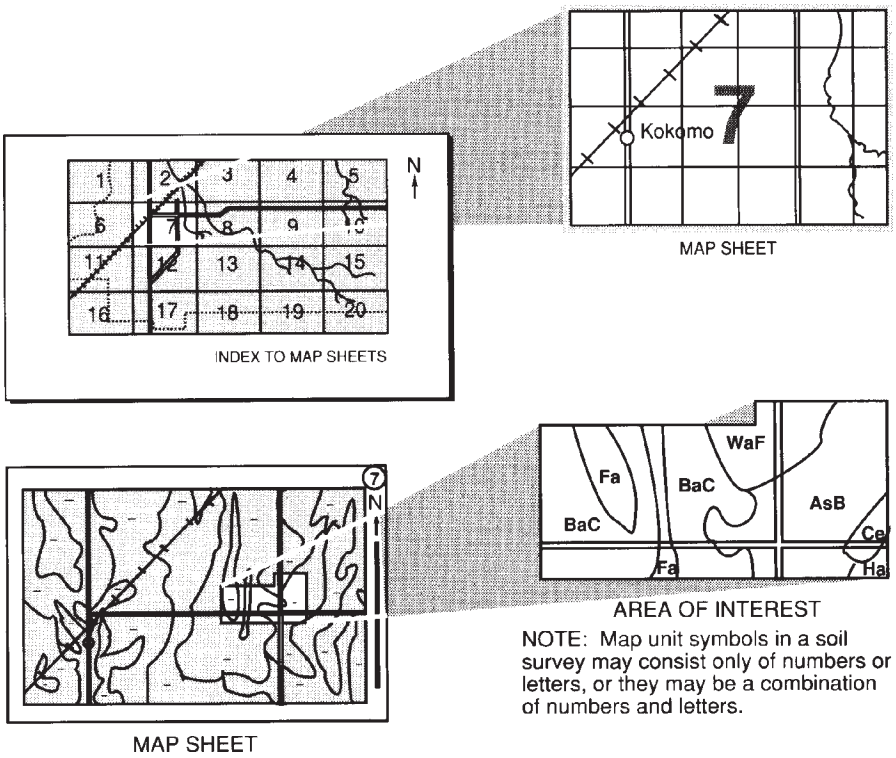
Detailed Soil Maps

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

To find information about your area of interest, you can locate that area on the Index to Map Sheets. Go to the Web Soil Survey for more information (http://websoilsurvey.nrcs.usda.gov/app/)

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.

See the Contents for sections of this publication that may address your specific needs.



This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies, including the Agricultural Experiment Stations, and local agencies. The fieldwork and technical quality control for this survey were conducted by the Forest Service. The correlation of the soils was conducted by the Natural Resources Conservation Service in consultation with the Forest Service. The Natural Resources Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

Fieldwork for this soil survey was performed in 2002. Soil names and descriptions were approved in 2007. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2002. This survey was made by the United States Department of Agriculture, Forest Service and Natural Resources Conservation Service.

The most current official data are available through the NRCS Soil Data Mart website at http://soildatamart.nrcs.usda.gov. Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. Maps do not show the small areas of contrasting soils that could have been shown at a larger scale, if enlarged.

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Cover: View of Vipond Park looking southwest toward Lion Mountain on the left and Black Lion Mountain on the right. Vipond Park is largely underlain by gravels that have been mapped as Pleistocene till.

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

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Issued 2008

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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. Range management specialists, foresters, and silviculturalists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, engineers and builders 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 fire management 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 land users identify and reduce the effects of soil limitations on various land uses. The 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 underground installations.

These and many other soil properties that affect land use are described in this soil survey. 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 Forest Service, Natural Resources Conservation Service, or the Cooperative Extension Service.

Dave White
State Conservationist
Natural Resources Conservation Service

Soil Survey of Beaverhead National Forest Area, Montana

By Antoinette Greene, Project Leader

Fieldwork by Antoinette Greene, Forest Service, and Cal Sibley, Natural Resources Conservation Service

United States Department of Agriculture, Forest Service in cooperation with United States Department of Agriculture, Natural Resources Conservation Service

Beaverhead National Forest Area is located in south-central Montana (fig. 1). The survey area includes 2,092,900 acres, or about 3,270 square miles.

General Nature of the Survey Area

This section describes some of the environmental and cultural features that affect the use and management of soils in the survey area. These features are history and development, landforms, and climate.

History and Development

Antoinette Greene, Forest Soil Scientist, Forest Service, prepared this section.

Human groups have occupied southwestern Montana for at least the last 12,000 years. Throughout prehistory, human groups pursued a hunting and gathering way of life. Paleo-Indian (12,000 to 7,500 years before present) subsistence systems centered on the hunting of Pleistocene megafauna such as the wooly mammoth and giant bison. These peoples likely moved around in small family bands following seasonal migrations of the herd animals they depended on for food.

During the Archaic Period (7,500 to 1,500 years before present), climatic shifts forced human populations to broaden their subsistence base. Modern forms of bison, deer, elk, and other ungulates were hunted. Incidence of grinding implements and plant processing evidence indicate a greater emphasis on plant use. Archaic hunters and gathers often used the same camp localities.

The Late Prehistoric Period (1,500 years before present to AD 1,700) showed an increase of technologic complexity with the introduction of the bow and arrow, which replaced the spear thrower. Large communal bison hunts, game drives, and ambush sites were common.

A transition between the pure aboriginal cultures and Euro-American culture occurred during the Proto-Historic Period (AD 1,700 to aboriginal contact with Euro-American people). The horse, trade beads, metal tools, and firearms were introduced through native trade systems.

Salish-speaking Flathead Indians were present in the area; they were later forced out by Shoshone Indians. In a very few years, nomadic Plains tribes pushed out the Shoshone. The Blackfeet, Gros Ventre, Plains, Cree, and other eastern bands acquired firearms and drove out the Flathead, Kootenai, Shoshone, and Bannock.

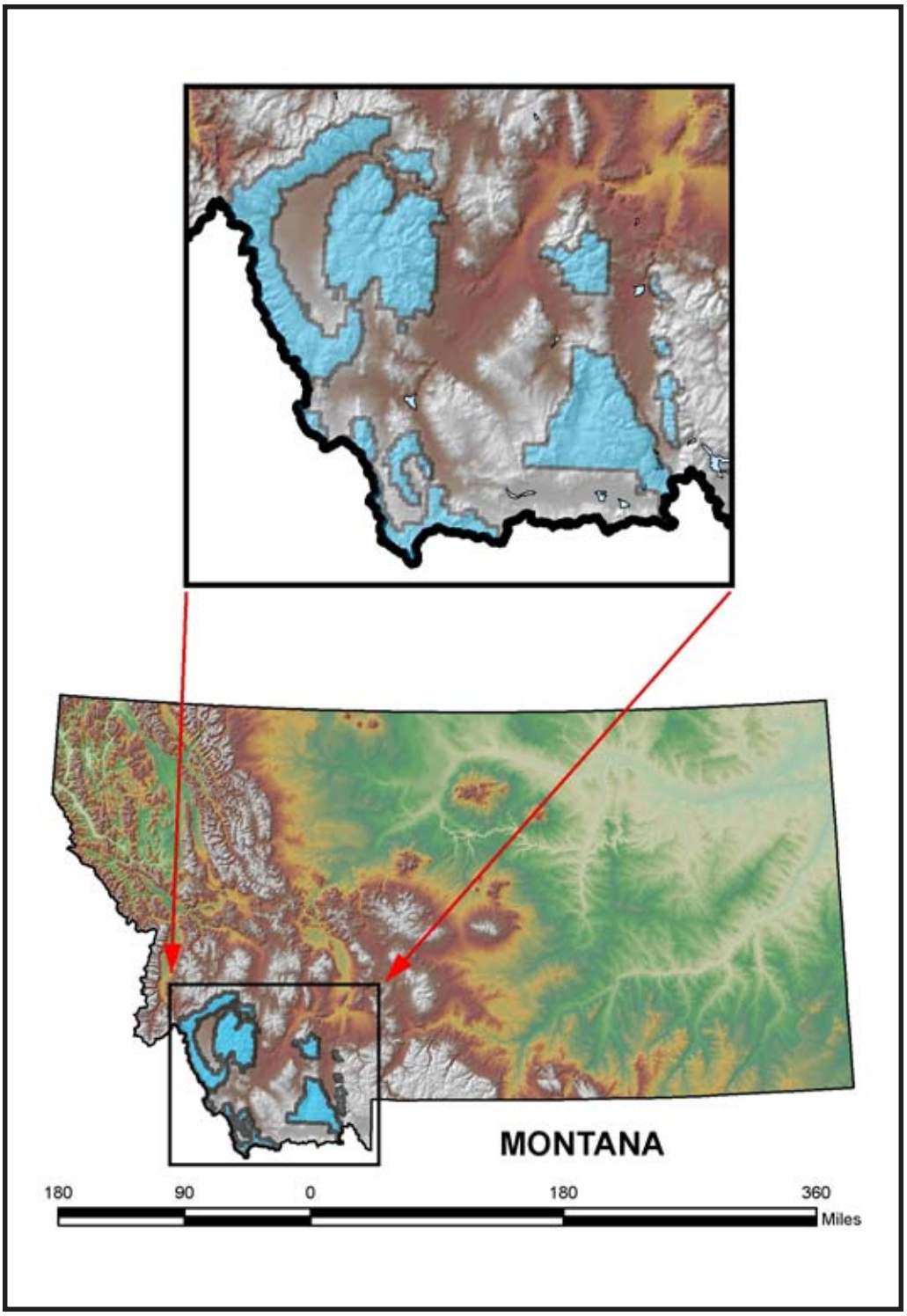

Figure 1.—Location of Beaverhead National Forest Area, Montana

The Lewis and Clark Expedition of 1804-1806 was the first documentation of Euro-Americans in the area. Fur trading was initiated a few years later and started the Fur Trade Era.

Discovery of gold initiated the Placer Era. Early placer sites are common on the Beaverhead-Deerlodge National Forest.

Later, lode mining occurred, giving way to the Hard Rock Mining Era. Many small mining camps and mining districts developed. There are many mining districts on the Beaverhead-Deerlodge National Forest. Mining required a considerable use of timber and was the start of historic logging activity.

Sheep and cattle ranching began, coincidentally, with the gold rush. Ranching resulted in home ranches, winter ranges in the valley, and riders' cabins on the summer ranges in the mountains.

Throughout the 1870s, cattle and sheep businesses, as well as farming, continued to expand.

By the 1880s, the railroads had tracked through the Montana Territory, facilitating development.

Montana became the forty-first state in November of 1889. The Great Northern Railroad moved a flood of emigrants to the area in the early 1900s. Agriculture surpassed mining as a major source of income.

On July 1, 1908, President Theodore Roosevelt proclaimed the Beaverhead and Deerlodge National Forests in separate executive orders. The Madison National Forest became part of the Beaverhead National Forest in 1931. In 1945, the west slope of the Madison Range was transferred from the Gallatin National Forest to the Beaverhead National Forest. On February 2, 1996, the Forest Service merged the Beaverhead and Deerlodge National Forests into one administrative unit.

Currently, National Forests are managed for recreation activities, livestock grazing, mining, timber production, watershed, wildlife, and fish habitat.

Landforms

Erosion and deposition by water and glaciers have influenced the landforms in the survey area. Common glacial landforms in the survey area include U-shaped valleys, cirques, outwash terraces, and rolling glacial moraines. In some areas, stream action has produced V-shaped valleys, terraces, and flood plains.

The structure of the bedrock controls the shape of many landforms. The bedding and hardness of the bedrock and the orientation of the beds affect the location of stream channels and the gradient and shape of slopes. Landslides commonly occur in areas where some of the layers of bedrock are soft. The areas of material deposited by landslides can be large and irregular in shape.

Each detailed soil map unit in this survey is on a characteristic landform. Slope, slope shape, relief, and other properties define landforms. A strong relationship between the properties of landforms and the properties of soils and vegetation is common. The pattern of landforms visible on aerial photography was used to plot the boundaries of the map units.

The following classes of landforms were used to define map units and assist in mapping (Holdorf, 1990).

Cirque headwalls and *alpine ridges* are very steep rock cliffs surrounding cirque basins and the very narrow ridges at the higher elevations above the cirques (fig. 2). The cirques tend to be on northerly aspects and the alpine ridges on southerly aspects.

Cirque basins are large hollows scooped out at the heads of valleys by glacial erosion. Defined by very steep walls that arc around the head of the hollow, cirque basins have semicircular or elongated U-shapes. At higher elevations, cirque walls consist mostly of rock outcrop and rubble land. At lower elevations, the walls have a partial mantle of till. Usually consisting of glacially scoured knolls, separated by depressions veneered with thin till, a cirque floor slopes gently along an irregular incline toward the cirque mouth, with a small lake (tarn) behind it.

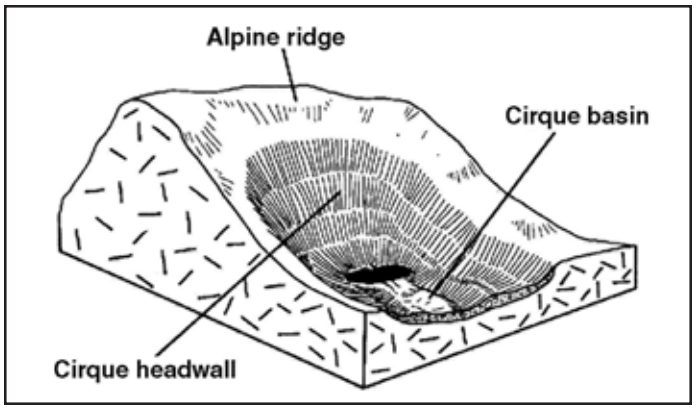

Figure 2.—A cirque has a steep headwall and an undulating to hilly basin or floor that often contains a small lake. Alpine ridges are very narrow.

Trough walls are straight or concave slopes in U-shaped glacial valleys (fig. 3). The slopes are very steep, and avalanche chutes occur. Glacial scouring has resulted in areas of rock outcrop and in areas on the upper slopes where the soils are shallow. Deposits of glacial drift are common on the lower slopes.

Trough bottoms are the floors of U-shaped, glacially modified valleys, typically overlaid by moraines and/or outwash terraces. Each trough bottom usually contains a relatively large stream running its length.

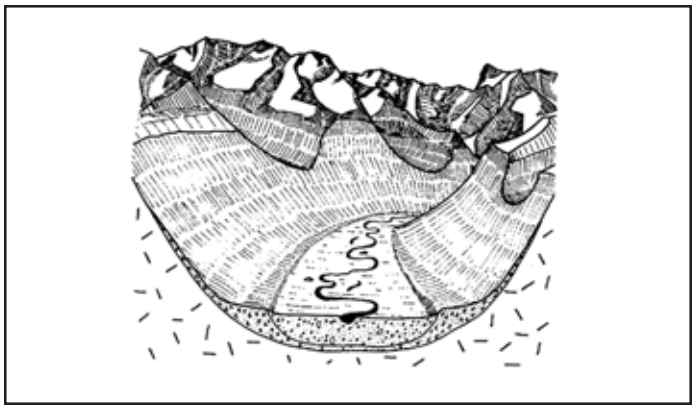

Figure 3.—Trough walls are the steep side slopes of U-shaped glacial valleys. Trough bottoms have thick deposits of drift, alluvium, and colluvium.

Glaciated mountain ridges are rounded mountain ridges that glaciers have overridden (fig. 4). Glacial scouring has resulted in areas of rock outcrop and in areas on the ridge crest where the soils are shallow. Thick deposits of glacial till occur on the lower slopes.

Glaciated mountain slopes are mantled by till. The drainage pattern is usually dendritic, and the drainageways are widely spaced. Slopes are weakly to moderately dissected by low-order streams.

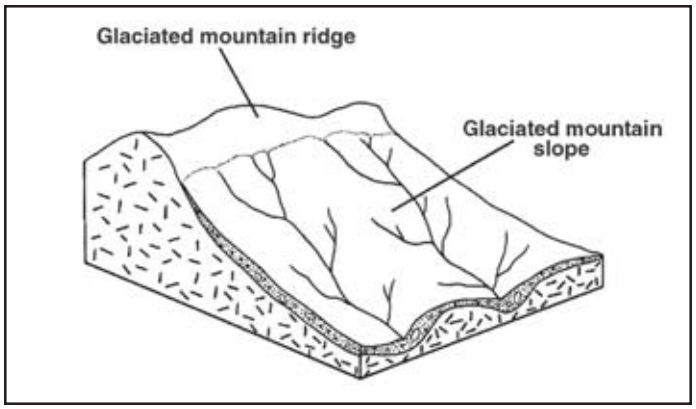

Figure 4.—Glaciated mountain slopes are mantled by glacial till.

Usually forming where alpine glaciers emerge from glacial troughs and spread out on large valley floors, *moraines* are undulating to hilly complex ridges formed of glacial drift (fig. 5). The relief of knolls and hills ranges from 10 to 60 meters, and dominant slope gradients range from 10 to 50 percent. Moraines usually have deranged drainage patterns with surface runoff collecting in closed depressions to form small lakes, ponds, and bogs.

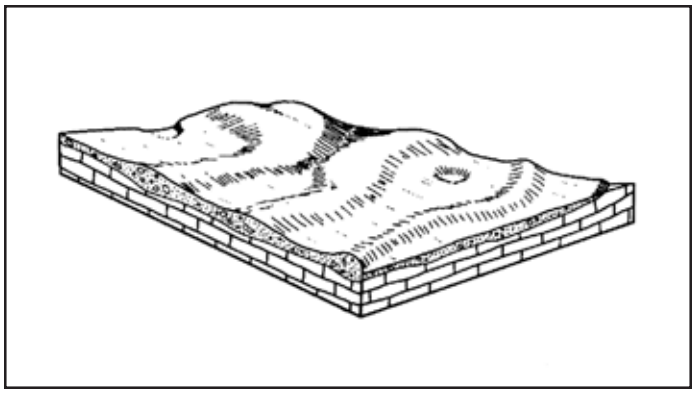

Figure 5.—Moraines are undulating or hilly glacial drift deposits.

Glacial deposits occur in valley bottoms in the larger intermountain valleys. Usually, these deposits are near or outside the forest boundary.

Ice-margin slopes consist of material deposited by meltwater streams beyond the extent of the glacial ice.

Mountain ridges are gently rounded and convex with poorly defined drainage channels. The soils are weakly developed and formed in material containing many angular or subangular rock fragments. Frost action has mixed the rock fragments and the soil together and has probably been most responsible for shaping the ridges. Patterned ground occurs at the highest elevations.

Mountain slopes have strongly convex ridge crests and convex shoulders that usually extend far down the sides of mountains (fig. 6). Footslopes and drainage bottoms are concave and relatively short; dominant slope gradients range between 0 and 15 percent. On most mountains, the drainage patterns are dendritic and composed of moderately incised low-order drainages, 250 to 500 meters apart. Drainage channels often originate at seeps or springs that emerge near the base of ridge shoulders. At the

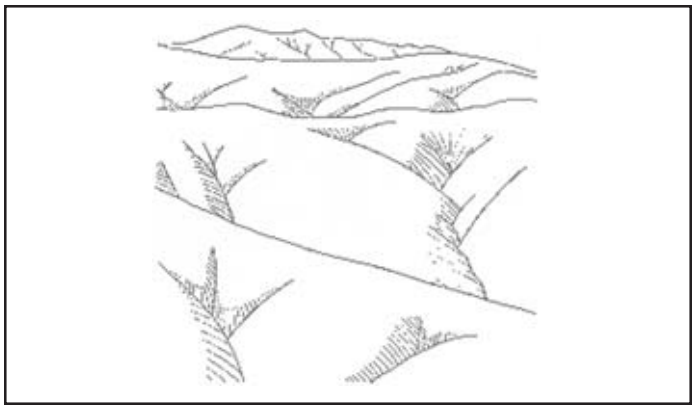

Figure 6.—Mountain slopes have strongly convex ridges and upper slopes. Drainageways are widely spaced.

highest elevations, drainages are absent or widely spaced and are weakly incised. Mantle thickness typically exceeds 3 meters on ridge crests. Mantle materials contain many hard, angular rock fragments of local origin.

Dissected mountain slopes, consisting mainly of mountain side slopes that parallel drainages spaced 150 to 500 meters apart, form V-shaped valleys (fig. 7). Local relief from drainage bottoms to spur-ridge divides ranges from 30 to 100 meters. Side slope profiles are typically straight to slightly convex. Dominant slope gradients range from 15 to 60 percent. Regolith thickness rarely exceeds 2 meters. Rock outcrop is rare and usually located on upper slopes.

Figure 7.—Dissected mountain slopes have V-shaped valleys with nearly straight side slopes. Drainageways are closely spaced.

Structurally controlled slopes, which occur on sedimentary rock, have shapes controlled by geologic structure. Landforms, underlain by thinly bedded sandstone and shale, have parallel ridges that are underlain by sandstone. Landforms, underlain by thickly bedded sandstone or limestone with thin beds of shale, have smooth slopes parallel to the dip of the underlying limestone or sandstone layers with benches or swales that are underlain by shale. Other landforms include eroded mountain ridges. These ridges are broad, exhumed, eroded areas occurring on tops of mountains.

Pediment slopes, which occur between mountain fronts and valley or basin bottoms, are gently inclined planate erosional surfaces carved in bedrock and usually veneered with fluvial gravels.

Depositional landforms occur throughout the Beaverhead National Forest. In appearance, depositional landforms are very similar to some of the glacial-fluvial deposits. Alluvial deposits are derived mainly from hard bedrock. These deposits contain abundant angular fragments larger than 3 inches in diameter. When derived from soft bedrock, the soils are more “loamy” or “clayey.”

Alluvium is unconsolidated material deposited by running water, including gravel, sand, silt, and clay. *Alluvial basins* are broad openings in otherwise narrow valleys. Sediments deposited by running water underlie alluvial basins, which contain low-gradient, meandering streams.

Alluvial fans are a dynamic body of alluvium with or without debris flow deposits, whose surface forms a segment of a cone that radiates downslope from the point where the stream emerges from a narrow valley onto a broader valley bottom or plain. Common longitudinal profiles are gently sloping and nearly linear. The drainage system has braided channels with moderate gradients and poorly defined, intermittent streams.

Valley bottoms occur along major perennial streams and include flood plains, stream terraces, and alluvial fans that are too small to map at the scale of this soil survey. These landforms are gently sloping, and slope gradients are generally 0 to 10 percent. Soils on valley bottoms can have a water table and are usually subject to flooding.

Landslide deposits result from rotational slumps, earthflows, and block glides (fig. 8). Most landslide deposits have a hummocky surface with cracks, slump escarpments, and undrained depressions, although some have randomly oriented large blocks of rock. Slopes are very complex with benches and escarpments; the drainage pattern is deranged; and many seeps, springs, and bogs occur.

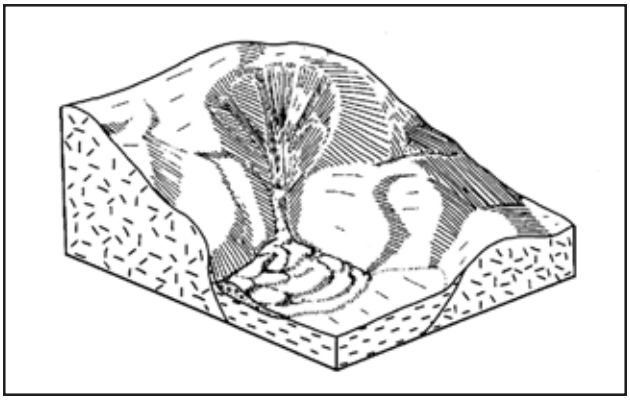

Figure 8.—Landslide deposits have slip scars, cracks, and leaning trees indicating recent movement.

Climate

This section was prepared by the Natural Resources Conservation Service, National Water and Climate Center, Portland, Oregon.

The survey area has a continental climate. Temperatures vary widely on a daily and seasonal basis with recorded air temperatures ranging from -60 to 104 degrees. Average annual precipitation is dominantly 12 to 55 inches and ranges up to 75 inches in a few alpine areas.

The majority of precipitation is received from Pacific air masses, with some additional moisture from arctic and gulf coast air masses. The arctic air masses often interrupt normal airflow and produce below zero temperatures during winter. The local climate in the mountains is highly variable, depending on slope, aspect, elevation, and the rain shadow effects produced by the mountains. South-facing, grassy slopes can

have little snow cover and relatively warm average temperatures. Windswept ridges can be extremely cold and have little snow cover. Snow on north-facing slopes in the higher elevations can persist well into early summer. Frost pockets are in low areas where cold air accumulates at night during summer. The Big Hole Valley can have freezing temperatures any day of the year. It is one of the coldest places in the continental United States.

The climate tables were created from climate station Dillon ARPT.

Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from the First Order station at Idaho Falls, Idaho, and various climate atlases.

The "Temperature and Precipitation" table gives data on temperature and precipitation for the survey area as recorded at Dillon ARPT in the period 1971 to 2000. The "Freeze Dates in Spring and Fall" table shows probable dates of the last freeze in spring and the first freeze in fall. The "Growing Season" table provides data on the length of the growing season.

Spring is dominantly cool and wet. Precipitation is highest in late May and early June. Snowstorms can occur at any time at the higher elevations.

Summer is warm and relatively dry. Cloudy days are infrequent. High intensity thunderstorms of short duration occur frequently throughout the summer. Several inches of snow can fall in June and August. In summer, the average temperature is 62.5 degrees F at Dillon ARPT. The average daily maximum summer temperature is 78.6 degrees F. The highest temperature ever recorded at Dillon ARPT was 101 degrees F on August 5, 1961.

Autumn is dry and cool. The first snow falls in September; however, autumn weather can last until December. Soils not covered by snow are generally frozen by late October.

In winter, the temperature is relatively cold and most precipitation falls as snow. The average temperature is 23.7 degrees F at Dillon ARPT. The average daily minimum winter temperature is 12.5 degrees F. The lowest temperature ever recorded at Dillon ARPT was -37 degrees F on December 24, 1983.

The average seasonal snowfall is 42.3 inches. The greatest snow depth at any one time during the period of record at Dillon ARPT was 15 inches recorded on February 11, 1949. On average, about 56 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 16.0 inches, recorded on November 26, 1931.

Growing-degree days, equivalent to "heat units," are shown in the "Temperature and Precipitation" table. During the month, growing-degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual precipitation in the soil survey area is about 9.98 inches. Of this amount, about 5 inches, or 50 percent, usually falls during June through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record at Dillon ARPT was 1.97 inches on June 24, 1958. Thunderstorms occur on about 25 days each year, mostly during July.

The average relative humidity generally is low. In midafternoon, the average relative humidity is about 51 percent. Humidity is higher at night, and the average at dawn is about 83 percent. The sun shines 65 percent of the time in summer and 35 percent in winter. The prevailing wind is from the south-southwest. Average wind speed is highest, 9.4 miles per hour, in April.

The average frost-free season ranges from about 110 days in the valleys to less than 20 days in alpine areas.

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 native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

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

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

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted 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.

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, used in combination with digital orthophotographic imagery (black and white, color, and color infrared), show trees, buildings, roads, and rivers, all of which help in locating boundaries accurately.

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

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

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

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. The soils of a given 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, Adel loam, 0 to 4 percent slopes, is a phase of the Adel series.

Map unit components labeled as "family," are classified and described at the family level of Soil Taxonomy and related, by name, to a series that is a member of that family.

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

This survey includes complexes. 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. Leighcan-Como families-Rubble land complex, mountain ridgetops is an example.

This survey includes associations. 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. Matcher-Como families-Rock outcrop association, valley trough walls is an example.

This survey includes miscellaneous areas. They have little or no soil material and support little or no vegetation. Water is an example. The "Acreage and Proportionate Extent of the Soils" table 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. Many of the terms used in describing the soils or miscellaneous areas are defined in the "Glossary."

1—Adel loam, 0 to 4 percent slopes

Setting

Elevation: 4,500 to 10,000
Mean annual precipitation: 15 to 30 inches
Frost-free period: 50 to 70 days

Component Description

Adel and similar soils
Composition: 90 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform:
- Alluvial fans
- Stream terraces
- Swales

Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Eolian deposits
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.9 inches

Typical profile:
A1—0 to 23 inches; loam
A2—23 to 37 inches; loam
Bw—37 to 60 inches; gravelly loam

Additional Components

Adel, gravelly and similar soils: 4 percent
Adel, stony and similar soils: 4 percent
Poorly drained soils and similar soils: 2 percent

Management Considerations

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel, gravelly
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poorly drained soils
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

2—Adel loam, 4 to 15 percent slopes

Setting

Elevation: 4,500 to 10,000
Mean annual precipitation: 15 to 30 inches
Frost-free period: 50 to 70 days

Component Description

Adel and similar soils
Composition: 85 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform:
- Alluvial fans
- Footslope on hills

Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Eolian deposits

Flooding: None

Available water capacity to 60 inch depth: Approximately 9.9 inches
Typical profile:
A1—0 to 23 inches; loam
A2—23 to 37 inches; loam
Bw—37 to 60 inches; gravelly loam

Additional Components

Adel, gravelly and similar soils: 5 percent
Adel, stony and similar soils: 5 percent
Soils with calcareous substratum and similar soils: 5 percent

Management Considerations

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel, gravelly
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Soils with calcareous substratum
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

3B—Foolhen loam, 0 to 4 percent slopes

Setting

Elevation: 5,700 to 6,500
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Foolhen and similar soils
Composition: 85 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls
Landform: Stream terraces
Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Fine-loamy alluvium
Flooding: None
Water table: Present
Ponding duration: Brief
Available water capacity to 60 inch depth: Approximately 7.2 inches

Typical profile:
Oi—0 to 6 inches; slightly decomposed plant material
Oe—6 to 11 inches; mucky peat
A—11 to 18 inches; loam
Bg—18 to 29 inches; loam
Cg1—29 to 36 inches; loam
Cg2—36 to 60 inches; gravelly loam

Additional Components

Mooseflat and similar soils: 6 percent
Finn and similar soils: 5 percent
Dunkleber and similar soils: 4 percent

Management Considerations

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dunkleber
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

3D—Libeg, stony-Monad complex, 4 to 15 percent slopes

Setting

Elevation: 6,500 to 8,150
Mean annual precipitation: 20 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Libeg, stony and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Hillslopes
Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, mixed
Depth to restrictive feature: None noted

Drainage class: Well drained
Parent material:
- Alluvium
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A1—0 to 5 inches; gravelly loam
A2—5 to 10 inches; gravelly loam
Bt1—10 to 17 inches; very gravelly sandy clay loam
Bt2—17 to 24 inches; very gravelly clay loam
Bt3—24 to 60 inches; extremely gravelly sandy clay loam

Monad and similar soils
Composition: 35 percent
Taxonomic class: Fine-loamy, mixed, superactive Alfic Argicryolls
Landform: Hillslopes
Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.9 inches
Typical profile:
A—0 to 15 inches; loam
Bt/E—15 to 20 inches; loam
Bt1—20 to 29 inches; gravelly clay loam
Bt2—29 to 60 inches; gravelly clay loam

Additional Components

Adel and similar soils: 5 percent
Butchhill, extremely stony and similar soils: 5 percent
Libeg, extremely stony, greater slopes and similar soils: 5 percent
Sebud and similar soils: 5 percent

Management Considerations

Libeg, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monad
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Butchhill, extremely stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg, extremely stony, greater slopes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

4E—Butchhill gravelly loam, 15 to 45 percent slopes, stony

Setting

Elevation: 6,500 to 8,200
Mean annual precipitation: 18 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Butchhill, stony and similar soils
Composition: 80 percent
Taxonomic class: Clayey-skeletal, smectitic Alfic Argicryolls
Landform: Hillslopes
Slope: 15 to 45 percent
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, mixed
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Clayey alluvium
- Clayey metamorphic and sedimentary colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.8 inches
Typical profile:
A—0 to 12 inches; gravelly loam
E/Bt—12 to 19 inches; very gravelly loam
Bt1—19 to 30 inches; very cobbly clay
Bt2—30 to 60 inches; very cobbly clay loam

Additional Components

Adel and similar soils: 4 percent
Butchhill, extremely stony, greater slopes and similar soils: 4 percent
Hairpin and similar soils: 4 percent
Libeg and similar soils: 4 percent
Nieman, extremely stony and similar soils: 3 percent
Rock outcrop: 1 percent

Management Considerations

Butchhill, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Butchhill, extremely stony, greater slopes
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hairpin
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Nieman, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

5C—Hairpin silt loam, 2 to 8 percent slopes

Setting

Elevation: 6,500 to 8,250
Mean annual precipitation: 18 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Hairpin and similar soils
Composition: 80 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform:
- Fan remnants
- Lake terraces

Slope: 2 to 8 percent

Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Clayey lacustrine deposits
- Clayey alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.7 inches
Typical profile:
A1—0 to 4 inches; silt loam
A2—4 to 12 inches; cobbly silt loam
Bt/E—12 to 22 inches; clay loam
2Btss1—22 to 42 inches; clay
2Btss2—42 to 60 inches; gravelly clay

Additional Components

Monad and similar soils: 7 percent
Libeg and similar soils: 6 percent
Adel and similar soils: 5 percent
Finn and similar soils: 2 percent

Management Considerations

Hairpin
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monad
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

6D—Hairpin-Libeg, stony-Monad, stony complex, 4 to 15 percent slopes

Setting

Elevation: 6,200 to 8,100
Mean annual precipitation: 18 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Hairpin and similar soils
Composition: 55 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform:
- Hillslopes
- Slumps
- Terraces

Slope: 4 to 15 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Clayey lacustrine deposits
- Clayey alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.7 inches
Typical profile:
A1—0 to 4 inches; silt loam
A2—4 to 12 inches; cobbly silt loam
Bt/E—12 to 22 inches; clay loam
2Btss1—22 to 42 inches; clay
2Btss2—42 to 60 inches; gravelly clay

Libeg, stony and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Hillslopes
Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, mixed
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A1—0 to 5 inches; gravelly loam
A2—5 to 10 inches; gravelly loam
Bt1—10 to 17 inches; very gravelly sandy clay loam
Bt2—17 to 24 inches; very gravelly clay loam
Bt3—24 to 60 inches; extremely gravelly sandy clay loam

Monad, stony and similar soils
Composition: 15 percent
Taxonomic class: Fine-loamy, mixed, superactive Alfic Argicryolls
Landform: Hillslopes
Slope: 4 to 15 percent
Native plant cover type: Rangeland

Plant associations: None noted
Surface layer texture: Loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, mixed
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.9 inches
Typical profile:
A—0 to 15 inches; loam
Bt/E—15 to 20 inches; loam
Bt1—20 to 29 inches; gravelly clay loam
Bt2—29 to 60 inches; gravelly clay loam

Additional Components

Finn and similar soils: 5 percent
Hooligan and similar soils: 5 percent

Management Considerations

Hairpin
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monad, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hooligan
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

9B—Bearmouth-Mooseflat-Finn complex, 0 to 4 percent slopes

Setting

Elevation: 6,600 to 7,510
Mean annual precipitation: 18 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Bearmouth and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Stream terraces
Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 5 inches; gravelly loam
Bw—5 to 13 inches; very gravelly sandy loam
2C—13 to 60 inches; extremely cobbly sand

Mooseflat and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls
Landform:
- Drainageways
- Flood plains

Slope: 0 to 2 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Fine-loamy alluvium over sandy and gravelly alluvium
Flooding: Occasional
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
Oe—0 to 4 inches; moderately decomposed plant material
A—4 to 14 inches; loam
Cg1—14 to 19 inches; silt loam
Cg2—19 to 25 inches; gravelly loam
2Cg3—25 to 60 inches; extremely cobbly loamy sand

Finn and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls
Landform:
- Drainageways
- Flood plains

Slope: 0 to 4 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted

Drainage class: Poorly drained
Parent material: Gravelly alluvium
Flooding: Occasional
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A1—3 to 7 inches; silt loam
A2—7 to 15 inches; silt loam
Bw1—15 to 27 inches; very cobbly loam
2Bw2—27 to 35 inches; extremely gravelly sandy loam
2Cg—35 to 60 inches; extremely cobbly loamy sand

Additional Components

Tepete and similar soils: 12 percent
Bearmouth, stony and similar soils: 6 percent
Water: 2 percent

Management Considerations

Bearmouth
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tepete
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bearmouth, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

10B—Bearmouth very gravelly loam, 0 to 4 percent slopes

Setting

Elevation: 6,690 to 7,450
Mean annual precipitation: 20 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Bearmouth and similar soils
Composition: 80 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform:
- Alluvial fans
- Stream terraces

Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.2 inches
Typical profile:
A—0 to 5 inches; very gravelly loam
Bw—5 to 13 inches; very gravelly sandy loam
2C—13 to 60 inches; extremely cobbly sand

Additional Components

Wisdom and similar soils: 10 percent
Bearmouth, stony and similar soils: 5 percent
Shewag and similar soils: 5 percent

Management Considerations

Bearmouth
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wisdom
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shewag
- High windthrow hazard
- Surface compaction hazard

12E—Hairpin-Libeg, very stony complex, 4 to 45 percent slopes, slumped

Setting

Elevation: 6,600 to 8,050
Mean annual precipitation: 18 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Hairpin and similar soils
Composition: 50 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform:
- Hillslopes
- Slumps

Slope: 4 to 25 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Clayey lacustrine deposits
- Clayey alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.7 inches
Typical profile:
A1—0 to 4 inches; silt loam
A2—4 to 12 inches; cobbly silt loam
Bt/E—12 to 22 inches; clay loam
2Btss1—22 to 42 inches; clay
2Btss2—42 to 60 inches; gravelly clay

Libeg, very stony and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Hillslopes
- Slumps

Slope: 8 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
A1—0 to 5 inches; very cobbly loam
A2—5 to 10 inches; very cobbly loam
Bt1—10 to 17 inches; very gravelly sandy clay loam

Bt2—17 to 24 inches; very gravelly clay loam
Bt3—24 to 60 inches; extremely gravelly sandy clay loam

Additional Components

Finn and similar soils: 10 percent
Butchhill, very stony and similar soils: 7 percent
Nieman and similar soils: 5 percent
Water: 2 percent
Rock outcrop: 1 percent

Management Considerations

Hairpin
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Butchhill, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Nieman
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

Rock outcrop
- Nonsoil material

13B—Foxgulch-Mooseflat-Copperbasin complex, 0 to 4 percent slopes

Setting

Elevation: 5,900 to 6,940
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Foxgulch and similar soils
Composition: 45 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Fluvaquentic Haplocryolls
Landform: Flood plains
Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Fine-loamy alluvium over sandy and gravelly alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 11 inches; silt loam
A2—11 to 16 inches; silty clay loam
Bw—16 to 29 inches; silt loam
BC—29 to 36 inches; sandy clay loam
2C—36 to 60 inches; very gravelly sand

Mooseflat and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls
Landform:
- Drainageways
- Flood plains

Slope: 0 to 2 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silty clay loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Fine-loamy alluvium over sandy and gravelly alluvium
Flooding: Occasional
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
Oe—0 to 4 inches; moderately decomposed plant material
A—4 to 14 inches; silty clay loam
Cg1—14 to 19 inches; silt loam
Cg2—19 to 25 inches; gravelly loam
2Cg3—25 to 60 inches; extremely cobbly loamy sand

Copperbasin and similar soils
Composition: 15 percent
Taxonomic class: Sandy-skeletal, mixed Aquic Haplocryolls
Landform: Flood plains
Slope: 0 to 4 percent
Native plant cover type: Rangeland

Plant associations: None noted
Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Sandy and gravelly alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 1.8 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 7 inches; very cobbly loam
AC—7 to 16 inches; extremely cobbly loamy sand
C1—16 to 35 inches; extremely cobbly sand
C2—35 to 60 inches; extremely cobbly sand

Additional Components

Water: 5 percent
Wisdom and similar soils: 5 percent
Redfish and similar soils: 3 percent
Tepete and similar soils: 2 percent

Management Considerations

Foxgulch
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Copperbasin
- High water table
- High windthrow hazard
- Surface compaction hazard

Water
- Nonsoil material

Wisdom
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redfish
- Flooding
- High water table
- High windthrow hazard

Tepete
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

15UD2—Garlet-Bata families-Rock outcrop complex, steep glaciated mountain slopes and ridges

Interpretive focus: multiple-use forest
Field investigation intensity: Order 3

Setting

Elevation: 6,000 to 7,990
Mean annual precipitation: 22 to 29 inches
Frost-free period: 30 to 60 days

Component Description

Garlet and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 35 percent
Plant associations:
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent boulders
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Drift over limestone, sandstone, and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
E1—0 to 4 inches; gravelly sandy loam
E2—4 to 19 inches; very channery sandy loam
Bw—19 to 46 inches; very cobbly sandy clay loam
Bk—46 to 70 inches; extremely cobbly loam

Bata and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs
Landform: Ground moraines
Slope: 10 to 35 percent
Plant associations:
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over sandstone and siltstone drift
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches

Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
Bw—3 to 12 inches; gravelly ashy loam
2E/Bt—12 to 23 inches; very gravelly sandy loam
2Bt—23 to 60 inches; very gravelly sandy clay loam

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Additional Components

Elvick and similar soils: 10 percent
Holloway and similar soils: 10 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Elvick
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Holloway
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

15UE2—Klootch family-Rock outcrop-Waldbillig family, complex, steep glaciated mountain slopes and ridges

Interpretive focus: High-elevation resource areas
Field investigation intensity: Order 4

Setting

Elevation: 7,660 to 10,600
Mean annual precipitation: 28 to 40 inches
Frost-free period: 20 to 40 days

Component Description

Klootch and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Backslope on ground moraines
Slope: 10 to 35 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/smooth woodrush
- whitebark pine/subalpine fir
- alpine larch/subalpine fir
- whitebark pine

Surface layer texture: Cobbly ashy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over dolomite (dolostone) and quartzite drift
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 7 inches; cobbly ashy loam
Bw—7 to 27 inches; very gravelly fine sandy loam
BC—27 to 60 inches; very cobbly fine sandy loam

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Waldbillig and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform:
- Footslope on valley floors
- Toeslope on valley floors

Slope: 10 to 35 percent
Plant associations:
- subalpine fir/smooth woodrush
- whitebark pine/subalpine fir
- alpine larch/subalpine fir
- whitebark pine

Surface layer texture: Gravelly ashy silt loam
Rock fragments on the soil surface: 3 to 15 percent boulders
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over sandstone and siltstone drift
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
Oe—0 to 2 inches; moderately decomposed plant material
Bw—2 to 12 inches; gravelly ashy silt loam
2E—12 to 28 inches; very gravelly fine sandy loam
2E and Bt—28 to 60 inches; very gravelly sandy loam

Additional Components

Elvick and similar soils: 10 percent
Bata and similar soils: 5 percent
Hun and similar soils: 5 percent

Management Considerations

Klootch
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Waldbillig
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Hun
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

15UE3—Klootch family-Rock outcrop-Elvick family, complex, steep glaciated mountain slopes and ridges

Interpretive focus: High-elevation resource areas
Field investigation intensity: Order 4

Setting

Elevation: 7,700 to 10,600
Mean annual precipitation: 28 to 40 inches
Frost-free period: 20 to 40 days

Component Description

Klootch and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Landform:
- Shoulder on ground moraines
- Backslope on ground moraines

Slope: 25 to 50 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/smooth woodrush
- whitebark pine/subalpine fir
- alpine larch/subalpine fir
- whitebark pine

Surface layer texture: Cobbly ashy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over quartzite drift over dolomite (dolostone)
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 7 inches; cobbly ashy loam
Bw—7 to 27 inches; very gravelly fine sandy loam
BC—27 to 60 inches; very cobbly fine sandy loam

Rock outcrop
Composition: 25 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Elvick and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocryepts
Landform:
- Depressions
- Drainageways
- Toeslope on ground moraines

Slope: 0 to 20 percent
Plant associations:
- subalpine fir/smooth woodrush
- whitebark pine/subalpine fir
- alpine larch/subalpine fir
- whitebark pine

Surface layer texture: Very bouldery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent boulders
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Sandstone and siltstone glaciofluvial deposits
Flooding: None
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
E1—0 to 7 inches; very bouldery loam
E2—7 to 18 inches; very bouldery loam
Bw—18 to 38 inches; very cobbly sandy loam
BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Waldbillig and similar soils: 10 percent
Rubble land: 8 percent
Hun and similar soils: 5 percent
Water: 2 percent

Management Considerations

Klootch
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Elvick
- High water table
- High windthrow hazard
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Waldbillig
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Hun
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

16—Bearmouth extremely stony loam, 0 to 4 percent slopes

Setting

Elevation: 4,800 to 7,500
Mean annual precipitation: 15 to 24 inches
Frost-free period: 50 to 70 days

Component Description

Bearmouth and similar soils
Composition: 90 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform:
- Alluvial fans
- Stream terraces

Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Extremely stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.8 inches
Typical profile:
A—0 to 6 inches; extremely stony loam
Bw—6 to 20 inches; very gravelly loam
2C—20 to 60 inches; extremely gravelly loamy sand

Additional Components

Adel and similar soils: 3 percent
Maxville and similar soils: 3 percent
Bearmouth, very stony and similar soils: 2 percent
Bearmouth, bouldery and similar soils: 2 percent

Management Considerations

Bearmouth
- High windthrow hazard
- Surface rock fragments
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maxville
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth, bouldery
- High windthrow hazard
- Surface boulders
- Low bearing strength
- Surface compaction hazard

16A—Tepete-Dunkleber-Mooseflat complex, 0 to 2 percent slopes

Setting

Elevation: 6,000 to 7,040
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Tepete and similar soils
Composition: 55 percent
Taxonomic class: Loamy, mixed, euic Terric Cryohemists
Landform: Marshes
Slope: 0 to 2 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Organic
Flooding: None
Water table: Present
Ponding duration: Very long
Available water capacity to 60 inch depth: Approximately 17.0 inches
Typical profile:
Oe—0 to 40 inches; moderately decomposed plant material
Ag—40 to 50 inches; silt loam
2Cg—50 to 60 inches; very gravelly sandy clay loam

Dunkleber and similar soils
Composition: 25 percent
Taxonomic class: Euic Typic Cryofibrists
Landform: Marshes
Slope: 0 to 2 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Organic
Flooding: None
Water table: Present
Ponding duration: Long
Available water capacity to 60 inch depth: Approximately 20.9 inches
Typical profile:
Oi1—0 to 18 inches; mucky peat
Oi2—18 to 60 inches; mucky peat

Mooseflat and similar soils
Composition: 15 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls

Landform:
- Drainageways
- Flood plains

Slope: 0 to 2 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Fine-loamy alluvium over sandy and gravelly alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:

Oe—0 to 4 inches; moderately decomposed plant material
A—4 to 14 inches; loam
Cg1—14 to 19 inches; silt loam
Cg2—19 to 25 inches; gravelly loam
2Cg3—25 to 60 inches; extremely cobbly loamy sand

Additional Components

Water: 3 percent
Slagamelt and similar soils: 2 percent

Management Considerations

Tepete
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Dunkleber
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

Slagamelt
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

19—Blaine stony loam, 2 to 15 percent slopes

Setting

Elevation: 5,900 to 7,500
Mean annual precipitation: 15 to 19 inches
Frost-free period: 50 to 80 days

Component Description

Blaine and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Hillsides
- Ridges

Slope: 2 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Stony loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Igneous residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 6 inches; stony loam
Bt—6 to 10 inches; very stony clay loam
Bk—10 to 25 inches; very stony loam
R—25 to 60 inches; bedrock

Additional Components

Leavitt and similar soils: 8 percent
Adel and similar soils: 5 percent
Rock outcrop: 2 percent

Management Considerations

Blaine
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Leavitt
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

19E—Hooligan-Inabnit complex, 8 to 35 percent slopes

Setting

Elevation: 6,200 to 7,050
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Hooligan and similar soils
Composition: 50 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls
Landform: Hillslopes
Slope: 8 to 25 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature:
Paralithic bedrock: 20 to 40 inches
Drainage class: Well drained
Parent material: Fine-loamy alluvium over siltstone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.3 inches
Typical profile:
A1—0 to 5 inches; silt loam
A2—5 to 10 inches; loam
Bt1—10 to 26 inches; gravelly clay loam
Bt2—26 to 35 inches; clay loam
Cr—35 to 60 inches; weathered bedrock

Inabnit, stony and similar soils
Composition: 30 percent
Taxonomic class: Loamy, mixed, superactive, shallow Ustic Haplocryalfs
Landform: Hillslopes
Slope: 8 to 35 percent
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent boulders, mixed
Depth to restrictive feature:
• Paralithic bedrock: 10 to 20 inches
Drainage class: Well drained
Parent material: Loamy siltstone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.7 inches
Typical profile:
A—0 to 3 inches; very cobbly loam
Bt—3 to 15 inches; very paragravelly silty clay loam
Cr—15 to 60 inches; weathered bedrock

Additional Components

Nieman, very stony and similar soils: 7 percent
Ratiopeak and similar soils: 6 percent
Hooligan, lesser slopes and similar soils: 5 percent
Rock outcrop: 2 percent

Management Considerations

Hooligan
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Inabnit, stony
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Nieman, very stony
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Ratiopeak
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hooligan, lesser slopes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

19N60—Lilylake-Mariel families, complex, alluvial basins

Setting

Elevation: 4,100 to 8,070
Mean annual precipitation: 22 to 42 inches
Frost-free period: 35 to 65 days
Note: This landform is enclosed by mountain slopes and typically has low-gradient, meandering streams.

Component Description

Lilylake and similar soils
Composition: 65 percent
Taxonomic class: Sandy-skeletal, mixed Histic Cryaquepts
Landform:
- Drainageways
- Kettles

Slope: 0 to 2 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Organic over mixed alluvium

Flooding: None
Water table: Present
Ponding duration: Brief
Available water capacity to 60 inch depth: Approximately 2.1 inches
Typical profile:
Oa—0 to 11 inches; mucky peat
Ag—11 to 17 inches; stony loam
2Cg—17 to 60 inches; very gravelly loamy coarse sand

Mariel and similar soils
Composition: 30 percent
Taxonomic class: Euic Typic Cryohemists
Landform: Proglacial lakes (relict)
Slope: 0 to 2 percent
Plant associations: Holm's Rocky Mountain sedge h.t.
Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Organic
Flooding: None
Water table: Present
Ponding duration: Long
Available water capacity to 60 inch depth: Approximately 1.6 inches
Typical profile:
Oe—0 to 52 inches; mucky peat
2C—52 to 60 inches; silt loam

Additional Components

Jurvannah and similar soils: 0 to 6 percent

Management Considerations

Lilylake
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Mariel
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Jurvannah
- Flooding
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Management note: This unit has a fluctuating water table.

21C—Maurice loam, 2 to 8 percent slopes

Setting

Elevation: 5,800 to 6,470
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Maurice and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Outwash plains
- Stream terraces

Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 3 inches; loam
Bw—3 to 13 inches; gravelly loam
BC—13 to 24 inches; very gravelly fine sandy loam
C—24 to 60 inches; very gravelly fine sandy loam

Additional Components

Libeg and similar soils: 10 percent
Redchief and similar soils: 5 percent

Management Considerations

Maurice
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

21E—Nieman, extremely stony-Sebud, very stony complex, 15 to 45 percent slopes

Setting

Elevation: 6,500 to 8,200
Mean annual precipitation: 20 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Nieman, extremely stony and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Argicryolls
Landform: Hillslopes
Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 3 to 15 percent stones, mixed
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Metamorphic residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
A—0 to 5 inches; very cobbly loam
Bt—5 to 12 inches; extremely cobbly sandy clay loam
C—12 to 16 inches; extremely cobbly sandy clay loam
R—16 to 60 inches; unweathered bedrock

Sebud, very stony and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Hillslopes
Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 3 to 15 percent stones, mixed
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly alluvium
- Igneous and metamorphic colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 11 inches; gravelly loam
Bw1—11 to 22 inches; very gravelly loam
Bw2—22 to 37 inches; very gravelly loam
C—37 to 60 inches; extremely gravelly sandy loam

Additional Components

Rock outcrop: 10 percent
Nieman, lesser slopes, extremely stony and similar soils: 5 percent
Rubble land: 5 percent

Management Considerations

Nieman, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Sebud, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Nieman, lesser slopes, extremely stony
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

22—Branham-Rock outcrop complex, 8 to 45 percent slopes

Setting

Elevation: 5,500 to 7,330
Mean annual precipitation: 15 to 20 inches
Frost-free period: 50 to 70 days

Component Description

Branham and similar soils
Composition: 70 percent
Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls
Landform: Hills
Slope: 8 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Coarse sandy loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Coarse-loamy granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.9 inches

Typical profile:
A—0 to 4 inches; coarse sandy loam
Bw—4 to 22 inches; gravelly coarse sandy loam
C—22 to 30 inches; gravelly coarse sand
R—30 to 60 inches; unweathered bedrock

Rock outcrop
Composition: 15 percent
Landform: None assigned

Additional Components

Poin and similar soils: 10 percent
Earcree and similar soils: 5 percent

Management Considerations

Branham
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

Poin
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

Earcree
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential

22E—Lolon gravelly loam, 4 to 25 percent slopes, bouldery

Setting

Elevation: 6,100 to 6,300
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Lolon and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform:
- Alluvial fans
- Moraines

Slope: 4 to 25 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.1 inches
Typical profile:
A—0 to 8 inches; gravelly loam
Bw—8 to 28 inches; very gravelly loam
2C—28 to 60 inches; very gravelly sand

Additional Components

Adel and similar soils: 5 percent
Finn and similar soils: 5 percent
Water: 5 percent

Management Considerations

Lolon
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

23—Bridger clay loam, 2 to 8 percent slopes

Setting

Elevation: 6,500 to 8,290
Mean annual precipitation: 15 to 19 inches
Frost-free period: 50 to 90 days

Component Description

Bridger and similar soils
Composition: 80 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform:
- Footslope on hills
- Stream terraces

Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material:
- Clayey alluvium
- Glaciomarine deposits

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.9 inches
Typical profile:
A—0 to 7 inches; clay loam
Bt—7 to 17 inches; clay
Bk1—17 to 21 inches; gravelly clay loam
Bk2—21 to 60 inches; very gravelly clay loam

Additional Components

Bridger, loam and similar soils: 10 percent
Adel and similar soils: 5 percent
Leavitt and similar soils: 5 percent

Management Considerations

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger, loam
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Leavitt
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

23B—Wisdom-Shewag-Mooseflat complex, 0 to 4 percent slopes

Setting

Elevation: 5,900 to 7,080
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Wisdom and similar soils
Composition: 40 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Oxyaquic Haplocryolls
Landform: Outwash plains
Slope: 0 to 4 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted

Drainage class: Well drained
Parent material: Fine-loamy alluvium over sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A1—2 to 7 inches; silt loam
A2—7 to 14 inches; silt loam
Bw—14 to 27 inches; loam
2C—27 to 60 inches; extremely gravelly sand

Shewag and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Oxyaquic Haplocryolls
Landform: Outwash plains
Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; very gravelly loam
Bw—9 to 18 inches; extremely gravelly sandy loam
2C—18 to 60 inches; extremely gravelly sand

Mooseflat and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Drainageways
Slope: 0 to 2 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Fine-loamy alluvium over sandy and gravelly alluvium
Flooding: None
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
Oe—0 to 4 inches; moderately decomposed plant material
A—4 to 14 inches; loam
Cg1—14 to 19 inches; silt loam
Cg2—19 to 25 inches; gravelly loam
2Cg3—25 to 60 inches; extremely cobbly loamy sand

Additional Components

Tepete and similar soils: 5 percent
Bighole and similar soils: 3 percent
Cowcamp and similar soils: 2 percent

Management Considerations

Wisdom
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shewag
- High windthrow hazard
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tepete
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bighole
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cowcamp
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

24—Bridger cobbly clay loam, 8 to 35 percent slopes

Setting

Elevation: 4,500 to 8,380
Mean annual precipitation: 15 to 30 inches
Frost-free period: 30 to 90 days

Component Description

Bridger and similar soils
Composition: 85 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform:
- Footslope on hills
- Stream terraces

Slope: 8 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly clay loam
Depth to restrictive feature: None noted

Drainage class: Well drained
Parent material:
- Clayey alluvium
- Glaciomarine deposits

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.7 inches
Typical profile:
A—0 to 7 inches; cobbly clay loam
Bt—7 to 17 inches; clay
Bk1—17 to 21 inches; gravelly clay loam
Bk2—21 to 60 inches; very gravelly sandy clay loam

Additional Components

Adel and similar soils: 4 percent
Gaylord and similar soils: 4 percent
Tiban and similar soils: 4 percent
Burnette and similar soils: 3 percent

Management Considerations

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gaylord
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Burnette
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

27C—Bearmouth, stony-Bearmouth complex, 2 to 8 percent slopes

Setting

Elevation: 6,500 to 7,400
Mean annual precipitation: 16 to 22 inches
Frost-free period: 30 to 50 days

Component Description

Bearmouth, stony and similar soils
Composition: 55 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls

Landform: Alluvial fans
Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, mixed
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 5 inches; cobbly loam
Bw—5 to 13 inches; very gravelly sandy loam
2C—13 to 60 inches; extremely cobbly sand

Bearmouth and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Alluvial fans
Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.1 inches
Typical profile:
A—0 to 5 inches; very stony loam
Bw—5 to 13 inches; very gravelly sandy loam
2C—13 to 60 inches; extremely cobbly sand

Additional Components

Adel and similar soils: 10 percent
Bata, very stony and similar soils: 5 percent
Bearmouth, very cobbly and similar soils: 5 percent

Management Considerations

Bearmouth, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bata, very stony
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bearmouth, very cobbly
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

30C—Quigg loam, 2 to 8 percent slopes

Setting

Elevation: 5,900 to 6,320
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Quigg and similar soils
Composition: 85 percent
Taxonomic class: Fine, mixed, superactive Abruptic Argicryolls
Landform:
- Alluvial fans
- Stream terraces

Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.7 inches
Typical profile:
A—0 to 7 inches; loam
E/Bt—7 to 17 inches; sandy loam
Bt—17 to 29 inches; sandy clay
BC—29 to 38 inches; silty clay
C—38 to 60 inches; silty clay

Additional Components

Mollet and similar soils: 10 percent
Redchief and similar soils: 5 percent

Management Considerations

Quigg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

31—Bullrey loam, bedrock substratum, 2 to 12 percent slopes

Setting

Elevation: 6,400 to 7,400
Mean annual precipitation: 18 to 24 inches
Frost-free period: 50 to 70 days

Component Description

Bullrey and similar soils
Composition: 85 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Structural benches
Slope: 2 to 12 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature:
- Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained
Parent material: Loamy eolian deposits over tuff, welded residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.6 inches
Typical profile:
A—0 to 21 inches; loam
Bw—21 to 39 inches; gravelly loam
C—39 to 48 inches; very gravelly fine sandy loam
Cr—48 to 60 inches; weathered bedrock

Additional Components

Adel and similar soils: 4 percent
Sebud and similar soils: 4 percent
Tiban and similar soils: 4 percent
Rock outcrop: 3 percent

Management Considerations

Bullrey
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

31F—Sebud very cobbly loam, very stony, 15 to 60 percent slopes

Setting

Elevation: 6,800 to 8,000
Mean annual precipitation: 20 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Sebud, very stony and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Hillslopes
Slope: 15 to 60 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, mixed
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly alluvium
- Igneous and metamorphic colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 11 inches; very cobbly loam
Bw1—11 to 22 inches; very gravelly loam
Bw2—22 to 37 inches; very gravelly loam
C—37 to 60 inches; extremely gravelly sandy loam

Additional Components

Nieman and similar soils: 5 percent
Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Sebud, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Nieman
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

31UE4—Rock outcrop-Sig-Klootch families, complex, very steep cirques

Interpretive focus: High-elevation resource areas
Field investigation intensity: Order 4

Setting

Elevation: 6,790 to 10,600
Mean annual precipitation: 28 to 42 inches
Frost-free period: 20 to 40 days

Component Description

Rock outcrop
Composition: 35 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Sig and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Dystrocryepts
Landform:
- Cirque headwalls
- Cirque walls

Slope: 45 to 70 percent
Plant associations:
- subalpine fir/smooth woodrush
- whitebark pine/subalpine fir
- alpine larch/subalpine fir
- whitebark pine

Surface layer texture: Very bouldery sandy loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Sandstone and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 0.9 inches

Typical profile:
E—0 to 4 inches; very bouldery sandy loam
Bw1—4 to 10 inches; very stony sandy loam
Bw2—10 to 13 inches; very stony sandy loam
R—13 to 60 inches; bedrock

Klootch and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform:
- Backslope on cirque headwalls
- Footslope on cirque headwalls
- Backslope on cirque walls
- Footslope on cirque walls
- Patterned ground

Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/smooth woodrush
- whitebark pine/subalpine fir
- alpine larch/subalpine fir
- whitebark pine

Surface layer texture: Very cobbly ashy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Sandstone and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 7 inches; very cobbly ashy loam
Bw—7 to 27 inches; very gravelly fine sandy loam
BC—27 to 60 inches; very gravelly fine sandy loam

Additional Components

Rubble land: 10 percent
Waldbillig and similar soils: 10 percent

Management Considerations

Rock outcrop
- Nonsoil material

Sig
- Steep slopes
- Erodible surface
- High windthrow hazard
- Surface boulders
- Shallow soil

Klootch
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Rubble land
- Nonsoil material

Waldbillig
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

31UK4—Rubble land-Rock outcrop-Crawfish family, complex, cirque headwalls

Setting

Elevation: 7,090 to 9,480
Mean annual precipitation: 34 to 41 inches
Frost-free period: 30 to 50 days
Note: This landform occurs on glacially scoured, amphitheater-shaped walls with poorly integrated drainages. Typically, glacial lakes or wet meadows are found in cirque basins. Runoff is concentrated and converges into the basin.

Component Description

Rubble land
Composition: 35 percent
Definition: An accumulation of large, angular broken rock
Landform: None assigned

Rock outcrop
Composition: 30 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Crawfish and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Humicryepts
Landform: Cirque headwalls
Slope: 45 to 90 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- alpine larch/subalpine fir

Surface layer texture: Very stony fine sandy loam
Rock fragments on the soil surface: 5 to 15 percent boulders, quartzite
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Colluvium over metasedimentary residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 0.9 inches

Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
A—1 to 4 inches; very stony fine sandy loam
Bw—4 to 14 inches; very cobbly sandy loam
R—14 to 60 inches; bedrock

Additional Components

Rubycreek and similar soils: 0 to 15 percent

Management Considerations

Rubble land
- Nonsoil material

Rock outcrop
- Nonsoil material

Crawfish
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard

Rubycreek
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

32—Comad-Earcree complex, 8 to 45 percent slopes

Setting

Elevation: 5,000 to 8,000
Mean annual precipitation: 20 to 35 inches
Frost-free period: 30 to 90 days

Component Description

Comad and similar soils
Composition: 60 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform:
- Moraines
- Mountaintops
- Mountainflanks

Slope: 8 to 45 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Very stony loamy sand
Depth to restrictive feature: None noted
Drainage class: Excessively drained

Parent material:
- Alluvium
- Colluvium
- Granite and gneiss till

Flooding: None
Available water capacity to 60 inch depth: Approximately 1.5 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 17 inches; very stony loamy sand
AB—17 to 42 inches; very stony loamy sand
Bw—42 to 66 inches; very stony loamy sand

Earcree and similar soils
Composition: 25 percent
Taxonomic class: Coarse-loamy, mixed, superactive Pachic Haplocryolls
Landform: Footslope on hills
Slope: 8 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Schist alluvium
- Gneiss

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.2 inches
Typical profile:
A—0 to 16 inches; gravelly sandy loam
C—16 to 60 inches; gravelly coarse sandy loam

Additional Components

Shadow and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Earcree
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

33B—Sebud very cobbly loam, 2 to 6 percent slopes

Setting

Elevation: 5,680 to 6,120
Mean annual precipitation: 12 to 16 inches
Frost-free period: 50 to 70 days

Component Description

Sebud, very stony and similar soils
Composition: 90 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Relic alluvial fans
Slope: 2 to 6 percent
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 2.5 percent stones, 7 to 23 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
A1—0 to 6 inches; very cobbly loam
A2—6 to 12 inches; very cobbly loam
Bw—12 to 20 inches; very cobbly sandy loam
BC—20 to 30 inches; very cobbly sandy loam
C—30 to 60 inches; very gravelly sandy loam

Additional Components

Danielvil and similar soils: 10 percent

Management Considerations

Sebud, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Danielvil
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

34A—Danielvil-Danielvil, rarely flooded complex, 0 to 4 percent slopes

Setting

Elevation: 5,690 to 6,310
Mean annual precipitation: 15 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Danielvil and similar soils
Composition: 80 percent
Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls
Landform: Stream terraces
Slope: 0 to 4 percent
Plant associations: Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.0 inches
Typical profile:
A1—0 to 5 inches; sandy loam
A2—5 to 13 inches; loam
Bw—13 to 23 inches; gravelly sandy loam
BC—23 to 34 inches; gravelly sandy loam
2C—34 to 60 inches; gravelly coarse sandy loam

Danielvil, wet and similar soils
Composition: 20 percent
Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls
Landform: Drainageways
Slope: 0 to 4 percent
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Moderately well drained
Parent material: Alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 7.0 inches
Typical profile:
A1—0 to 5 inches; loam
A2—5 to 13 inches; loam
Bw—13 to 23 inches; gravelly sandy loam
BC—23 to 34 inches; gravelly sandy loam
2C—34 to 60 inches; gravelly coarse sandy loam

Management Considerations

Danielvil
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Danielvil, wet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

35A—Philipsburg-Mussigbrod complex, 0 to 2 percent slopes

Setting

Elevation: 6,100 to 7,010
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Philipsburg and similar soils
Composition: 60 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Terraces
Slope: 0 to 2 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.5 inches
Typical profile:
A1—0 to 5 inches; silt loam
A2—5 to 14 inches; silt loam
Bt1—14 to 20 inches; silty clay loam
Bt2—20 to 32 inches; clay loam
Bk1—32 to 43 inches; gravelly loam
Bk2—43 to 60 inches; very gravelly sandy loam

Mussigbrod and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Cumulic Haplocryolls
Landform: Mima mounds
Slope: 0 to 2 percent
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium over sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.1 inches
Typical profile:
A1—0 to 3 inches; gravelly loam
A2—3 to 9 inches; gravelly loam
A3—9 to 17 inches; gravelly loam
Bk—17 to 27 inches; loam
Ab—27 to 38 inches; loam
Bwb—38 to 49 inches; loam
2C—49 to 60 inches; extremely gravelly sand

Additional Components

Donald and similar soils: 5 percent
Libeg and similar soils: 5 percent
Philipsburg, greater slopes and similar soils: 3 percent
Hooligan and similar soils: 2 percent

Management Considerations

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mussigbrod
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Donald
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg, greater slopes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hooligan
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

35D—Philipsburg-Mussigbrod complex, 4 to 15 percent slopes

Setting

Elevation: 6,000 to 6,300
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Philipsburg and similar soils
Composition: 50 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 8.5 inches
Typical profile:
A1—0 to 5 inches; silt loam
A2—5 to 14 inches; silt loam
Bt1—14 to 20 inches; silty clay loam
Bt2—20 to 32 inches; clay loam
Bk1—32 to 43 inches; gravelly loam
Bk2—43 to 60 inches; very gravelly sandy loam

Mussigbrod and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Cumulic Haplocryolls
Landform: Terraces
Slope: 4 to 15 percent
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium over sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.1 inches
Typical profile:
A1—0 to 3 inches; loam
A2—3 to 8 inches; loam
A3—8 to 17 inches; loam
Bk—17 to 27 inches; loam
Ab—27 to 38 inches; loam
Bwb—38 to 49 inches; loam
2C—49 to 60 inches; extremely gravelly sand

Additional Components

Donald and similar soils: 10 percent
Libeg and similar soils: 10 percent

Management Considerations

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mussigbrod
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Donald
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

35UK4—Rock outcrop-Sig family, complex, very steep trough walls

Setting

Elevation: 7,320 to 11,200
Mean annual precipitation: 24 to 47 inches
Frost-free period: 20 to 40 days

Component Description

Rock outcrop
Composition: 60 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Sig and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Dystrocryepts
Landform: Valley sides
Slope: 45 to 70 percent
Plant associations: subalpine fir/grouse whortleberry
Surface layer texture: Very bouldery sandy loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 0.9 inches
Typical profile:
E—0 to 4 inches; very bouldery sandy loam
Bw1—4 to 10 inches; very stony sandy loam
Bw2—10 to 13 inches; very stony sandy loam
R—13 to 60 inches; bedrock

Additional Components

Leighcan and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Rock outcrop
- Nonsoil material

Sig
- Steep slopes
- Erodible surface
- High windthrow hazard
- Surface boulders
- Shallow soil

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Rubble land
- Nonsoil material

37B—Mooseflat, occasionally flooded-Monaberg, rarely flooded, wet complex, 1 to 4 percent slopes

Setting

Elevation: 5,690 to 6,120
Mean annual precipitation: 15 to 17 inches
Frost-free period: 50 to 70 days

Component Description

Mooseflat and similar soils
Composition: 80 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Flood plains
Slope: 1 to 4 percent
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Alluvium
Flooding: Occasional
Water table: Present
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 12 inches; loam
Bg—12 to 18 inches; sandy loam
BCg—18 to 26 inches; very gravelly loamy sand
2Cg—26 to 60 inches; very cobbly loamy coarse sand

Monaberg, wet and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Oxyaquic Argicryolls
Landform: Flood-plain steps
Slope: 1 to 4 percent
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Moderately well drained
Parent material: Alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 8.4 inches
Typical profile:
A—0 to 10 inches; loam
Bt—10 to 28 inches; gravelly sandy clay loam
C—28 to 60 inches; gravelly sandy clay loam

Management Considerations

Mooseflat
- Flooding
- High water table
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Monaberg, wet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

37Bbh—Wisdom-Bighole complex, 0 to 4 percent slopes

Setting

Elevation: 5,830 to 6,800
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Wisdom and similar soils
Composition: 50 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Oxyaquic Haplocryolls
Landform: Outwash plains
Slope: 0 to 4 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium over sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A1—2 to 7 inches; silt loam
A2—7 to 14 inches; silt loam
Bw—14 to 27 inches; loam
2C—27 to 60 inches; extremely gravelly sand

Bighole and similar soils
Composition: 35 percent
Taxonomic class: Fine-loamy, mixed, superactive Oxyaquic Argicryolls
Landform: Outwash plains
Slope: 0 to 4 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A1—2 to 8 inches; silt loam
A2—8 to 17 inches; silt loam
Bt/E—17 to 26 inches; silt loam

Bt—26 to 41 inches; clay loam
Bk—41 to 60 inches; silt loam

Additional Components

Cowcamp and similar soils: 10 percent
Shewag and similar soils: 2 percent
Finn and similar soils: 1 percent
Mooseflat and similar soils: 1 percent
Tepete and similar soils: 1 percent

Management Considerations

Wisdom
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bighole
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cowcamp
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shewag
- High windthrow hazard
- Surface compaction hazard

Finn
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tepete
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

40B—Mooseflat loam, 0 to 4 percent slopes

Setting

Elevation: 5,940 to 6,960
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Mooseflat and similar soils
Composition: 80 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls
Landform:
- Drainageways
- Flood plains

Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Fine-loamy alluvium over sandy and gravelly alluvium
Flooding: Occasional
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
Oe—0 to 4 inches; moderately decomposed plant material
A—4 to 14 inches; loam
Cg1—14 to 19 inches; silt loam
Cg2—19 to 25 inches; gravelly loam
2Cg3—25 to 60 inches; extremely cobbly loamy sand

Additional Components

Foxgulch and similar soils: 10 percent
Water: 5 percent
Copperbasin and similar soils: 2 percent
Redfish and similar soils: 2 percent
Tepete and similar soils: 1 percent

Management Considerations

Mooseflat
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foxgulch
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

Copperbasin
- High water table
- High windthrow hazard
- Surface compaction hazard

Redfish
- Flooding
- High water table
- High windthrow hazard

Tepete
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

40S90—Rock outcrop-Roman family-Rubble land association, cirque headwalls and scoured basins

Setting

Elevation: 4,860 to 10,000
Mean annual precipitation: 30 to 79 inches
Frost-free period: 30 to 50 days
Note: This landform occurs on glacially scoured, amphitheater-shaped walls with poorly integrated drainages. Typically, glacial lakes or wet meadows are found in cirque basins. Runoff is concentrated and converges into the basin.

Component Description

Rock outcrop
Composition: 50 percent
Definition: Exposures of granitic or gneissic bedrock
Landform: None assigned

Roman and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Andic Dystrocryepts
Landform: Cirque headwalls
Slope: 25 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/whitebark pine/grouse whortleberry
- alpine larch/subalpine fir
- whitebark pine/subalpine fir

Surface layer texture: Bouldery ashy loam
Rock fragments on the soil surface: 2 to 10 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Volcanic ash over granite and gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
E—1 to 2 inches; bouldery ashy loam
Bw—2 to 9 inches; bouldery ashy loam
2BC—9 to 19 inches; very gravelly sandy loam
2C—19 to 60 inches; very gravelly loamy coarse sand

Rubble land
Composition: 20 percent
Definition: An accumulation of large, angular broken rock
Landform: None assigned

Additional Components

Crawfish and similar soils: 0 to 10 percent
Hun and similar soils: 0 to 10 percent

Management Considerations

Rock outcrop
- Nonsoil material

Roman
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Rubble land
- Nonsoil material

Crawfish
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard

Hun
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

41A13—Priestlake-Crawfish families, association, patterned ground on mountain peaks

Setting

Elevation: 6,630 to 10,100
Mean annual precipitation: 33 to 69 inches
Frost-free period: 30 to 50 days
Note: This landform consists of first- to third-order intermittent or perennial streams. Most drainage channels are poorly integrated with others and are weakly incised.

Component Description

Priestlake and similar soils
Composition: 55 percent
Taxonomic class: Sandy-skeletal, mixed Typic Dystrocryepts
Landform: Patterned ground on mountain peaks
Slope: 15 to 50 percent
Native plant cover type: Forestland

Plant associations:
- whitebark pine/subalpine fir
- mountain heather/woolly pussytoes c.t.
- alpine larch/subalpine fir

Surface layer texture: Bouldery ashy loam
Rock fragments on the soil surface: 2 to 10 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material:
- Colluvium
- Granite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.1 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
E—1 to 2 inches; bouldery ashy loam
Bw—2 to 7 inches; bouldery ashy loam
2BC—7 to 21 inches; very cobbly sandy loam
2C—21 to 60 inches; very cobbly loamy sand

Crawfish and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Humicryepts
Landform: Patterned ground on mountain peaks
Slope: 15 to 50 percent
Native plant cover type: Forestland
Plant associations:
- alpine larch/subalpine fir
- whitebark pine/subalpine fir

Surface layer texture: Very bouldery sandy loam
Rock fragments on the soil surface: 5 to 15 percent boulders, mixed
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Till over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 0.8 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
A—1 to 5 inches; very bouldery sandy loam
Bw—5 to 10 inches; very bouldery sandy loam
C—10 to 14 inches; very bouldery sandy loam
R—14 to 60 inches; bedrock

Additional Components

Roman and similar soils: 0 to 10 percent
Rock outcrop: 0 to 10 percent
Rubble land: 0 to 5 percent

Management Considerations

Priestlake
- Steep slopes
- Erodible surface
- High windthrow hazard

- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Crawfish
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard

Roman
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

42H92—Rock outcrop-Crawfish-Roman families, association, scoured cirque basins

Setting

Elevation: 5,740 to 8,960
Mean annual precipitation: 34 to 79 inches
Frost-free period: 30 to 50 days
Note: This landform occurs on glacially scoured knolls separated by thinly mantled glacial till. Lakes or wet meadows can be found in depressions. Runoff from the adjacent cirque walls converges into cirque basins.

Component Description

Rock outcrop
Composition: 40 percent
Definition: Exposures of granitic or gneissic bedrock
Landform: None assigned

Crawfish and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Humicryepts
Landform: Scoured cirque floors
Slope: 8 to 35 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/beargrass-grouse whortleberry phase
- subalpine fir/smooth woodrush-grouse whortleberry phase

Surface layer texture: Very bouldery sandy loam
Rock fragments on the soil surface: 5 to 15 percent boulders, mixed

Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Till over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 0.8 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
A—1 to 5 inches; very bouldery sandy loam
Bw—5 to 10 inches; very bouldery sandy loam
C—10 to 14 inches; very bouldery sandy loam
R—14 to 60 inches; bedrock

Roman and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Andic Dystrocryepts
Landform:
- Scoured cirque floors
- Moraines

Slope: 4 to 35 percent
Plant associations:
- subalpine fir/smooth woodrush-grouse whortleberry phase
- alpine larch/subalpine fir
- subalpine fir/whitebark pine/grouse whortleberry

Surface layer texture: Bouldery ashy loam
Rock fragments on the soil surface: 2 to 10 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Volcanic ash over granite and gneiss till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
E—1 to 2 inches; bouldery ashy loam
Bw—2 to 9 inches; bouldery ashy loam
2BC—9 to 19 inches; very gravelly sandy loam
2C—19 to 60 inches; very gravelly loamy coarse sand

Additional Components

Lilylake and similar soils: 0 to 15 percent

Management Considerations

Rock outcrop
- Nonsoil material

Crawfish
- Erodible surface
- High windthrow hazard
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard

Roman
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer

- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Lilylake
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

43B—Meadowcreek-Mannixlee, rarely flooded complex, 0 to 4 percent slopes

Setting

Elevation: 5,100 to 5,510
Mean annual precipitation: 12 to 14 inches
Frost-free period: 70 to 90 days

Component Description

Meadowcreek and similar soils
Composition: 60 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Fluvaquentic Haplustolls
Landform: Tread on stream terraces
Slope: 0 to 4 percent
Plant associations: None noted
Surface layer texture: Silty clay loam
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Alluvium
Flooding: None
Water table: Present
Available water capacity to 60 inch depth: Approximately 6.8 inches
Typical profile:
A—0 to 11 inches; silty clay loam
Bg—11 to 32 inches; silt loam
2C—32 to 60 inches; very gravelly sand

Mannixlee and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive, frigid Cumulic Endoaquolls
Landform: Flood plains
Slope: 0 to 2 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material: Alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 6.2 inches

Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 19 inches; silt loam
Bw—19 to 28 inches; loam
2Cg—28 to 60 inches; gravelly coarse sand

Additional Components

Patouza, very deep and similar soils: 7 percent
Sixbeacon and similar soils: 3 percent

Management Considerations

Meadowcreek
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mannixlee
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Patouza, very deep
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sixbeacon
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

43Bbh—Redfish-Slagamelt-Shewag complex, 0 to 4 percent slopes

Setting

Elevation: 6,200 to 7,000
Mean annual precipitation: 16 to 20 inches
Frost-free period: 30 to 50 days

Component Description

Redfish and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Typic Cryaquolls
Landform:
- Drainageways
- Flood plains

Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: Wet meadow
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Sandy and gravelly alluvium

Flooding: Occasional
Water table: Present
Ponding duration: Very long
Available water capacity to 60 inch depth: Approximately 3.0 inches
Typical profile:
Oi—0 to 4 inches; slightly decomposed plant material
A—4 to 11 inches; gravelly loam
Ag—11 to 16 inches; very gravelly loam
2Cg—16 to 60 inches; extremely gravelly loamy coarse sand

Slagamelt and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Aquic Haplocryolls
Landform: Outwash plains
Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: subalpine fir/sweetscented bedstraw
Surface layer texture: Cobbly silt loam
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Alluvium
Flooding: None
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.6 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 7 inches; cobbly silt loam
Bw1—7 to 16 inches; very cobbly loam
Bw2—16 to 27 inches; very gravelly loam
C—27 to 34 inches; very gravelly sandy loam
2C—34 to 60 inches; extremely gravelly sand

Shewag and similar soils
Composition: 15 percent
Taxonomic class: Sandy-skeletal, mixed Oxyaquic Haplocryolls
Landform: Outwash plains
Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 18 inches; extremely gravelly sandy loam
2C—18 to 60 inches; extremely gravelly sand

Additional Components

Bearmouth, stony and similar soils: 10 percent
Tepete and similar soils: 8 percent
Water: 2 percent

Management Considerations

Redfish
- Flooding
- High water table
- High windthrow hazard

Slagamelt
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shewag
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tepete
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

45B—Redchief cobbly loam, 2 to 4 percent slopes

Setting

Elevation: 5,900 to 7,000
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Redchief and similar soils
Composition: 85 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform:
- Footslope on hills
- Backslope on hills

Slope: 2 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material: Clayey igneous colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 10 inches; cobbly loam
Bt—10 to 28 inches; very gravelly clay
C—28 to 60 inches; very gravelly clay loam

Additional Components

Libeg and similar soils: 5 percent
Mollet and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

45C—Redchief cobbly loam, 4 to 8 percent slopes

Setting

Elevation: 5,900 to 7,000
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Redchief and similar soils
Composition: 85 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform:
- Footslope on hills
- Backslope on hills

Slope: 4 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey igneous colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches

Typical profile:
A—0 to 10 inches; cobbly loam
Bt—10 to 28 inches; very gravelly clay
C—28 to 60 inches; very gravelly clay loam

Additional Components

Libeg and similar soils: 5 percent
Mollet and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

45D—Redchief cobbly loam, 8 to 15 percent slopes

Setting

Elevation: 5,900 to 7,000
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Redchief and similar soils
Composition: 85 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform:
- Footslope on hills
- Backslope on hills

Slope: 8 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey igneous colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 10 inches; cobbly loam
Bt—10 to 28 inches; very gravelly clay
C—28 to 60 inches; very gravelly clay loam

Additional Components

Libeg and similar soils: 5 percent
Mollet and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

45Dbh—Hooligan-Monaberg complex, 2 to 15 percent slopes

Setting

Elevation: 6,100 to 6,490
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Hooligan and similar soils
Composition: 50 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls
Landform: Hillslopes
Slope: 2 to 15 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Fine-loamy alluvium over siltstone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.3 inches
Typical profile:
A1—0 to 5 inches; silt loam
A2—5 to 10 inches; loam
Bt1—10 to 26 inches; gravelly clay loam
Bt2—26 to 35 inches; clay loam
Cr—35 to 60 inches; weathered bedrock

Monaberg and similar soils
Composition: 35 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls
Landform: Fans
Slope: 2 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 10.2 inches
Typical profile:
A1—0 to 5 inches; silt loam
A2—5 to 11 inches; loam
Bt1—11 to 37 inches; clay loam
Bt2—37 to 45 inches; clay loam
BC1—45 to 52 inches; gravelly sandy clay loam
BC2—52 to 60 inches; gravelly loam

Additional Components

Monaberg, lesser slopes and similar soils: 5 percent
Donald and similar soils: 4 percent
Inabnit and similar soils: 3 percent
Hooligan, greater slopes and similar soils: 2 percent
Lehunt and similar soils: 1 percent

Management Considerations

Hooligan
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monaberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monaberg, lesser slopes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Donald
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Inabnit
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Hooligan, greater slopes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lehunt
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

45E—Redchief cobbly loam, 15 to 35 percent slopes

Setting

Elevation: 5,900 to 7,000
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Redchief and similar soils
Composition: 85 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform:
- Footslope on hills
- Backslope on hills

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey igneous colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 10 inches; cobbly loam
Bt—10 to 28 inches; very gravelly clay
C—28 to 60 inches; very gravelly clay loam

Additional Components

Libeg and similar soils: 5 percent
Mollet and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

46—Garlet very channery sandy loam, cool, 15 to 45 percent slopes

Setting

Elevation: 4,400 to 8,830
Mean annual precipitation: 18 to 40 inches
Frost-free period: 60 to 90 days

Component Description

Garlet and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform:
- Moraines
- Mountain slopes

Slope: 15 to 45 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Very channery sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly sandstone colluvium
- Metaquartzite
- Andesite

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 15 inches; very channery sandy loam
Bw—15 to 26 inches; very channery sandy loam
C—26 to 60 inches; very channery sandy loam

Additional Components

Garlet, very stony and similar soils: 5 percent
Rock outcrop: 4 percent
Slopes greater than 45 percent and similar soils: 4 percent
Poorly drained soils and similar soils: 2 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Garlet, very stony
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Slopes greater than 45 percent
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poorly drained soils
- On-site required

46E—Barbarela-Rogert complex, 8 to 35 percent slopes

Setting

Elevation: 6,080 to 7,180
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Barbarela and similar soils
Composition: 60 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls
Landform: Hillslopes
Slope: 8 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material:
- Granite and gneiss colluvium
- Granite and gneiss residuum
- Schist residuum
- Schist colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.1 inches
Typical profile:
A—0 to 4 inches; loam
AB—4 to 10 inches; gravelly loam
Bt1—10 to 17 inches; gravelly sandy clay loam
Bt2—17 to 25 inches; gravelly sandy clay loam
Cr—25 to 42 inches; weathered bedrock
R—42 to 60 inches; unweathered bedrock

Rogert and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform:
- Hillslopes
- Ridges

Slope: 8 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very gravelly sandy loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Gravelly granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.2 inches
Typical profile:

A—0 to 7 inches; very gravelly sandy loam
C—7 to 13 inches; very gravelly sandy loam
R—13 to 60 inches; unweathered bedrock

Additional Components

Danielvil and similar soils: 5 percent
Rock outcrop: 5 percent
Barbarela, greater slopes and similar soils: 2 percent
Rogert, greater slopes, very stony and similar soils: 2 percent
Finn and similar soils: 1 percent

Management Considerations

Barbarela
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard

Rogert
- High windthrow hazard
- Shallow soil

Danielvil
- High windthrow hazard

Rock outcrop
- Nonsoil material

Barbarela, greater slopes
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard

Rogert, greater slopes, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

Finn
- High water table
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

47—Garlet, cool-Rock outcrop complex, 45 to 70 percent slopes

Setting

Elevation: 4,400 to 8,940
Mean annual precipitation: 18 to 40 inches
Frost-free period: 60 to 90 days

Component Description

Garlet and similar soils
Composition: 70 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Mountainsides
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Very channery sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly sandstone colluvium
- Metaquartzite
- Andesite

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 4 inches; very channery sandy loam
Bw—4 to 15 inches; very channery sandy loam
C1—15 to 26 inches; very channery sandy loam
C2—26 to 60 inches; very channery sandy loam

Rock outcrop
Composition: 20 percent
Landform: None assigned

Additional Components

Garlet, very stony and similar soils: 5 percent
Cryoborolls and similar soils: 4 percent
Poorly drained soils and similar soils: 1 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Garlet, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cryoborolls
- On-site required

Poorly drained soils
- On-site required

47C—Libeg-Adel complex, 2 to 8 percent slopes

Setting

Elevation: 6,150 to 7,100
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Libeg and similar soils
Composition: 65 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Alluvial fans
Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A1—0 to 5 inches; loam
A2—5 to 10 inches; loam
Bt1—10 to 17 inches; very gravelly sandy clay loam
Bt2—17 to 24 inches; very gravelly clay loam
Bt3—24 to 60 inches; extremely gravelly sandy clay loam

Adel and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Mima mounds
Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 10.6 inches
Typical profile:
A1—0 to 9 inches; silt loam
A2—9 to 16 inches; silt loam
Bw1—16 to 28 inches; silt loam
Bw2—28 to 43 inches; silt loam
Bw3—43 to 52 inches; silt loam
C—52 to 60 inches; gravelly loam

Additional Components

Monaberg and similar soils: 9 percent
Libeg, greater slopes and similar soils: 3 percent
Tiban, stony and similar soils: 3 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monaberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg, greater slopes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

47D—Libeg-Adel complex, 8 to 15 percent slopes

Setting

Elevation: 6,100 to 6,900
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Libeg and similar soils
Composition: 70 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Fans
- Riser on terraces

Slope: 8 to 15 percent

Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A1—0 to 5 inches; loam
A2—5 to 10 inches; loam
Bt1—10 to 17 inches; very gravelly sandy clay loam
Bt2—17 to 24 inches; very gravelly clay loam
Bt3—24 to 60 inches; extremely gravelly sandy clay loam

Adel and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform:
- Fans
- Riser on terraces

Slope: 8 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 10.6 inches
Typical profile:
A1—0 to 9 inches; silt loam
A2—9 to 16 inches; silt loam
Bw1—16 to 28 inches; silt loam
Bw2—28 to 43 inches; silt loam
Bw3—43 to 52 inches; silt loam
C—52 to 60 inches; gravelly loam

Additional Components

Monaberg and similar soils: 4 percent
Philipsburg and similar soils: 4 percent
Libeg, greater slopes and similar soils: 2 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monaberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg, greater slopes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

48C—Mollet loam, 2 to 8 percent slopes

Setting

Elevation: 6,000 to 6,600
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Mollet and similar soils
Composition: 85 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform:
- Fans
- Mountainbases
- Terraces

Slope: 2 to 8 percent
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.1 inches
Typical profile:
A—0 to 12 inches; loam
Bt1—12 to 29 inches; clay
Bt2—29 to 60 inches; gravelly clay

Additional Components

Redchief and similar soils: 10 percent
Libeg and similar soils: 5 percent

Management Considerations

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

48D—Mollet loam, 8 to 15 percent slopes

Setting

Elevation: 6,000 to 6,600
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Mollet and similar soils
Composition: 85 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform:
- Fans
- Mountainbases
- Terraces

Slope: 8 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.1 inches
Typical profile:
A—0 to 12 inches; loam
Bt1—12 to 29 inches; clay
Bt2—29 to 60 inches; gravelly clay

Additional Components

Redchief and similar soils: 10 percent
Libeg and similar soils: 5 percent

Management Considerations

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

48E—Libeg-Sebud, very stony complex, 15 to 35 percent slopes

Setting

Elevation: 5,830 to 7,760
Mean annual precipitation: 18 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Libeg and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Hillslopes
Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
A1—0 to 5 inches; very gravelly loam
A2—5 to 10 inches; very gravelly loam
Bt1—10 to 17 inches; very gravelly sandy clay loam
Bt2—17 to 24 inches; very gravelly clay loam
Bt3—24 to 60 inches; extremely gravelly sandy clay loam

Sebud, very stony and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Hillslopes
Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, mixed
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly alluvium
- Igneous and metamorphic colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches

Typical profile:
A—0 to 11 inches; very cobbly loam
Bw1—11 to 22 inches; very gravelly loam
Bw2—22 to 37 inches; very gravelly loam
C—37 to 60 inches; extremely gravelly sandy loam

Additional Components

Nieman, stony and similar soils: 8 percent
Sebud, greater slopes, bouldery and similar soils: 7 percent
Monaberg and similar soils: 5 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Nieman, stony
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Sebud, greater slopes, bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monaberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

49—Hanson channery loam, 2 to 8 percent slopes

Setting

Elevation: 4,800 to 8,000
Mean annual precipitation: 18 to 26 inches
Frost-free period: 50 to 90 days

Component Description

Hanson and similar soils
Composition: 90 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform:
- Footslope on hills
- Footslope on moraines

Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted

Surface layer texture: Channery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Limestone colluvium
- Limestone alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 11 inches; channery loam
Bk—11 to 60 inches; very gravelly loam

Additional Components

Hanson, stony and similar soils: 5 percent
Hanson, loam and similar soils: 5 percent

Management Considerations

Hanson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson, loam
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

49A—Wisdom-Proposal complex, 0 to 2 percent slopes

Setting

Elevation: 6,000 to 6,360
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Wisdom and similar soils
Composition: 40 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Oxyaquic Haplocryolls
Landform: Outwash plains
Slope: 0 to 2 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium over sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches

Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A1—2 to 7 inches; silt loam
A2—7 to 14 inches; silt loam
Bw—14 to 27 inches; loam
2C—27 to 60 inches; extremely gravelly sand

Proposal and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Oxyaquic Haplocryolls
Landform: Outwash plains
Slope: 0 to 2 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 10.4 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 16 inches; silt loam
Bw—16 to 45 inches; silt loam
Bk—45 to 60 inches; loam

Additional Components

Foxgulch and similar soils: 10 percent
Cowcamp and similar soils: 5 percent
Mooseflat and similar soils: 5 percent
Shewag and similar soils: 5 percent
Bearmouth and similar soils: 3 percent
Water: 2 percent

Management Considerations

Wisdom
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Proposal
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foxgulch
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cowcamp
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shewag
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

50—Hanson channery loam, 8 to 45 percent slopes

Setting

Elevation: 4,800 to 8,850
Mean annual precipitation: 18 to 26 inches
Frost-free period: 50 to 90 days

Component Description

Hanson and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform:
- Footslope on hills
- Footslope on moraines

Slope: 8 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Channery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Limestone alluvium
- Limestone colluvium
- Till

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 11 inches; channery loam
Bk—11 to 60 inches; very gravelly loam

Additional Components

Hanson, stony and similar soils: 5 percent
Soils with thick dark surfaces and similar soils: 5 percent
Tiban and similar soils: 5 percent

Management Considerations

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Soils with thick dark surfaces
- On-site required

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

50C—Monad loam, 2 to 8 percent slopes

Setting

Elevation: 5,900 to 6,400
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Monad and similar soils
Composition: 85 percent
Taxonomic class: Fine-loamy, mixed, superactive Alfic Argicryolls
Landform: Stream terraces
Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.2 inches
Typical profile:
A—0 to 11 inches; loam
Bt/E—11 to 25 inches; sandy clay loam
Bt—25 to 60 inches; stony clay loam

Additional Components

Adel and similar soils: 5 percent
Libeg and similar soils: 5 percent
Mollet and similar soils: 5 percent

Management Considerations

Monad
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

50E—Libeg-Monad complex, 8 to 35 percent slopes

Setting

Elevation: 6,100 to 6,900
Mean annual precipitation: 20 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Libeg and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Hillslopes
Slope: 8 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A1—0 to 5 inches; gravelly loam
A2—5 to 10 inches; gravelly loam
Bt1—10 to 17 inches; very gravelly sandy clay loam
Bt2—17 to 24 inches; very gravelly clay loam
Bt3—24 to 60 inches; extremely gravelly sandy clay loam

Monad and similar soils
Composition: 40 percent
Taxonomic class: Fine-loamy, mixed, superactive Alfic Argicryolls
Landform: Hillslopes

Slope: 8 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.2 inches
Typical profile:
A—0 to 15 inches; gravelly loam
Bt/E—15 to 20 inches; loam
Bt1—20 to 29 inches; gravelly clay loam
Bt2—29 to 60 inches; gravelly clay loam

Additional Components

Adel and similar soils: 5 percent
Butchhill and similar soils: 5 percent
Hairpin and similar soils: 5 percent
Sebud and similar soils: 5 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monad
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Butchhill
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hairpin
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

51—Hanson-Adel complex, 4 to 45 percent slopes

Setting

Elevation: 4,500 to 8,690
Mean annual precipitation: 15 to 26 inches
Frost-free period: 50 to 70 days

Component Description

Hanson and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform:
- Footslope on hills
- Footslope on moraines

Slope: 4 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Limestone alluvium
- Limestone till

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
A—0 to 16 inches; stony loam
Bk—16 to 60 inches; very cobbly loam

Adel and similar soils
Composition: 40 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform:
- Footslope on hills
- Swales

Slope: 4 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Eolian deposits

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.9 inches
Typical profile:
A1—0 to 23 inches; loam
A2—23 to 37 inches; loam
Bw—37 to 60 inches; gravelly loam

Additional Components

Leavitt and similar soils: 3 percent
Tiban and similar soils: 3 percent
Cryaquolls and similar soils: 2 percent
Water: 2 percent

Management Considerations

Hanson
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Leavitt
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cryaquolls
- On-site required

Water
- Nonsoil material

51NE3—Klootch, noncalcareous-Waldbillig, noncalcareous families-Rubble land complex, steep ridges and mountain slopes

Interpretive focus: High-elevation resource areas
Field investigation intensity: Order 4

Setting

Elevation: 7,700 to 10,600
Mean annual precipitation: 28 to 40 inches
Frost-free period: 20 to 40 days

Component Description

Klootch and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform:
- Summit on mountain slopes
- Shoulder on mountain slopes
- Patterned ground
- Ridges

Slope: 25 to 50 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/smooth woodrush
- whitebark pine/subalpine fir
- alpine larch/subalpine fir
- whitebark pine

Surface layer texture: Very cobbly ashy loam

Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 7 inches; very cobbly ashy loam
Bw—7 to 27 inches; very gravelly fine sandy loam
BC—27 to 60 inches; very cobbly fine sandy loam

Waldbillig and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform:
- Shoulder on mountain slopes
- Summit on mountain slopes
- Ridges

Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Cobbly ashy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over sandstone and siltstone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.8 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
Bw1—2 to 8 inches; cobbly ashy loam
2Bw2—8 to 22 inches; very cobbly fine sandy loam
2C—22 to 60 inches; very gravelly fine sandy loam

Rubble land
Composition: 15 percent
Definition: Areas of boulders, stones, and cobbles
Landform: None assigned

Additional Components

Bata and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Klootch
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Waldbillig
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer

- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Bata
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

51NH2—Maurice-Marcetta-Libeg families, complex, steep ridges and mountain slopes

Interpretive focus: multiple-use grassland
Field investigation intensity: Order 3

Setting

Elevation: 4,500 to 8,500
Mean annual precipitation: 15 to 31 inches
Frost-free period: 30 to 70 days

Component Description

Maurice and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Mountain slopes
- Ridges

Slope: 10 to 35 percent
Plant associations: None noted
Surface layer texture: Channery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.2 inches
Typical profile:
A1—0 to 3 inches; channery loam
A2—3 to 13 inches; channery loam
Bw1—13 to 24 inches; very gravelly fine sandy loam
Bw2—24 to 60 inches; very gravelly fine sandy loam

Marcetta and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform:
- Mountain slopes
- Ridges

Slope: 10 to 35 percent

Plant associations: None noted
Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
A1—0 to 10 inches; very gravelly loam
A2—10 to 17 inches; very gravelly loam
AB—17 to 48 inches; extremely gravelly loam
C—48 to 60 inches; extremely gravelly loam

Libeg and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Mountain slopes
- Ridges

Slope: 10 to 35 percent
Plant associations: None noted
Surface layer texture: Channery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
A—0 to 6 inches; channery loam
Bt1—6 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery sandy clay loam
BC—30 to 60 inches; extremely stony sandy loam

Additional Components

Rubble land: 10 percent
Rock outcrop: 5 percent

Management Considerations

Maurice
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Marcetta
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Rock outcrop
- Nonsoil material

51UD3—Garlet-Tigeron families-Rubble land complex, steep ridges and mountain slopes

Interpretive focus: multiple-use forest
Field investigation intensity: Order 3

Setting

Elevation: 6,000 to 8,170
Mean annual precipitation: 22 to 30 inches
Frost-free period: 30 to 60 days

Component Description

Garlet and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform:
- Mountain slopes
- Ridges

Slope: 25 to 50 percent
Plant associations:
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandstone and siltstone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
E1—0 to 4 inches; cobbly loam
E2—4 to 19 inches; very cobbly loam
Bw/E—19 to 46 inches; extremely cobbly sandy clay loam
Bk—46 to 70 inches; extremely cobbly loam

Tigeron and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform:
- Mountain slopes
- Ridges

Slope: 25 to 50 percent
Plant associations:
- subalpine fir/dwarf huckleberry
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass
- subalpine fir/beargrass

Surface layer texture: Very channery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandstone and siltstone residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
E—0 to 7 inches; very channery loam
Bt and E—7 to 13 inches; very gravelly loam
Bt—13 to 60 inches; extremely gravelly clay loam
2C—60 to 66 inches; extremely gravelly loam

Rubble land
Composition: 15 percent
Definition: Areas of boulders, stones, and cobbles
Landform: None assigned

Additional Components

Holloway and similar soils: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tigeron
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Holloway
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

51UE2—Klootch-Waldbillig families-Rubble land complex, steep ridges and mountain slopes

Interpretive focus: High-elevation resource areas
Field investigation intensity: Order 4

Setting

Elevation: 7,700 to 10,600
Mean annual precipitation: 28 to 40 inches
Frost-free period: 20 to 40 days

Component Description

Klootch and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform:
- Summit on mountain slopes
- Shoulder on mountain slopes
- Patterned ground
- Ridges

Slope: 10 to 35 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/smooth woodrush
- whitebark pine/subalpine fir
- alpine larch/subalpine fir
- whitebark pine

Surface layer texture: Cobbly ashy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Quartzite
- Dolomite (dolostone) residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 7 inches; cobbly ashy loam
Bw—7 to 27 inches; very gravelly fine sandy loam
BC—27 to 60 inches; very cobbly fine sandy loam

Waldbillig and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform:
- Shoulder on mountain slopes
- Summit on mountain slopes

Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Cobbly ashy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over sandstone and siltstone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.8 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
Bw1—2 to 8 inches; cobbly ashy loam
2Bw2—8 to 22 inches; very cobbly fine sandy loam
2C—22 to 60 inches; very gravelly fine sandy loam

Rubble land
Composition: 15 percent
Definition: Areas of boulders, stones, and cobbles
Landform: None assigned

Additional Components

Bata and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Klootch
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Waldbillig
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Bata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

51UE3—Klootch family-Rubble land-Waldbillig family, complex, steep ridges and mountain slopes

Interpretive focus: High-elevation resource areas
Field investigation intensity: Order 4

Setting

Elevation: 7,700 to 10,600
Mean annual precipitation: 28 to 40 inches
Frost-free period: 20 to 40 days

Component Description

Klootch and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform:
- Summit on mountain slopes
- Shoulder on mountain slopes

- Patterned ground
- Ridges

Slope: 25 to 50 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/smooth woodrush
- whitebark pine/subalpine fir
- alpine larch/subalpine fir
- whitebark pine

Surface layer texture: Cobbly ashy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Dolomite (dolostone) residuum
- Quartzite

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 7 inches; cobbly ashy loam
Bw—7 to 27 inches; very gravelly fine sandy loam
BC—27 to 60 inches; very cobbly fine sandy loam

Rubble land
Composition: 30 percent
Definition: Areas of boulders, stones, and cobbles
Landform: None assigned

Waldbillig and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform:
- Shoulder on mountain slopes
- Summit on mountain slopes
- Ridges

Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Cobbly ashy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over sandstone and siltstone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.8 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
Bw1—2 to 8 inches; cobbly ashy loam
2Bw2—8 to 22 inches; very cobbly fine sandy loam
2C—22 to 60 inches; very gravelly fine sandy loam

Additional Components

Bata and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Klootch
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Waldbillig
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bata
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

51UH2—Sebud-Libeg-Marcetta families, complex, steep ridges and mountain slopes

Interpretive focus: multiple-use grassland
Field investigation intensity: Order 3

Setting

Elevation: 4,500 to 8,500
Mean annual precipitation: 15 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Mountain slopes
- Ridges

Slope: 10 to 35 percent
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandstone and siltstone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches

Typical profile:
A—0 to 10 inches; cobbly loam
BC—10 to 60 inches; very cobbly loam

Libeg and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Mountain slopes
- Ridges

Slope: 10 to 35 percent
Plant associations: None noted
Surface layer texture: Extremely cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandstone and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; extremely cobbly sandy loam
Bt—7 to 36 inches; extremely cobbly sandy clay loam
BC—36 to 60 inches; extremely cobbly sandy loam

Marcetta and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform:
- Mountain slopes
- Ridges

Slope: 10 to 35 percent
Plant associations: None noted
Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandstone and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
A1—0 to 10 inches; very gravelly loam
A2—10 to 17 inches; very gravelly loam
AB—17 to 48 inches; extremely gravelly loam
C—48 to 60 inches; extremely gravelly loam

Additional Components

Ratiopeak and similar soils: 5 percent
Rock outcrop: 5 percent
Tiban and similar soils: 5 percent

Management Considerations

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Surface rock fragments
- Low bearing strength
- Surface compaction hazard

Marcetta
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ratiopeak
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

51UI3—Arrowpeak family-Rock outcrop-Sebud family, complex, steep ridges and mountain slopes

Interpretive focus: alpine meadows
Field investigation intensity: Order 4

Setting

Elevation: 8,350 to 10,600
Mean annual precipitation: 20 to 50 inches
Frost-free period: 20 to 40 days

Component Description

Arrowpeak and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform:
- Mountain slopes
- Patterned ground
- Ridges

Slope: 10 to 50 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Sandstone and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
A—0 to 6 inches; very cobbly loam
Bw—6 to 17 inches; extremely cobbly loam
R—17 to 60 inches; bedrock

Rock outcrop
Composition: 30 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Sebud and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Mountain slopes
- Patterned ground
- Ridges

Slope: 10 to 50 percent
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandstone and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
A—0 to 10 inches; cobbly loam
BC—10 to 60 inches; very cobbly loam

Management Considerations

Arrowpeak
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

Rock outcrop
- Nonsoil material

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

51VD2—Tigeron-Garlet families-Rubble land complex, steep ridges and mountain slopes

Interpretive focus: multiple-use forest
Field investigation intensity: Order 3

Setting

Elevation: 6,000 to 7,840
Mean annual precipitation: 22 to 30 inches
Frost-free period: 30 to 60 days

Component Description

Tigeron and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform:
- Mountain slopes
- Ridges

Slope: 10 to 35 percent
Plant associations:
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Andesite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
E—0 to 7 inches; very cobbly loam
Bt and E—7 to 13 inches; very gravelly loam
Bt—13 to 60 inches; extremely gravelly clay loam
2C—60 to 66 inches; extremely gravelly loam

Garlet and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Mountain slopes
Slope: 10 to 35 percent
Plant associations:
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
E1—0 to 4 inches; gravelly sandy loam
E2—4 to 19 inches; very channery sandy loam
Bw/E—19 to 70 inches; extremely flaggy loam

Rubble land
Composition: 15 percent
Definition: Areas of boulders, stones, and cobbles
Landform: None assigned

Additional Components

Holloway and similar soils: 10 percent
Hiore and similar soils: 5 percent

Management Considerations

Tigeron
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Holloway
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Hiore
- High windthrow hazard

51VE3—Hiore-Tigeron families-Rubble land complex, steep ridges and mountain slopes

Interpretive focus: High-elevation resource areas
Field investigation intensity: Order 4

Setting

Elevation: 7,680 to 10,000
Mean annual precipitation: 28 to 40 inches
Frost-free period: 20 to 40 days

Component Description

Hiore and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform:
- Backslope on mountain slopes
- Footslope on mountain slopes
- Patterned ground
- Ridges

Slope: 25 to 50 percent
Plant associations:
- subalpine fir/smooth woodrush
- whitebark pine/subalpine fir
- alpine larch/subalpine fir
- whitebark pine

Surface layer texture: Sandy loam
Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained
Parent material: Andesite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.8 inches
Typical profile:
A1—0 to 2 inches; sandy loam
A2—2 to 7 inches; gravelly coarse sandy loam
Bw—7 to 60 inches; very gravelly loamy coarse sand

Tigeron and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform:
- Backslope on mountain slopes
- Footslope on mountain slopes
- Ridges

Slope: 25 to 50 percent
Plant associations:
- whitebark pine/subalpine fir
- alpine larch/subalpine fir
- whitebark pine
- subalpine fir/smooth woodrush

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Andesite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
E—0 to 7 inches; very cobbly loam
Bt and E—7 to 13 inches; very gravelly loam
Bt—13 to 60 inches; extremely gravelly clay loam
2C—60 to 66 inches; extremely gravelly loam

Rubble land
Composition: 20 percent
Definition: Areas of boulders, stones, and cobbles
Landform: None assigned

Management Considerations

Hiore
- Steep slopes
- Erodible surface
- High windthrow hazard

Tigeron
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

51VH2—Libeg-Copenhaver families-Rubble land complex, steep ridges and mountain slopes

Interpretive focus: multiple-use grassland
Field investigation intensity: Order 3

Setting

Elevation: 4,500 to 8,500
Mean annual precipitation: 15 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Mountain slopes
- Ridges

Slope: 10 to 35 percent
Plant associations: None noted
Surface layer texture: Extremely cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Andesite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; extremely cobbly sandy loam
Bt—7 to 36 inches; extremely cobbly sandy clay loam
BC—36 to 60 inches; extremely cobbly sandy loam

Copenhaver and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Argicryolls
Landform:
- Mountain slopes
- Ridges

Slope: 10 to 35 percent
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Andesite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
A—0 to 5 inches; gravelly loam
Bt—5 to 14 inches; very gravelly clay loam
R—14 to 60 inches; bedrock

Rubble land
Composition: 15 percent
Definition: Areas of boulders, stones, and cobbles
Landform: None assigned

Additional Components

Marcetta and similar soils: 10 percent

Management Considerations

Libeg
- High windthrow hazard
- Surface rock fragments
- Low bearing strength
- Surface compaction hazard

Copenhaver
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Marcetta
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

52A—Plimpton-Cowcamp complex, 0 to 2 percent slopes

Setting

Elevation: 6,000 to 6,500
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Plimpton and similar soils
Composition: 50 percent
Taxonomic class: Fine-loamy, mixed, superactive Oxyaquic Argicryolls
Landform: Outwash plains
Slope: 0 to 2 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 10.1 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 9 inches; silt loam
A2—9 to 19 inches; loam
Bt—19 to 38 inches; sandy clay loam
BC—38 to 60 inches; gravelly sandy clay loam

Cowcamp and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Argicryolls
Landform: Outwash plains
Slope: 0 to 2 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A1—2 to 6 inches; silt loam
A2—6 to 13 inches; silt loam
Bt/E—13 to 18 inches; gravelly silt loam
Bt1—18 to 28 inches; very cobbly clay loam
Bt2—28 to 35 inches; very gravelly loam
BC—35 to 60 inches; very gravelly sandy loam

Additional Components

Mooseflat and similar soils: 10 percent

Management Considerations

Plimpton
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cowcamp
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

53—Hanson-Rock outcrop complex, 25 to 45 percent slopes

Setting

Elevation: 5,000 to 8,070
Mean annual precipitation: 15 to 19 inches
Frost-free period: 50 to 90 days

Component Description

Hanson and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls

Landform:
- Footslope on hills
- Footslope on moraines

Slope: 25 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Channery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly limestone colluvium
- Till

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 11 inches; channery loam
Bk—11 to 60 inches; very gravelly loam

Rock outcrop
Composition: 30 percent
Landform: None assigned

Additional Components

Adel and similar soils: 7 percent
Tiban and similar soils: 7 percent
Hanson, stony and similar soils: 6 percent

Management Considerations

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

54—Hapgood loam, moist, 2 to 8 percent slopes

Setting

Elevation: 5,000 to 7,690
Mean annual precipitation: 15 to 24 inches
Frost-free period: 30 to 70 days

Component Description

Hapgood and similar soils
Composition: 90 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform:
- Hills
- Ridges
- Structural benches

Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly argillite colluvium
- Metaquartzite

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.4 inches
Typical profile:
A—0 to 12 inches; loam
C—12 to 60 inches; very gravelly loam

Additional Components

Adel and similar soils: 4 percent
Hapgood, very stony and similar soils: 3 percent
Rock outcrop: 3 percent

Management Considerations

Hapgood
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hapgood, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

54C—Libeg gravelly loam, 4 to 8 percent slopes

Setting

Elevation: 5,400 to 7,800
Mean annual precipitation: 15 to 23 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Alluvial fans
- Side slope on hills
- Riser on terraces

Slope: 4 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
A—0 to 14 inches; gravelly loam
Bt—14 to 60 inches; very channery clay loam

Additional Components

Copenhaver and similar soils: 5 percent
Finn and similar soils: 5 percent
Mollet and similar soils: 5 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Copenhaver
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Finn
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

54D—Libeg gravelly loam, 8 to 15 percent slopes

Setting

Elevation: 5,800 to 7,800
Mean annual precipitation: 15 to 23 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Alluvial fans
- Side slope on hills
- Riser on terraces

Slope: 8 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
A—0 to 14 inches; gravelly loam
Bt—14 to 60 inches; very channery clay loam

Additional Components

Copenhaver and similar soils: 5 percent
Mollet and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Copenhaver
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

54E—Libeg gravelly loam, 15 to 35 percent slopes

Setting

Elevation: 5,400 to 8,120
Mean annual precipitation: 15 to 24 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Alluvial fans
- Side slope on hills
- Riser on terraces

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
A—0 to 14 inches; gravelly loam
Bt—14 to 60 inches; very channery clay loam

Additional Components

Copenhaver and similar soils: 5 percent
Mollet and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Copenhaver
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

54F—Libeg gravelly loam, 35 to 60 percent slopes

Setting

Elevation: 5,400 to 8,200
Mean annual precipitation: 14 to 25 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Alluvial fans
- Side slope on hills
- Riser on terraces

Slope: 35 to 60 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
A—0 to 14 inches; gravelly loam
Bt—14 to 60 inches; very channery clay loam

Additional Components

Copenhaver and similar soils: 5 percent
Redchief and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Copenhaver
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Redchief
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

55—Hapgood loam, moist, 8 to 25 percent slopes

Setting

Elevation: 5,000 to 8,260
Mean annual precipitation: 15 to 24 inches
Frost-free period: 30 to 70 days

Component Description

Hapgood and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform:
- Drainageways
- Hills
- Ridges

Slope: 8 to 25 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly argillite colluvium
- Metaquartzite

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.4 inches
Typical profile:
A—0 to 12 inches; loam
C—12 to 60 inches; very gravelly loam

Additional Components

Adel and similar soils: 4 percent
Hapgood, very stony and similar soils: 4 percent
Sebud and similar soils: 4 percent
Rock outcrop: 3 percent

Management Considerations

Hapgood
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hapgood, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

56—Hapgood very stony loam, 4 to 15 percent slopes

Setting

Elevation: 5,000 to 7,310
Mean annual precipitation: 15 to 24 inches
Frost-free period: 30 to 70 days

Component Description

Hapgood and similar soils
Composition: 90 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform:
- Alluvial fans
- Footslope on hills

Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly argillite colluvium
- Metaquartzite

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 18 inches; very stony loam
C—18 to 60 inches; very cobbly loam

Additional Components

Hapgood, loam and similar soils: 5 percent
Sebud and similar soils: 5 percent

Management Considerations

Hapgood
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hapgood, loam
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

57—Hapgood-Sebud very stony loams, 15 to 45 percent slopes

Setting

Elevation: 5,000 to 7,930
Mean annual precipitation: 15 to 24 inches
Frost-free period: 30 to 70 days

Component Description

Hapgood and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform:
- Depressions
- Moraines

Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly argillite colluvium
- Metaquartzite

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 18 inches; very stony loam
C—18 to 60 inches; very cobbly loam

Sebud and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Moraines
- Mountain slopes

Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Igneous and metamorphic till

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
A—0 to 14 inches; very stony loam
Bw1—14 to 30 inches; very stony sandy clay loam
Bw2—30 to 46 inches; very stony sandy clay loam
C—46 to 60 inches; very stony sandy loam

Additional Components

Adel and similar soils: 3 percent
Shadow and similar soils: 3 percent
Hapgood, bouldery and similar soils: 2 percent
Typic Cryaquolls, poorly drained and similar soils: 2 percent

Management Considerations

Hapgood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

Hapgood, bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Typic Cryaquolls, poorly drained
- On-site required

60A—Cowcamp-Maybee complex, 0 to 2 percent slopes

Setting

Elevation: 6,000 to 6,600
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Cowcamp and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Argicryolls
Landform: Terraces
Slope: 0 to 2 percent

Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A1—2 to 6 inches; silt loam
A2—6 to 13 inches; silt loam
Bt/E—13 to 18 inches; gravelly silt loam
Bt1—18 to 28 inches; very cobbly clay loam
Bt2—28 to 35 inches; very gravelly loam
BC—35 to 60 inches; very gravelly sandy loam

Maybee and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal over sandy or sandy-skeletal, mixed, superactive Oxyaquic Argicryolls
Landform: Terraces
Slope: 0 to 2 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A1—2 to 7 inches; silt loam
A2—7 to 12 inches; gravelly loam
Bt1—12 to 21 inches; very gravelly clay loam
Bt2—21 to 27 inches; very cobbly sandy clay loam
2C—27 to 60 inches; very cobbly loamy sand

Additional Components

Plimpton and similar soils: 5 percent
Beaverslide and similar soils: 4 percent
Libeg and similar soils: 2 percent
Shewag and similar soils: 2 percent
Finn and similar soils: 1 percent
Mooseflat and similar soils: 1 percent

Management Considerations

Cowcamp
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maybee
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Plimpton
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Beaverslide
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shewag
- High windthrow hazard
- Surface compaction hazard

Finn
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

62—Kalsted sandy loam, 2 to 8 percent slopes

Setting

Elevation: 4,500 to 6,500
Mean annual precipitation: 10 to 14 inches
Frost-free period: 90 to 110 days

Component Description

Kalsted and similar soils
Composition: 90 percent
Taxonomic class: Coarse-loamy, mixed, superactive, frigid Aridic Calciustepts
Landform:
- Hills
- Stream terraces

Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Coarse-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.3 inches

Typical profile:
A—0 to 7 inches; sandy loam
Bk1—7 to 30 inches; sandy loam
Bk2—30 to 60 inches; stratified loamy sand to gravelly sandy loam

Additional Components

Crago and similar soils: 5 percent
Scravo and similar soils: 5 percent

Management Considerations

Kalsted
- High windthrow hazard

Crago
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Scravo
- High windthrow hazard

62D—Doolittle-Philipsburg-Hooligan complex, 2 to 15 percent slopes

Setting

Elevation: 5,900 to 6,260
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Doolittle and similar soils
Composition: 30 percent
Taxonomic class: Fine, smectitic Vertic Haplocryalfs
Landform:
- Depressions
- Hills
- Slumps

Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Clay loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material:
- Alluvium
- Colluvium over clayey siltstone, calcareous residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.0 inches
Typical profile:
A—0 to 3 inches; clay loam
Bt1—3 to 12 inches; silty clay loam
Bt2—12 to 28 inches; silty clay

Bk—28 to 39 inches; paragravelly silt loam
Cr—39 to 60 inches; weathered bedrock

Philipsburg and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Fans
Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.5 inches
Typical profile:
A1—0 to 5 inches; silt loam
A2—5 to 14 inches; silt loam
Bt1—14 to 20 inches; silty clay loam
Bt2—20 to 32 inches; clay loam
Bk1—32 to 43 inches; gravelly loam
Bk2—43 to 60 inches; very gravelly sandy loam

Hooligan and similar soils
Composition: 15 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls
Landform: Hillslopes
Slope: 4 to 15 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature:
• Paralithic bedrock: 20 to 40 inches
Drainage class: Well drained
Parent material: Fine-loamy alluvium over siltstone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.3 inches
Typical profile:
A1—0 to 5 inches; silt loam
A2—5 to 10 inches; loam
Bt1—10 to 26 inches; gravelly clay loam
Bt2—26 to 35 inches; clay loam
Cr—35 to 60 inches; weathered bedrock

Additional Components

Donald and similar soils: 10 percent
Inabnit, stony and similar soils: 7 percent
Monaberg and similar soils: 5 percent
Ratiopeak, very stony and similar soils: 5 percent
Beaverslide and similar soils: 4 percent
Finn and similar soils: 3 percent
Rock outcrop: 1 percent

Management Considerations

Doolittle
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hooligan
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Donald
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Inabnit, stony
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Monaberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ratiopeak, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Beaverslide
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

64D—Monaberg-Maurice, bouldery-Barbarela complex, 4 to 15 percent slopes

Setting

Elevation: 5,970 to 6,690
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Monaberg and similar soils
Composition: 35 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls
Landform: Ground moraines
Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 10.2 inches
Typical profile:
A1—0 to 5 inches; loam
A2—5 to 11 inches; loam
Bt1—11 to 37 inches; clay loam
Bt2—37 to 45 inches; clay loam
BC1—45 to 52 inches; gravelly sandy clay loam
BC2—52 to 60 inches; gravelly loam

Maurice, bouldery and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Ground moraines
Slope: 4 to 15 percent
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent boulders, mixed
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
A1—0 to 6 inches; gravelly loam
A2—6 to 15 inches; gravelly loam
Bw—15 to 34 inches; extremely gravelly sandy loam
BC—34 to 60 inches; very gravelly sandy loam

Barbarela and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls
Landform: Ground moraines
Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature:
• Paralithic bedrock: 20 to 40 inches
Drainage class: Well drained

Parent material:
- Granite and gneiss colluvium
- Granite and gneiss residuum
- Schist residuum
- Schist colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A—0 to 4 inches; gravelly loam
AB—4 to 10 inches; gravelly loam
Bt1—10 to 17 inches; gravelly sandy clay loam
Bt2—17 to 25 inches; gravelly sandy clay loam
Cr—25 to 42 inches; weathered bedrock
R—42 to 60 inches; unweathered bedrock

Additional Components

Maurice, greater slopes, stony and similar soils: 6 percent
Adel and similar soils: 3 percent
Donald and similar soils: 2 percent
Libeg, very stony and similar soils: 2 percent
Plimpton and similar soils: 2 percent

Management Considerations

Monaberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maurice, bouldery
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Barbarela
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard

Maurice, greater slopes, stony
- High windthrow hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Donald
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Plimpton
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

65B—Sebud-Bearmouth complex, 1 to 4 percent slopes, very stony

Setting

Elevation: 5,540 to 6,300
Mean annual precipitation: 13 to 17 inches
Frost-free period: 50 to 70 days

Component Description

Sebud, very stony and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Alluvial fans
Slope: 1 to 2 percent
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.2 to 3.0 percent stones, 10 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
A1—0 to 6 inches; gravelly loam
A2—6 to 12 inches; very cobbly loam
Bw—12 to 20 inches; very cobbly sandy loam
BC—20 to 30 inches; very cobbly sandy loam
C—30 to 60 inches; very gravelly sandy loam

Bearmouth, very stony and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Gravel bars on alluvial fans
Slope: 1 to 4 percent
Plant associations: None noted
Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 1 to 6 percent stones, 5 to 33 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.2 inches
Typical profile:
A—0 to 6 inches; gravelly sandy loam
Bw—6 to 11 inches; gravelly coarse sandy loam
BC—11 to 18 inches; gravelly coarse sandy loam
2C1—18 to 34 inches; very cobbly loamy coarse sand
2C2—34 to 60 inches; very cobbly sand

Additional Components

Foxgulch and similar soils: 8 percent
Bearmouth, extremely stony and similar soils: 2 percent

Management Considerations

Sebud, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth, extremely stony
- High windthrow hazard

Foxgulch
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

65E—Maurice, bouldery-Monad complex, 8 to 25 percent slopes

Setting

Elevation: 6,100 to 6,620
Mean annual precipitation: 20 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Maurice, bouldery and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Ground moraines
Slope: 8 to 25 percent
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent boulders, mixed
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
A1—0 to 6 inches; gravelly loam
A2—6 to 15 inches; gravelly loam
Bw—15 to 34 inches; extremely gravelly sandy loam
BC—34 to 60 inches; very gravelly sandy loam

Monad and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Alfic Argicryolls
Landform: Ground moraines
Slope: 8 to 25 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy outwash

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.9 inches
Typical profile:
A—0 to 15 inches; loam
Bt/E—15 to 20 inches; loam
Bt1—20 to 29 inches; gravelly clay loam
Bt2—29 to 60 inches; gravelly clay loam

Additional Components

Maurice, very bouldery and similar soils: 7 percent
Hairpin and similar soils: 5 percent
Libeg, bouldery and similar soils: 2 percent
Nieman, bouldery and similar soils: 1 percent

Management Considerations

Maurice, bouldery
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monad
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maurice, very bouldery
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hairpin
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg, bouldery
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Nieman, bouldery
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

66—Leavitt loam, moist, 2 to 15 percent slopes

Setting

Elevation: 6,000 to 9,500
Mean annual precipitation: 20 to 24 inches
Frost-free period: 50 to 70 days

Component Description

Leavitt and similar soils
Composition: 85 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform:
- Footslope on hills
- Backslope on hills

Slope: 2 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.0 inches
Typical profile:
A—0 to 15 inches; loam
Bt—15 to 40 inches; gravelly clay loam
Bk—40 to 60 inches; gravelly loam

Additional Components

Adel and similar soils: 5 percent
Bearmouth and similar soils: 5 percent
Hapgood and similar soils: 5 percent

Management Considerations

Leavitt
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hapgood
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

68—Leavitt stony loam, 2 to 25 percent slopes

Setting

Elevation: 4,500 to 7,550
Mean annual precipitation: 15 to 20 inches
Frost-free period: 50 to 70 days

Component Description

Leavitt and similar soils
Composition: 85 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform:
- Alluvial fans
- Footslope on hills
- Backslope on hills
- Stream terraces

Slope: 2 to 25 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.5 inches
Typical profile:
A—0 to 4 inches; stony loam
Bt—4 to 21 inches; stony clay loam
Bk—21 to 60 inches; stony loam

Additional Components

Adel and similar soils: 3 percent
Blaine and similar soils: 3 percent
Leavitt, extremely stony and similar soils: 3 percent
Rock outcrop: 3 percent
Soils with a clayey subsoil and similar soils: 3 percent

Management Considerations

Leavitt
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Blaine
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Leavitt, extremely stony
- High windthrow hazard
- Surface rock fragments
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Soils with a clayey subsoil
- On-site required

68B—Bearmouth, rarely flooded-Foxgulch, occasionally flooded complex, 0 to 4 percent slopes, very stony

Setting

Elevation: 5,560 to 6,090
Mean annual precipitation: 12 to 16 inches
Frost-free period: 50 to 70 days

Component Description

Bearmouth, very stony and similar soils
Composition: 70 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Flood plains
Slope: 0 to 4 percent
Plant associations: black cottonwood/herbaceous c.t.
Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0.1 to 2.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: Rare
Available water capacity to 60 inch depth: Approximately 2.2 inches
Typical profile:
A—0 to 6 inches; gravelly sandy loam
Bw—6 to 11 inches; gravelly coarse sandy loam
BC—11 to 18 inches; gravelly coarse sandy loam
2C1—18 to 34 inches; very cobbly loamy coarse sand
2C2—34 to 60 inches; very cobbly sand

Foxgulch, very stony and similar soils
Composition: 15 percent
Taxonomic class: Fine-loamy, mixed, superactive Fluvaquentic Haplocryolls
Landform:
- Broad channels
- Flood plains

Slope: 0 to 2 percent
Plant associations: None noted
Surface layer texture: Loam
Rock fragments on the soil surface: 0.1 to 2.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Sandy and gravelly alluvium
Flooding: Occasional
Water table: Present
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 12 inches; loam
Bw—12 to 30 inches; loam
BC—30 to 46 inches; sandy clay loam
2C—46 to 60 inches; very gravelly coarse sand

Additional Components

Kilgore and similar soils: 5 percent
Riverwash: 5 percent
Water: 4 percent
Bearmouth, very stony and similar soils: 1 percent

Management Considerations

Bearmouth, very stony
- High windthrow hazard

Foxgulch, very stony
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Kilgore
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Riverwash
- Nonsoil material

Water
- Nonsoil material

Bearmouth, very stony
- High windthrow hazard

71—Libeg-Hapgood complex, 15 to 45 percent slopes

Setting

Elevation: 4,500 to 8,000
Mean annual precipitation: 18 to 30 inches
Frost-free period: 60 to 80 days

Component Description

Libeg and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Hillsides
- Landslides
- Moraines

Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Till
- Loamy colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
A—0 to 7 inches; very stony loam
Bt1—7 to 33 inches; very stony clay loam
Bt2—33 to 60 inches; very stony sandy clay loam

Hapgood and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform:
- Footslope on hills
- Swales

Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly argillite colluvium
- Metaquartzite

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A1—0 to 6 inches; stony loam
A2—6 to 12 inches; stony loam
C—12 to 60 inches; very gravelly loam

Additional Components

Adel and similar soils: 7 percent
Leavitt and similar soils: 7 percent
Tiban and similar soils: 6 percent

Management Considerations

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Hapgood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Leavitt
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

71D—Sebud-Ratiopeak complex, 4 to 15 percent slopes, stony

Setting

Elevation: 5,450 to 6,300
Mean annual precipitation: 13 to 17 inches
Frost-free period: 50 to 70 days

Component Description

Sebud, stony and similar soils
Composition: 75 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Alluvial fans
Slope: 4 to 8 percent
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
A1—0 to 6 inches; gravelly loam
A2—6 to 12 inches; very cobbly loam
Bw—12 to 20 inches; very cobbly sandy loam
BC—20 to 30 inches; very cobbly sandy loam
C—30 to 60 inches; very gravelly sandy loam

Ratiopeak, stony and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Footslope on hills
Slope: 8 to 15 percent
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 150 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material: Quartzite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.4 inches
Typical profile:
A—0 to 8 inches; very cobbly loam
Bt—8 to 15 inches; very gravelly sandy clay loam
Bk1—15 to 24 inches; very gravelly loam
Bk2—24 to 45 inches; very cobbly loam
BC—45 to 60 inches; very gravelly coarse sandy loam

Additional Components

Bearmouth, stony and similar soils: 9 percent
Riverwash: 1 percent

Management Considerations

Sebud, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ratiopeak, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth, stony
- High windthrow hazard

Riverwash
- Nonsoil material

71ND3—Evaro-Holloway-Elvick families, complex, high relief mountain slopes and ridges

Interpretive focus: multiple-use forest
Field investigation intensity: Order 3

Setting

Elevation: 6,000 to 8,090
Mean annual precipitation: 22 to 28 inches
Frost-free period: 30 to 60 days

Component Description

Evaro and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocryepts
Landform: Mountain slopes
Slope: 25 to 50 percent
Plant associations:
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very channery ashy loam
Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained
Parent material: Quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 5 inches; very channery ashy loam
Bw—5 to 8 inches; very cobbly ashy loam
2E—8 to 25 inches; very gravelly sandy loam
2E and Bt—25 to 60 inches; extremely gravelly sandy loam

Holloway and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Mountain slopes
Slope: 25 to 50 percent
Plant associations:
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Channery ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
Bw—2 to 12 inches; channery ashy silt loam
2E—12 to 19 inches; very gravelly loam
2E and Bt—19 to 54 inches; extremely gravelly sandy loam
2C—54 to 60 inches; extremely gravelly sandy loam

Elvick and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocryepts
Landform:
- Drainageways
- Toeslope on draws

Slope: 0 to 20 percent
Plant associations:
- lodgepole pine/pinegrass
- subalpine fir/dwarf huckleberry
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- subalpine fir/beargrass

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Quartzite alluvium
Flooding: None
Water table: Present

Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
E1—0 to 7 inches; very cobbly loam
E2—7 to 18 inches; very cobbly loam
Bw—18 to 38 inches; very cobbly sandy loam
BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Rock outcrop: 10 percent
Rubble land: 5 percent
Tigeron and similar soils: 5 percent

Management Considerations

Evaro
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Holloway
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

Tigeron
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

71NH2—Sebud-Libeg families-Rock outcrop complex, high relief mountain slopes and ridges

Interpretive focus: multiple-use grassland
Field investigation intensity: Order 3

Setting

Elevation: 4,500 to 9,220
Mean annual precipitation: 15 to 27 inches
Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Mountain slopes
Slope: 25 to 50 percent
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandstone and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 14 inches; gravelly loam
Bw—14 to 30 inches; very gravelly loam
BC—30 to 60 inches; very cobbly loam

Libeg and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Mountain slopes
Slope: 10 to 35 percent
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
A—0 to 6 inches; cobbly loam
Bt1—6 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery sandy clay loam
BC—30 to 60 inches; extremely stony sandy loam

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Additional Components

Rubble land: 10 percent
Marcetta and similar soils: 5 percent

Management Considerations

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

Marcetta
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

71UDB—Worock-Evaro-Elvick families, complex, nivational mountain slopes and ridges

Interpretive focus: multiple-use forest
Field investigation intensity: Order 3

Setting

Elevation: 6,000 to 7,700
Mean annual precipitation: 22 to 28 inches
Frost-free period: 30 to 60 days

Component Description

Worock and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Mountain slopes
Slope: 25 to 50 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandstone and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 7 inches; gravelly loam
E/Bt—7 to 19 inches; gravelly loam
Bt—19 to 29 inches; very gravelly sandy clay loam
BC—29 to 60 inches; very gravelly sandy clay loam

Evaro and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocryepts
Landform: Mountain slopes

Slope: 25 to 50 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry

Surface layer texture: Stony ashy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Sandstone and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.1 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 5 inches; stony ashy loam
Bw—5 to 8 inches; stony ashy loam
2E—8 to 25 inches; very gravelly sandy loam
2E and Bt—25 to 60 inches; extremely gravelly sandy loam

Elvick and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocryepts
Landform:
- Drainageways
- Toeslope on draws

Slope: 0 to 20 percent
Plant associations:
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very bouldery loam
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Sandstone and siltstone alluvium
Flooding: None
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
E1—0 to 7 inches; very bouldery loam
E2—7 to 18 inches; very bouldery loam
Bw—18 to 38 inches; very cobbly sandy loam
BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Elve and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Worock
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Evaro
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick
- High water table
- High windthrow hazard
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

72—Loberg very stony loam, 15 to 45 percent slopes

Setting

Elevation: 4,000 to 8,000
Mean annual precipitation: 20 to 35 inches
Frost-free period: 50 to 70 days

Component Description

Loberg and similar soils
Composition: 85 percent
Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs
Landform:
- Moraines
- Mountainsides

Slope: 15 to 45 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Very stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Clayey till
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 11 inches; very stony loam
Bt1—11 to 18 inches; very stony clay

Bt2—18 to 42 inches; very stony clay
Btk—42 to 60 inches; very stony clay

Additional Components

Mikesell and similar soils: 4 percent
Whitore and similar soils: 4 percent
Worock and similar soils: 4 percent
Rock outcrop: 3 percent

Management Considerations

Loberg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mikesell
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

73—MacFarlane stony sandy loam, 15 to 45 percent slopes

Setting

Elevation: 6,000 to 8,680
Mean annual precipitation: 25 to 35 inches
Frost-free period: 30 to 60 days

Component Description

MacFarlane and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs
Landform:
- Moraines
- Mountainsides

Slope: 15 to 45 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Coarse-loamy granite and gneiss colluvium
- Till

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.8 inches
Typical profile:

Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 7 inches; stony sandy loam
E/Bt—7 to 14 inches; stony sandy loam
Bt—14 to 70 inches; very channery sandy loam
2C—70 to 80 inches; very cobbly loamy sand

Additional Components

Loberg and similar soils: 4 percent
MacFarlane, with trees and similar soils: 4 percent
Mikesell and similar soils: 4 percent
Shadow and similar soils: 3 percent

Management Considerations

MacFarlane
- Steep slopes
- Erodible surface
- High windthrow hazard

Loberg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

MacFarlane, with trees
- On-site required

Mikesell
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

74—MacFarlane very stony sandy loam, warm, 15 to 45 percent slopes

Setting

Elevation: 6,000 to 7,500
Mean annual precipitation: 20 to 25 inches
Frost-free period: 60 to 90 days

Component Description

MacFarlane and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs
Landform: Mountainsides
Slope: 15 to 45 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Coarse-loamy colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.8 inches
Typical profile:
Oi—0 to 1 inches; slightly decomposed plant material
A—1 to 7 inches; stony sandy loam
E/Bt—7 to 14 inches; stony sandy loam
Bt—14 to 70 inches; very stony sandy loam
2C—70 to 80 inches; very cobbly loamy sand

Additional Components

Comad and similar soils: 5 percent
Rock outcrop: 5 percent
Shadow and similar soils: 5 percent

Management Considerations

MacFarlane
- Steep slopes
- Erodible surface
- High windthrow hazard

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

74A—Bearmouth very cobbly sandy loam, 0 to 2 percent slopes, very stony

Setting

Elevation: 5,280 to 5,530
Mean annual precipitation: 12 to 16 inches
Frost-free period: 50 to 70 days

Component Description

Bearmouth, very stony and similar soils
Composition: 80 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Stream terraces
Slope: 0 to 2 percent
Plant associations: None noted
Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface: 0.1 to 2.0 percent stones, 17 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.2 inches
Typical profile:
A—0 to 6 inches; very cobbly sandy loam
Bw—6 to 11 inches; gravelly coarse sandy loam
BC—11 to 18 inches; gravelly coarse sandy loam
2C1—18 to 34 inches; very cobbly loamy coarse sand
2C2—34 to 60 inches; very cobbly sand

Additional Components

Bearmouth, very stony and similar soils: 10 percent
Sebud and similar soils: 10 percent

Management Considerations

Bearmouth, very stony
- High windthrow hazard

Bearmouth, very stony
- High windthrow hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

75GD2—Kurrie-Goldflint-Warwood families, complex, low relief mountain slopes and ridges

Interpretive focus: multiple-use forest
Field investigation intensity: Order 3

Setting

Elevation: 6,000 to 8,590
Mean annual precipitation: 22 to 28 inches
Frost-free period: 30 to 60 days

Component Description

Kurrie and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs
Landform:
- Mountain slopes
- Ridges

Slope: 10 to 35 percent
Plant associations:
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature:
- Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained
Parent material: Colluvium over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.8 inches
Typical profile:
A—0 to 4 inches; very cobbly sandy loam
E/Bt—4 to 23 inches; very cobbly sandy loam
Bt—23 to 41 inches; very cobbly sandy clay loam
BC—41 to 46 inches; very gravelly sandy loam
Cr—46 to 60 inches; bedrock

Goldflint and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Lithic Cryorthents
Landform:
- Mountain slopes
- Ridges

Slope: 10 to 35 percent
Native plant cover type: Forestland
Plant associations:
- lodgepole pine/pinegrass
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry

Surface layer texture: Coarse sandy loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained
Parent material: Granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 0.5 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 6 inches; coarse sandy loam
BC—6 to 13 inches; very gravelly coarse sand
R—13 to 60 inches; bedrock

Warwood and similar soils
Composition: 15 percent
Taxonomic class: Fine-loamy, mixed, superactive Eutric Glossocryalfs
Landform:
- Mountain slopes
- Ridges

Slope: 10 to 35 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.9 inches
Typical profile:
Oe—0 to 2 inches; moderately decomposed plant material
E—2 to 10 inches; loam
Bt/E—10 to 22 inches; sandy clay loam
Bt—22 to 40 inches; sandy clay loam
BC—40 to 62 inches; gravelly sandy clay loam

Additional Components

Rock outcrop: 10 percent
Blackleed and similar soils: 5 percent
Ovando and similar soils: 5 percent
Lowder and similar soils: 3 percent
Finn and similar soils: 2 percent

Management Considerations

Kurrie
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Goldflint
- High windthrow hazard
- Shallow soil
- Cutslope slumping
- Cutslope erosion

Warwood
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Blackleed
- High windthrow hazard

Ovando
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

76—Maxville gravelly loam, 2 to 8 percent slopes

Setting

Elevation: 6,000 to 7,500
Mean annual precipitation: 15 to 19 inches
Frost-free period: 50 to 70 days

Component Description

Maxville and similar soils
Composition: 85 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Fan remnants
- Stream terraces

Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: Strongly contrasting textural stratification: 20 to 40 inches
Drainage class: Well drained
Parent material: Loamy eolian deposits over gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
A—0 to 11 inches; gravelly loam
Bw—11 to 19 inches; loam
Bk—19 to 34 inches; gravelly loam
2C—34 to 60 inches; very gravelly loamy sand

Additional Components

Adel and similar soils: 5 percent
Bearmouth and similar soils: 5 percent
Tiban and similar soils: 5 percent

Management Considerations

Maxville
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

76B—Tibson gravelly loam, 2 to 4 percent slopes

Setting

Elevation: 5,800 to 6,420
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Tibson and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform:
- Mountainflanks
- Mountainbases

Slope: 2 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly slope alluvium over limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Additional Components

Levengood and similar soils: 8 percent
Maciver and similar soils: 7 percent

Management Considerations

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Levengood
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

76C—Tibson gravelly loam, 4 to 8 percent slopes

Setting

Elevation: 5,800 to 6,440
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Tibson and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform:
- Mountainbases
- Mountainflanks

Slope: 4 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly slope alluvium over limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Additional Components

Levengood and similar soils: 8 percent
Maciver and similar soils: 7 percent

Management Considerations

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Levengood
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

76E—Tibson gravelly loam, 15 to 35 percent slopes

Setting

Elevation: 5,800 to 6,440
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Tibson and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform:
- Mountainflanks
- Mountainbases

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly slope alluvium over limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Additional Components

Levengood and similar soils: 8 percent
Maciver and similar soils: 7 percent

Management Considerations

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Levengood
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

80—Mikesell clay loam, 15 to 45 percent slopes

Setting

Elevation: 6,000 to 8,070
Mean annual precipitation: 22 to 32 inches
Frost-free period: 40 to 60 days

Component Description

Mikesell and similar soils
Composition: 85 percent
Taxonomic class: Fine, smectitic Eutric Haplocryalfs
Landform:
- Footslope on mountains
- Mountainsides

Slope: 15 to 45 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.2 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 8 inches; clay loam
Bt—8 to 60 inches; gravelly clay

Additional Components

Loberg and similar soils: 7 percent
Soils with shale at 40 to 60 in. and similar soils: 6 percent
Poorly drained soils and similar soils: 2 percent

Management Considerations

Mikesell
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Loberg
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Soils with shale at 40 to 60 in.
- On-site required

Poorly drained soils
- On-site required

80A—Water-Riverwash complex

Setting

Elevation: 5,250 to 5,810
Mean annual precipitation: 12 to 16 inches
Frost-free period: 50 to 70 days

Component Description

Water
Composition: 80 percent
Landform: None assigned

Riverwash
Composition: 15 percent
Landform: None assigned

Additional Components

Bearmouth, very stony and similar soils: 3 percent
Foolhen and similar soils: 2 percent

Management Considerations

Water
- Nonsoil material

Riverwash
- Nonsoil material

Bearmouth, very stony
- High windthrow hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

82D—Elve gravelly loam, 4 to 15 percent slopes

Setting

Elevation: 5,600 to 8,000
Mean annual precipitation: 20 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Elve and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform: Mountain slopes
Slope: 4 to 15 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/twinflower
- Douglas-fir/pinegrass
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oe—0 to 2 inches; moderately decomposed plant material
E—2 to 11 inches; gravelly loam
Bw—11 to 24 inches; extremely gravelly sandy loam
BC—24 to 60 inches; extremely gravelly loam

Additional Components

Evaro and similar soils: 5 percent
Rock outcrop: 5 percent
Worock and similar soils: 5 percent

Management Considerations

Elve
- High windthrow hazard
- Low bearing strength

Evaro
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

82E—Elve gravelly loam, 15 to 35 percent slopes

Setting

Elevation: 5,600 to 8,000
Mean annual precipitation: 18 to 26 inches
Frost-free period: 30 to 70 days

Component Description

Elve and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform: Mountain slopes
Slope: 15 to 35 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/beargrass
- Douglas-fir/twinflower
- Douglas-fir/pinegrass-pinegrass phase
- subalpine fir/grouse whortleberry
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oe—0 to 2 inches; moderately decomposed plant material
E—2 to 11 inches; gravelly loam
Bw—11 to 24 inches; extremely gravelly sandy loam
BC—24 to 60 inches; extremely gravelly loam

Additional Components

Evaro and similar soils: 5 percent
Rock outcrop: 5 percent
Worock and similar soils: 5 percent

Management Considerations

Elve
- High windthrow hazard
- Low bearing strength

Evaro
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

82F—Elve gravelly loam, 35 to 60 percent slopes

Setting

Elevation: 5,610 to 8,000
Mean annual precipitation: 17 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Elve and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Mountain slopes
Slope: 35 to 60 percent, west to southeast aspects
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/twinflower
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- subalpine fir/mountain gooseberry
- Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oe—0 to 2 inches; moderately decomposed plant material
E—2 to 11 inches; gravelly loam
Bw—11 to 24 inches; extremely gravelly sandy loam
BC—24 to 60 inches; extremely gravelly loam

Additional Components

Evaro and similar soils: 5 percent
Rock outcrop: 5 percent
Worock and similar soils: 5 percent

Management Considerations

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Evaro
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

84—Musselshell-Amesha, bedrock substratum, complex, cool, 8 to 25 percent slopes

Setting

Elevation: 3,280 to 6,500
Mean annual precipitation: 10 to 14 inches
Frost-free period: 90 to 105 days

Component Description

Musselshell and similar soils
Composition: 50 percent
Taxonomic class: Coarse-loamy, carbonatic, frigid Aridic Calciustepts
Landform: Dissected alluvial fans
Slope: 8 to 25 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Coarse-loamy limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.8 inches
Typical profile:
A—0 to 8 inches; gravelly loam
Bk—8 to 25 inches; gravelly loam
2C—25 to 60 inches; very gravelly sandy loam

Amesha and similar soils
Composition: 30 percent
Taxonomic class: Coarse-loamy, mixed, superactive, frigid Aridic Calciustepts
Landform:
- Alluvial fans
- Stream terraces

Slope: 8 to 25 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature:
- Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained
Parent material: Loamy siltstone, calcareous alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.7 inches
Typical profile:
A—0 to 8 inches; loam
Bk1—8 to 35 inches; loam
Bk2—35 to 52 inches; loam
Cr—52 to 60 inches; weathered bedrock

Additional Components

Blackhall and similar soils: 7 percent
Trimad and similar soils: 7 percent
Varney and similar soils: 6 percent

Management Considerations

Musselshell
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Amesha
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Blackhall
- High windthrow hazard
- Shallow soil
- Low bearing strength

Trimad
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Varney
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

85D—Loberg gravelly loam, 4 to 15 percent slopes

Setting

Elevation: 5,800 to 7,000
Mean annual precipitation: 15 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Loberg and similar soils
Composition: 85 percent
Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs
Landform:
- Mountainbases
- Mountainflanks

Slope: 4 to 15 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/twinflower
- Douglas-fir/twinflower

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
Oe—1 to 3 inches; moderately decomposed plant material
E—3 to 8 inches; gravelly loam

E/Bt—8 to 14 inches; very cobbly clay
Bt—14 to 60 inches; very cobbly clay loam

Additional Components

Danaher and similar soils: 6 percent
Worock and similar soils: 5 percent
Foolhen and similar soils: 4 percent

Management Considerations

Loberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Danaher
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

85E—Loberg gravelly loam, 15 to 35 percent slopes

Setting

Elevation: 5,800 to 7,000
Mean annual precipitation: 15 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Loberg and similar soils
Composition: 85 percent
Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs
Landform:
- Mountainbases
- Mountainflanks

Slope: 15 to 35 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/twinflower
- subalpine fir/twinflower

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
Oe—1 to 3 inches; moderately decomposed plant material
E—3 to 8 inches; gravelly loam
E/Bt—8 to 14 inches; very cobbly clay
Bt—14 to 60 inches; very cobbly clay loam

Additional Components

Danaher and similar soils: 5 percent
Worock and similar soils: 4 percent
Foolhen and similar soils: 3 percent
Rock outcrop: 3 percent

Management Considerations

Loberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Danaher
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

87D—Danaher loam, 4 to 15 percent slopes

Setting

Elevation: 6,000 to 6,600
Mean annual precipitation: 15 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Danaher and similar soils
Composition: 85 percent
Taxonomic class: Fine, mixed, superactive Ustic Glossocryalfs
Landform: Mountain slopes
Slope: 4 to 15 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/blue huckleberry
- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower

Surface layer texture: Loam

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.7 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
Oi—1 to 3 inches; slightly decomposed plant material
E—3 to 6 inches; loam
Bt/E—6 to 10 inches; clay loam
Bt—10 to 60 inches; gravelly clay

Additional Components

Foolhen and similar soils: 5 percent
Loberg and similar soils: 5 percent
Worock and similar soils: 5 percent

Management Considerations

Danaher
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Loberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

91E—Mohaggin stony ashy very fine sandy loam, 15 to 35 percent slopes

Setting

Elevation: 7,800 to 9,150
Mean annual precipitation: 22 to 40 inches
Frost-free period: 30 to 70 days

Component Description

Mohaggin and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Dystrocryepts
Landform: Mountain slopes
Slope: 15 to 35 percent
Native plant cover type: Forestland
Plant associations: Douglas-fir/common juniper

Surface layer texture: Stony ashy very fine sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
Oe—2 to 5 inches; moderately decomposed plant material
A—5 to 14 inches; stony ashy very fine sandy loam
2Bw—14 to 32 inches; very gravelly sandy loam
2C—32 to 60 inches; very cobbly loamy sand

Additional Components

Mohaggin, greater slopes and similar soils: 5 percent
Rubble land: 5 percent
Comad and similar soils: 3 percent
Mooseflat and similar soils: 2 percent

Management Considerations

Mohaggin
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Mohaggin, greater slope
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Rubble land
- Nonsoil material

Comad
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

92—Oro Fino loam, 2 to 12 percent slopes

Setting

Elevation: 5,920 to 7,220
Mean annual precipitation: 15 to 19 inches
Frost-free period: 50 to 70 days

Component Description

Oro Fino and similar soils
Composition: 85 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform:
- Backslope on hills
- Footslope on hills

Slope: 2 to 12 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gneiss residuum
- Loamy colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
A—0 to 10 inches; loam
Bt—10 to 22 inches; gravelly sandy clay loam
Bk1—22 to 42 inches; gravelly loam
Bk2—42 to 60 inches; very gravelly loamy sand

Additional Components

Shallow soils and similar soils: 8 percent
Rock outcrop: 7 percent

Management Considerations

Oro Fino
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shallow soils
- High windthrow hazard
- Shallow soil
- Mass movement potential

Rock outcrop
- Nonsoil material

93—Oro Fino-Poin complex, 4 to 15 percent slopes

Setting

Elevation: 6,000 to 8,500
Mean annual precipitation: 15 to 20 inches
Frost-free period: 50 to 70 days

Component Description

Oro Fino and similar soils
Composition: 70 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls

Landform:
- Backslope on hills
- Footslope on hills

Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Loamy colluvium
- Gneiss residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
A—0 to 10 inches; gravelly loam
Bt—10 to 22 inches; gravelly sandy clay loam
Bk1—22 to 42 inches; gravelly loam
Bk2—42 to 60 inches; very gravelly loamy sand

Poin and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform:
- Shoulder on hills
- Summit on hills

Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very flaggy sandy loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material:
- Gravelly residuum
- Gneiss colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 0.8 inches
Typical profile:
A—0 to 7 inches; very flaggy sandy loam
Bw—7 to 14 inches; extremely channery sandy loam
R—14 to 60 inches; unweathered bedrock

Additional Components

Rock outcrop: 5 percent

Management Considerations

Oro Fino
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin
- High windthrow hazard
- Shallow soil

Rock outcrop
- Nonsoil material

94—Oro Fino-Poin complex, 15 to 45 percent slopes

Setting

Elevation: 5,760 to 8,500
Mean annual precipitation: 15 to 20 inches
Frost-free period: 50 to 70 days

Component Description

Oro Fino and similar soils
Composition: 50 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform:
- Backslope on hills
- Footslope on hills

Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Loamy colluvium
- Gneiss residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
A—0 to 10 inches; gravelly loam
Bt—10 to 22 inches; gravelly sandy clay loam
Bk1—22 to 42 inches; gravelly loam
Bk2—42 to 60 inches; very gravelly loamy sand

Poin and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform:
- Shoulder on hills
- Summit on hills

Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very flaggy sandy loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material:
- Gravelly residuum
- Gneiss colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 0.8 inches

Typical profile:
A—0 to 7 inches; very flaggy sandy loam
Bw—7 to 14 inches; extremely channery sandy loam
R—14 to 60 inches; unweathered bedrock

Additional Components

Adel and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Oro Fino
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

Adel
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

95—Pensore-Crago, cool-Rock outcrop complex, 25 to 75 percent slopes

Setting

Elevation: 3,500 to 7,390
Mean annual precipitation: 10 to 23 inches
Frost-free period: 90 to 120 days

Component Description

Pensore and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic, frigid Lithic Calciustepts
Landform:
- Hillsides
- Ridges

Slope: 25 to 75 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very channery loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material:
- Limestone residuum
- Loamy limestone residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 1.3 inches
Typical profile:
A—0 to 4 inches; very channery loam
Bk—4 to 16 inches; very channery loam
R—16 to 60 inches; bedrock

Crago and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic, frigid Aridic Calciustepts
Landform: Dissected terraces
Slope: 25 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
A—0 to 4 inches; very stony loam
Bk1—4 to 15 inches; very stony loam
Bk2—15 to 60 inches; very cobbly loam

Rock outcrop
Composition: 25 percent
Landform: None assigned

Additional Components

Lithic Calciustepts and similar soils: 5 percent

Management Considerations

Pensore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Crago
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Lithic Calciustepts
- Steep slopes
- Erodible surface

- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

96D—Worock gravelly loam, 4 to 15 percent slopes

Setting

Elevation: 6,060 to 8,100
Mean annual precipitation: 20 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Worock and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Mountain slopes
Slope: 4 to 15 percent
Native plant cover type: Forestland
Plant associations: subalpine fir/twinflower
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
E—1 to 6 inches; gravelly loam
E/Bt—6 to 19 inches; gravelly clay loam
Bt—19 to 39 inches; very gravelly clay loam
BC—39 to 60 inches; very gravelly sandy clay loam

Additional Components

Elve and similar soils: 5 percent
Loberg and similar soils: 4 percent
Danaher and similar soils: 3 percent
Evaro and similar soils: 3 percent

Management Considerations

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- High windthrow hazard
- Low bearing strength

Loberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Danaher
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Evaro
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

96E—Worock gravelly loam, 15 to 35 percent slopes

Setting

Elevation: 5,610 to 8,100
Mean annual precipitation: 18 to 25 inches
Frost-free period: 30 to 50 days

Component Description

Worock and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Mountain slopes
Slope: 15 to 35 percent
Native plant cover type: Forestland
Plant associations: subalpine fir/twinflower
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
E—1 to 6 inches; gravelly loam
E/Bt—6 to 19 inches; gravelly clay loam
Bt—19 to 39 inches; very gravelly clay loam
BC—39 to 60 inches; very gravelly sandy clay loam

Additional Components

Elve and similar soils: 5 percent
Loberg and similar soils: 4 percent
Danaher and similar soils: 3 percent
Evaro and similar soils: 3 percent

Management Considerations

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- High windthrow hazard
- Low bearing strength

Loberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Danaher
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Evaro
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

96F—Worock gravelly loam, 35 to 60 percent slopes

Setting

Elevation: 5,600 to 8,100
Mean annual precipitation: 20 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Worock and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Mountain slopes
Slope: 35 to 60 percent
Native plant cover type: Forestland
Plant associations: subalpine fir/twinflower
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
E—1 to 6 inches; gravelly loam
E/Bt—6 to 19 inches; gravelly clay loam
Bt—19 to 39 inches; very gravelly clay loam
BC—39 to 60 inches; very gravelly sandy clay loam

Additional Components

Elve and similar soils: 5 percent
Evaro and similar soils: 4 percent
Danaher and similar soils: 3 percent
Loberg and similar soils: 3 percent

Management Considerations

Worock
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Evaro
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Danaher
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Loberg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

101B—Matcher-Leighcan-Cowood families, complex, mountain ridgetops

Setting

Elevation: 6,450 to 10,400
Mean annual precipitation: 20 to 49 inches
Frost-free period: 20 to 40 days

Component Description

Matcher and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Humic Dystrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Plant associations:
- Ross' avens-arctic sandwort c.t.
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches

Typical profile:
A—0 to 10 inches; stony sandy loam
Bw—10 to 23 inches; very stony sandy loam
C—23 to 60 inches; very stony sand

Leighcan and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Plant associations:
- Ross' avens-arctic sandwort c.t.
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
E1—0 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Cowood and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 25 percent
Plant associations:
- Ross' avens-arctic sandwort c.t.
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.

Surface layer texture: Very stony coarse sandy loam
Depth to restrictive feature:
- Paralithic bedrock: 10 to 19 inches
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Gneiss residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
E—0 to 6 inches; very stony coarse sandy loam
Bw—6 to 17 inches; very gravelly sandy loam
Cr—17 to 19 inches; bedrock
R—19 to 60 inches; bedrock

Additional Components

Moran and similar soils: 10 percent
Rubble land: 10 percent
Como and similar soils: 5 percent

Management Considerations

Matcher
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Leighcan
- High windthrow hazard

Cowood
- High windthrow hazard
- Shallow soil
- Low bearing strength

Moran
- High windthrow hazard

Rubble land
- Nonsoil material

Como
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

101V—Como-Leighcan-Matcher families, complex, mountain ridgetops

Setting

Elevation: 7,380 to 10,200
Mean annual precipitation: 27 to 47 inches
Frost-free period: 20 to 40 days

Component Description

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Leighcan and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Matcher and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Humic Dystrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
A—0 to 10 inches; stony sandy loam
Bw—10 to 23 inches; very stony sandy loam
C—23 to 60 inches; very stony sand

Additional Components

Cowood and similar soils: 10 percent
Moran and similar soils: 10 percent
Rubble land: 10 percent

Management Considerations

Como
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Leighcan
- High windthrow hazard

Matcher
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Cowood
- High windthrow hazard
- Shallow soil
- Low bearing strength

Moran
- High windthrow hazard

Rubble land
- Nonsoil material

102B—Woodhurst-Swifton families, complex, mountain ridgetops

Setting

Elevation: 7,340 to 9,750
Mean annual precipitation: 22 to 45 inches
Frost-free period: 20 to 40 days

Component Description

Woodhurst and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Argicryolls
Landform: Ridges
Slope: 0 to 25 percent
Plant associations:
- Ross' avens-arctic sandwort c.t.
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Tuff
- Rhyolite

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 16 inches; gravelly loam
Bt1—16 to 30 inches; very cobbly clay loam
Bt2—30 to 60 inches; extremely cobbly clay loam

Swifton and similar soils
Composition: 40 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Palecryalfs
Landform: Mountain slopes

Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- blackroot sedge c.t.
- Idaho fescue/diverseleafed cinquefoil c.t.
- Ross' avens-arctic sandwort c.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Tuff
- Andesite colluvium
- Rhyolite

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.9 inches
Typical profile:
E—0 to 10 inches; loam
B/E—10 to 43 inches; gravelly sandy clay loam
Bt—43 to 72 inches; very gravelly sandy clay loam

Additional Components

Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Swifton
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

102V—Garlet-Tenrag families, complex, mountain ridgetops

Setting

Elevation: 8,630 to 9,740
Mean annual precipitation: 32 to 40 inches
Frost-free period: 20 to 40 days

Component Description

Garlet and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Ridges
Slope: 0 to 20 percent

Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Tuff
- Rhyolite

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Tenrag and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Ridges
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- whitebark pine/subalpine fir
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Tuff
- Rhyolite

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Additional Components

Rubble land: 10 percent
Worock and similar soils: 10 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

103B—Garlet-Comad families, complex, mountain ridgetops

Setting

Elevation: 7,550 to 9,990
Mean annual precipitation: 18 to 35 inches
Frost-free period: 20 to 40 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Plant associations:
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.
- Ross' avens-arctic sandwort c.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
E—0 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Comad and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Ridges
Slope: 0 to 25 percent

Plant associations:
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.
- Ross' avens-arctic sandwort c.t.

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Conglomerate colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
E1—0 to 6 inches; stony sandy loam
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Additional Components

Tenrag and similar soils: 10 percent
Yellowmule and similar soils: 10 percent
Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Comad
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Tenrag
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Yellowmule
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

105—Rivra very gravelly sandy loam, cool, 2 to 4 percent slopes

Setting

Elevation: 1,900 to 6,000
Mean annual precipitation: 10 to 16 inches
Frost-free period: 90 to 135 days

Component Description

Rivra and similar soils
Composition: 85 percent
Taxonomic class: Sandy-skeletal, mixed, frigid Aridic Ustifluvents
Landform: Flood plains
Slope: 2 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 12 inches; very gravelly sandy loam
C—12 to 60 inches; very gravelly sand

Additional Components

Havre and similar soils: 5 percent
Ryell and similar soils: 5 percent
Rivra, cobbly and similar soils: 3 percent
Rivra, stony and similar soils: 2 percent

Management Considerations

Rivra
- High windthrow hazard

Havre
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ryell
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rivra, cobbly
- High windthrow hazard

Rivra, stony
- High windthrow hazard

105C—Prudy-Libeg-Rooset families, complex, mountain ridgetops

Setting

Elevation: 7,060 to 8,900
Mean annual precipitation: 19 to 31 inches
Frost-free period: 20 to 40 days

Component Description

Prudy and similar soils
Composition: 35 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Haplocryolls
Landform: Ridges
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.6 inches
Typical profile:
A—0 to 10 inches; loam
Bk—10 to 60 inches; gravelly loam

Libeg and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Ridges
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
A—0 to 10 inches; very cobbly sandy loam
Bt1—10 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery clay loam
BC—30 to 60 inches; very cobbly sandy loam

Rooset and similar soils
Composition: 20 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform: Ridges
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.9 inches
Typical profile:
A—0 to 7 inches; gravelly loam
AB—7 to 11 inches; gravelly clay loam
Bt—11 to 21 inches; very gravelly clay loam
Bk1—21 to 30 inches; very gravelly clay loam
Bk2—30 to 60 inches; very gravelly clay loam

Additional Components

Elve and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Prudy
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rooset
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

106B—Tibson-Starley families, complex, mountain ridgetops

Setting

Elevation: 7,600 to 10,600
Mean annual precipitation: 18 to 49 inches
Frost-free period: 20 to 40 days

Component Description

Tibson and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Ridges
Slope: 0 to 25 percent
Plant associations:
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.
- Ross' avens-arctic sandwort c.t.

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Starley and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform: Ridges
Slope: 0 to 25 percent
Plant associations:
- Ross' avens-arctic sandwort c.t.
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Limestone, sandstone, and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.7 inches
Typical profile:
A—0 to 9 inches; gravelly loam
Bk1—9 to 12 inches; very cobbly loam
Bk2—12 to 15 inches; very cobbly loam
R—15 to 60 inches; bedrock

Additional Components

Whitore and similar soils: 10 percent
Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Starley
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Whitore
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

106E—Hanson-Tibson-Starley families, complex, mountain ridgetops

Setting

Elevation: 7,600 to 10,600
Mean annual precipitation: 18 to 49 inches
Frost-free period: 30 to 70 days

Component Description

Hanson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Summit on ridges
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Tibson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Ridges
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Starley and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform: Ridges
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Limestone, sandstone, and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.7 inches
Typical profile:
A—0 to 9 inches; gravelly loam
Bk1—9 to 12 inches; very cobbly loam
Bk2—12 to 15 inches; very cobbly loam
R—15 to 60 inches; bedrock

Additional Components

Rubble land: 10 percent
Whitore and similar soils: 10 percent

Management Considerations

Hanson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Starley
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Whitore
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

106S—Whitore-Helmville families, complex, mountain ridgetops

Setting

Elevation: 6,990 to 9,410
Mean annual precipitation: 20 to 41 inches
Frost-free period: 20 to 50 days

Component Description

Whitore and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Helmville and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Summit on ridges
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Additional Components

Rock outcrop: 10 percent
Tropal and similar soils: 10 percent

Management Considerations

Whitore
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Helmville
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Tropal
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

107B—Moran-Worock-Leighcan families, complex, mountain ridgetops

Setting

Elevation: 7,300 to 10,400
Mean annual precipitation: 18 to 46 inches
Frost-free period: 20 to 40 days

Component Description

Moran and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Humic Dystrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- Ross' avens-arctic sandwort c.t.
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.8 inches
Typical profile:
A—0 to 7 inches; very stony sandy loam
Bw—7 to 16 inches; very stony sandy loam
C—16 to 60 inches; very stony sandy loam

Worock and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Ridges
Slope: 0 to 25 percent

Native plant cover type: Forestland
Plant associations:
- Ross' avens-arctic sandwort c.t.
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
E—0 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Leighcan and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Plant associations:
- Ross' avens-arctic sandwort c.t.
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
E1—0 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Additional Components

Matcher and similar soils: 10 percent
Rubble land: 10 percent
Gateview and similar soils: 5 percent

Management Considerations

Moran
- High windthrow hazard

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Leighcan
- High windthrow hazard

Matcher
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rubble land
- Nonsoil material

Gateview
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

107S—Garlet-Moran families, complex, mountain ridgetops

Setting

Elevation: 7,240 to 8,820
Mean annual precipitation: 20 to 36 inches
Frost-free period: 20 to 50 days

Component Description

Garlet and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Moran and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Humic Dystrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica

- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 7 inches; very stony sandy loam
Bw—7 to 16 inches; very stony sandy loam
C—16 to 60 inches; very stony sandy loam

Additional Components

Como and similar soils: 10 percent
Matcher and similar soils: 10 percent
Rubble land: 10 percent
Worock and similar soils: 5 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Moran
- High windthrow hazard

Como
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Matcher
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rubble land
- Nonsoil material

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

107Sa—Garlet-Holloway families, complex, mountain ridgetops

Setting

Elevation: 7,110 to 8,660
Mean annual precipitation: 24 to 36 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Holloway and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.5 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 13 inches; gravelly ashy silt loam
2E—13 to 20 inches; extremely gravelly loam
2E and Bt—20 to 55 inches; extremely gravelly loam
2C—55 to 60 inches; extremely gravelly loam

Additional Components

Bata and similar soils: 10 percent
Rock outcrop: 10 percent
Como and similar soils: 5 percent
Cowood and similar soils: 5 percent
Rubble land: 5 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Holloway
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Como
- High windthrow hazard
- Low bearing strength

Cowood
- High windthrow hazard
- Shallow soil

Rubble land
- Nonsoil material

107Vr—Leighcan-Como families-Rubble land complex, mountain ridgetops

Setting

Elevation: 7,570 to 9,760
Mean annual precipitation: 16 to 39 inches
Frost-free period: 20 to 40 days

Component Description

Leighcan and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rubble land
Composition: 15 percent
Definition: Areas of boulders, stones, and cobbles
Landform: Summit on ridges

Additional Components

Moran and similar soils: 10 percent
Rock outcrop: 10 percent
Matcher and similar soils: 5 percent

Management Considerations

Leighcan
- High windthrow hazard

Como
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rubble land
- Nonsoil material

Moran
- High windthrow hazard

Rock outcrop
- Nonsoil material

Matcher
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

107Vra—Jeru-Cowood-Rubycreek families, complex, mountain ridgetops

Setting

Elevation: 6,940 to 10,000
Mean annual precipitation: 24 to 47 inches
Frost-free period: 20 to 40 days

Component Description

Jeru and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Ridges
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Bouldery ashy loam
Rock fragments on the soil surface: 1 to 5 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.8 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 7 inches; bouldery ashy loam
Bw—7 to 35 inches; very cobbly sandy loam
C—35 to 60 inches; very cobbly loamy sand

Cowood and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 20 percent
Plant associations:
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Very stony coarse sandy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, quartzite
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 0.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 5 inches; very stony coarse sandy loam
Bw1—5 to 11 inches; very stony sandy loam
Bw2—11 to 14 inches; very stony sandy loam
R—14 to 60 inches; bedrock

Rubycreek and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Dystrocryepts
Landform: Ridges
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Ashy silt loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 3 inches; ashy silt loam
Bw—3 to 12 inches; ashy silt loam
2Bw—12 to 20 inches; very stony loam
2BC—20 to 29 inches; very cobbly loam
2C—29 to 60 inches; very cobbly sandy loam

Additional Components

Moran and similar soils: 10 percent
Rubble land: 10 percent
Priestlake and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Jeru
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Cowood
- High windthrow hazard
- Shallow soil

Rubycreek
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Moran
- High windthrow hazard

Rubble land
- Nonsoil material

Priestlake
- High windthrow hazard

Rock outcrop
- Nonsoil material

108—Rochester-Rock outcrop complex, 35 to 70 percent slopes

Setting

Elevation: 3,800 to 8,000
Mean annual precipitation: 10 to 35 inches
Frost-free period: 50 to 120 days

Component Description

Rochester and similar soils
Composition: 60 percent
Taxonomic class: Sandy-skeletal, mixed, frigid Typic Ustorthents
Landform: Mountainsides
Slope: 35 to 70 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Very stony loamy sand
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite and gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 5 inches; very stony loamy sand
C1—5 to 15 inches; very stony loamy sand
C2—15 to 60 inches; very stony loamy sand

Rock outcrop
Composition: 25 percent
Landform: None assigned

Additional Components

Brocko and similar soils: 5 percent
Rubble land: 5 percent
Soils with dark surface layers and similar soils: 5 percent

Management Considerations

Rochester
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Brocko
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Soils with dark surface layers
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

108B—Como-Matcher-Leighcan families, complex, mountain ridgetops

Setting

Elevation: 6,760 to 11,000
Mean annual precipitation: 25 to 45 inches
Frost-free period: 20 to 40 days

Component Description

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- Ross' avens-arctic sandwort c.t.
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.0 inches

Typical profile:
E—0 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Matcher and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Humic Dystrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Plant associations:
- Ross' avens-arctic sandwort c.t.
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
A—0 to 10 inches; stony sandy loam
Bw—10 to 23 inches; very stony sandy loam
C—23 to 60 inches; very stony sand

Leighcan and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Plant associations:
- blackroot sedge c.t.
- Idaho fescue/diverseleafed cinquefoil c.t.
- Ross' avens-arctic sandwort c.t.

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
E1—0 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Additional Components

Rubble land: 10 percent
Comad and similar soils: 5 percent

Management Considerations

Como
- High windthrow hazard
- Low bearing strength

- Cutslope slumping
- Cutslope erosion

Matcher
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Leighcan
- High windthrow hazard

Rubble land
- Nonsoil material

Comad
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

108S—Como-Garlet-Comad families, complex, mountain ridgetops

Setting

Elevation: 6,760 to 8,710
Mean annual precipitation: 24 to 35 inches
Frost-free period: 20 to 50 days

Component Description

Como and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/heartleaf arnica
- subalpine fir/pinegrass
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 25 percent

Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Comad and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Summit on ridges
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; stony sandy loam
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Additional Components

Rubble land: 10 percent

Management Considerations

Como
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Comad
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rubble land
- Nonsoil material

108Sa—Como-Littlesalmon-Cowood families, complex, mountain ridgetops

Setting

Elevation: 6,330 to 8,250
Mean annual precipitation: 24 to 42 inches
Frost-free period: 20 to 50 days

Component Description

Como and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Littlesalmon and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Andic Haplocryepts
Landform: Ridges
Slope: 0 to 20 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Very bouldery ashy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; very bouldery ashy loam
Bw1—4 to 12 inches; very bouldery ashy loam
2Bw2—12 to 22 inches; very gravelly sandy loam
2BC—22 to 60 inches; very gravelly loamy coarse sand

Cowood and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/elk sedge

Surface layer texture: Very stony coarse sandy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature:
- Paralithic bedrock: 10 to 19 inches
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.0 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 6 inches; very stony coarse sandy loam
Bw—6 to 17 inches; very gravelly sandy loam
Cr—17 to 19 inches; bedrock
R—19 to 60 inches; bedrock

Additional Components

Garlet and similar soils: 10 percent
Bata and similar soils: 5 percent
Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Como
- High windthrow hazard
- Low bearing strength

Littlesalmon
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Cowood
- High windthrow hazard
- Shallow soil
- Low bearing strength

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

108V—Leighcan-Como families, complex, mountain ridgetops

Setting

Elevation: 8,310 to 9,180
Mean annual precipitation: 32 to 37 inches
Frost-free period: 20 to 40 days

Component Description

Leighcan and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Ridges
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches

Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Como and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- subalpine fir/mountain gooseberry
- whitebark pine

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Additional Components

Matcher and similar soils: 10 percent
Rubble land: 10 percent

Management Considerations

Leighcan
- High windthrow hazard

Como
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Matcher
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rubble land
- Nonsoil material

108Va—Priestlake-Cowood-Littlesalmon families, complex, mountain ridgetops

Setting

Elevation: 6,750 to 9,980
Mean annual precipitation: 32 to 48 inches
Frost-free period: 20 to 40 days

Component Description

Priestlake and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Dystrocryepts
Landform: Ridges
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Very bouldery sandy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 8 inches; very bouldery sandy loam
Bw—8 to 23 inches; very cobbly sandy loam
C—23 to 60 inches; very cobbly loamy sand

Cowood and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 20 percent
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Very cobbly coarse sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature:
- Paralithic bedrock: 10 to 19 inches
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
E—0 to 5 inches; very cobbly coarse sandy loam
Bw—5 to 17 inches; very gravelly sandy loam
Cr—17 to 19 inches; bedrock
R—19 to 60 inches; bedrock

Littlesalmon and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Andic Haplocryepts
Landform: Ridges
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Very bouldery ashy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; very bouldery ashy loam
Bw1—4 to 12 inches; very bouldery ashy loam
2Bw2—12 to 22 inches; very gravelly sandy loam
2BC—22 to 60 inches; very gravelly loamy coarse sand

Additional Components

Jeru and similar soils: 10 percent
Matcher and similar soils: 10 percent
Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Priestlake
- High windthrow hazard

Cowood
- High windthrow hazard
- Shallow soil
- Low bearing strength

Littlesalmon
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Jeru
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Matcher
- High windthrow hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

108Vra—Priestlake-Cowood families-Rock outcrop complex, mountain ridgetops

Setting

Elevation: 6,730 to 8,980
Mean annual precipitation: 29 to 44 inches
Frost-free period: 20 to 40 days

Component Description

Priestlake and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Typic Dystrocryepts
Landform: Ridges
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Very bouldery sandy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 8 inches; very bouldery sandy loam
Bw—8 to 23 inches; very cobbly sandy loam
C—23 to 60 inches; very cobbly loamy sand

Cowood and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform: Summit on ridges
Slope: 0 to 20 percent
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Very cobbly coarse sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature:
- Paralithic bedrock: 10 to 19 inches
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches

Typical profile:
E—0 to 5 inches; very cobbly coarse sandy loam
Bw—5 to 17 inches; very gravelly sandy loam
Cr—17 to 19 inches; bedrock
R—19 to 60 inches; bedrock

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Additional Components

Rubble land: 10 percent
Jeru and similar soils: 5 percent
Littlesalmon and similar soils: 5 percent
Matcher and similar soils: 5 percent

Management Considerations

Priestlake
- High windthrow hazard

Cowood
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

Jeru
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Littlesalmon
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Matcher
- High windthrow hazard

111B—Rivra complex, 0 to 4 percent slopes

Setting

Elevation: 4,800 to 6,000
Mean annual precipitation: 10 to 14 inches
Frost-free period: 90 to 105 days

Component Description

Rivra, very cobbly and similar soils
Composition: 55 percent
Taxonomic class: Sandy-skeletal, mixed, frigid Aridic Ustifluvents
Landform: Flood plains
Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium
Flooding: Occasional
Water table: Present
Available water capacity to 60 inch depth: Approximately 2.1 inches
Typical profile:
A—0 to 5 inches; very cobbly sandy loam
C1—5 to 19 inches; very gravelly loamy coarse sand
C2—19 to 60 inches; extremely gravelly sand

Rivra and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed, frigid Aridic Ustifluvents
Landform: Flood plains
Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium
Flooding: Occasional
Water table: Present
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
A—0 to 5 inches; sandy loam
C1—5 to 19 inches; very gravelly loamy coarse sand
C2—19 to 60 inches; extremely gravelly sand

Additional Components

Ashbough and similar soils: 5 percent
Ryell and similar soils: 5 percent
Dillon and similar soils: 4 percent
Beavrock and similar soils: 1 percent

Management Considerations

Rivra, very cobbly
- Flooding
- High windthrow hazard
- Low bearing strength

Rivra
- Flooding
- High windthrow hazard

Ashbough
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ryell
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dillon
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Beavrock
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

114A—Mooseflat loam, 0 to 2 percent slopes

Setting

Elevation: 5,700 to 6,260
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Mooseflat and similar soils
Composition: 85 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Flood plains
Slope: 0 to 2 percent
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Loamy alluvium over sandy and gravelly alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
A—1 to 11 inches; loam
Bw—11 to 23 inches; loam
2C—23 to 60 inches; very cobbly sand

Additional Components

Dunkleber and similar soils: 5 percent
Foolhen and similar soils: 5 percent
Mooseflat and similar soils: 5 percent

Management Considerations

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dunkleber
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

115—Scravo very cobbly sandy loam, cool, 0 to 4 percent slopes

Setting

Elevation: 3,500 to 6,500
Mean annual precipitation: 10 to 14 inches
Frost-free period: 90 to 135 days

Component Description

Scravo and similar soils
Composition: 90 percent
Taxonomic class: Sandy-skeletal, mixed, frigid Aridic Calciustepts
Landform: Stream terraces
Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.5 inches
Typical profile:
A—0 to 5 inches; very cobbly sandy loam
Bk—5 to 17 inches; very gravelly sandy loam
2C—17 to 60 inches; very gravelly sand

Additional Components

Crago and similar soils: 5 percent
Thess and similar soils: 5 percent

Management Considerations

Scravo
- High windthrow hazard
- Low bearing strength

Crago
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Thess
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

118—Sebud-Hapgood complex, 8 to 45 percent slopes

Setting

Elevation: 4,500 to 8,000
Mean annual precipitation: 15 to 35 inches
Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Moraines
- Mountainsides

Slope: 8 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Igneous and metamorphic till

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
A—0 to 14 inches; very stony loam
Bw1—14 to 30 inches; very stony sandy clay loam
Bw2—30 to 46 inches; very stony sandy clay loam
C—46 to 60 inches; very stony sandy loam

Hapgood and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform:
- Depressions
- Moraines

Slope: 8 to 45 percent
Native plant cover type: Rangeland

Plant associations: None noted
Surface layer texture: Bouldery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly argillite colluvium
- Metaquartzite

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
A—0 to 18 inches; bouldery loam
C—18 to 60 inches; very cobbly loam

Additional Components

Oro Fino and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hapgood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Oro Fino
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

119—Sebud-Hapgood-Rock outcrop complex, 25 to 60 percent slopes

Setting

Elevation: 4,500 to 10,000
Mean annual precipitation: 15 to 35 inches
Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:
- Moraines
- Mountainsides

Slope: 25 to 60 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very flaggy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Igneous and metamorphic till

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A—0 to 14 inches; very flaggy loam
Bw1—14 to 30 inches; very stony sandy clay loam
Bw2—30 to 46 inches; very stony sandy loam
C—46 to 60 inches; very stony sandy loam

Hapgood and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform:
- Depressions
- Mountainsides

Slope: 25 to 60 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Bouldery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly argillite colluvium
- Metaquartzite

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
A—0 to 18 inches; bouldery loam
C—18 to 60 inches; very cobbly loam

Rock outcrop
Composition: 15 percent
Landform: None assigned

Additional Components

Adel and similar soils: 2 percent
Poin and similar soils: 2 percent
Tiban and similar soils: 1 percent

Management Considerations

Sebud
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hapgood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Adel
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

120—Sebud-Rochester-Rock outcrop complex, 25 to 60 percent slopes

Setting

Elevation: 4,000 to 8,000
Mean annual precipitation: 15 to 35 inches
Frost-free period: 30 to 105 days

Component Description

Sebud and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls
Landform:
- Moraines
- Mountainsides

Slope: 25 to 60 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material:
- Colluvium
- Igneous and metamorphic till

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
A—0 to 8 inches; very gravelly sandy loam
Bw—8 to 23 inches; very stony sandy clay loam
C—23 to 60 inches; very stony sandy clay loam

Rochester and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed, frigid Typic Ustorthents
Landform: Mountainsides
Slope: 25 to 60 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Very stony loamy sand
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite and gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 5 inches; very stony loamy sand
C1—5 to 15 inches; very stony loamy sand
C2—15 to 60 inches; very stony loamy sand

Rock outcrop
Composition: 20 percent
Landform: None assigned

Additional Components

Earcree and similar soils: 5 percent
Hapgood and similar soils: 5 percent
Oro Fino and similar soils: 5 percent
Sebud, extremely bouldery and similar soils: 5 percent

Management Considerations

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rochester
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Earcree
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential

Hapgood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Oro Fino
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud, extremely bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard
- Surface boulders
- Low bearing strength
- Surface compaction hazard

121—Shadow very channery loam, 15 to 45 percent slopes

Setting

Elevation: 6,000 to 8,600
Mean annual precipitation: 15 to 32 inches
Frost-free period: 30 to 90 days

Component Description

Shadow and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform:
- Moraines
- Mountain slopes

Slope: 15 to 45 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Very channery loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Till
- Colluvium
- Gravelly alluvium

Flooding: None

Available water capacity to 60 inch depth: Approximately 3.3 inches
Typical profile:
A—0 to 10 inches; very channery loam
Bw—10 to 30 inches; very channery sandy loam
C—30 to 60 inches; extremely channery sandy loam

Additional Components

Mikesell and similar soils: 3 percent
Shadow, very stony and similar soils: 3 percent
Shallow soils over shale and similar soils: 3 percent
Poorly drained soils and similar soils: 2 percent
Slopes greater than 45 percent and similar soils: 2 percent
Soils with Douglas-fir trees and similar soils: 2 percent

Management Considerations

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

Mikesell
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shadow, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Shallow soils over shale
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Poorly drained soils
- On-site required

Slopes greater than 45 percent
- Steep slopes
- Erodible surface
- High windthrow hazard

Soils with Douglas-fir trees
- On-site required

122—Shadow very flaggy loam, 45 to 70 percent slopes

Setting

Elevation: 6,000 to 8,600
Mean annual precipitation: 15 to 32 inches
Frost-free period: 30 to 90 days

Component Description

Shadow and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform:
- Moraines
- Mountain slopes

Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Very flaggy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Till
- Colluvium
- Gravelly alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
A—0 to 6 inches; very flaggy loam
Bw—6 to 17 inches; very channery sandy loam
C—17 to 60 inches; extremely channery sandy loam

Additional Components

Mikesell and similar soils: 3 percent
Shallow soils over shale and similar soils: 3 percent
Soils with Douglas-fir trees and similar soils: 3 percent
Poorly drained soils and similar soils: 2 percent
Rock outcrop: 2 percent
Shadow, very stony and similar soils: 2 percent

Management Considerations

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

Mikesell
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shallow soils over shale
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Soils with Douglas-fir trees
- On-site required

Poorly drained soils
- On-site required

Rock outcrop
- Nonsoil material

Shadow, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

123—Shadow complex, warm, 15 to 45 percent slopes

Setting

Elevation: 4,500 to 8,500
Mean annual precipitation: 18 to 35 inches
Frost-free period: 30 to 90 days

Component Description

Shadow and similar soils
Composition: 65 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform:
- Moraines
- Mountainsides

Slope: 15 to 45 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Very channery sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Till
- Colluvium
- Gravelly alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.6 inches
Typical profile:
A—0 to 9 inches; very channery sandy loam
Bw—9 to 30 inches; very channery sandy loam
C—30 to 60 inches; extremely channery sandy loam

Shadow, stony loam surface and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform:
- Moraines
- Mountainsides

Slope: 15 to 45 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained

Parent material:
- Till
- Colluvium
- Gravelly alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
A—0 to 10 inches; stony loam
Bw—10 to 30 inches; very channery sandy loam
C—30 to 60 inches; extremely channery sandy loam

Additional Components

Comad and similar soils: 3 percent
MacFarlane and similar soils: 3 percent
Rock outcrop: 3 percent
Sebud and similar soils: 3 percent
Shadow, sandy loam surface and similar soils: 3 percent

Management Considerations

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

Shadow, stony loam surface
- Steep slopes
- Erodible surface
- High windthrow hazard

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

MacFarlane
- High windthrow hazard

Rock outcrop
- Nonsoil material

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shadow, sandy loam surface
- Steep slopes
- Erodible surface
- High windthrow hazard

123B—Wisdom-Shewag complex, 0 to 4 percent slopes

Setting

Elevation: 6,000 to 7,200
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Wisdom and similar soils
Composition: 55 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Oxyaquic Haplocryolls
Landform: Outwash plains
Slope: 0 to 4 percent
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium over sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A1—2 to 7 inches; silt loam
A2—7 to 14 inches; silt loam
Bw—14 to 27 inches; loam
2C—27 to 60 inches; extremely gravelly sand

Shewag and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Oxyaquic Haplocryolls
Landform: Outwash plains
Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; very gravelly loam
Bw—9 to 18 inches; extremely gravelly sandy loam
2C—18 to 60 inches; extremely gravelly sand

Additional Components

Plimpton and similar soils: 5 percent
Cowcamp and similar soils: 2 percent
Mooseflat and similar soils: 1 percent
Shewag, stony and similar soils: 1 percent
Tepete and similar soils: 1 percent

Management Considerations

Wisdom
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shewag
- High windthrow hazard
- Surface compaction hazard

Plimpton
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cowcamp
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shewag, stony
- High windthrow hazard
- Surface compaction hazard

Tepete
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

124—Shadow complex, warm, 45 to 70 percent slopes

Setting

Elevation: 4,500 to 8,500
Mean annual precipitation: 15 to 35 inches
Frost-free period: 30 to 90 days

Component Description

Shadow and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform:
- Moraines
- Mountainsides

Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Very channery sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained

Parent material:
- Till
- Colluvium
- Gravelly alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.6 inches
Typical profile:
A—0 to 9 inches; very channery sandy loam
Bw—9 to 30 inches; very channery sandy loam
C—30 to 60 inches; extremely channery sandy loam

Shadow, stony loam surface and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform:
- Moraines
- Mountainsides

Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Till
- Colluvium
- Gravelly alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
A—0 to 10 inches; stony loam
Bw—10 to 30 inches; very channery sandy loam
C—30 to 60 inches; extremely channery sandy loam

Additional Components

Comad and similar soils: 5 percent
Rock outcrop: 5 percent
Sebud and similar soils: 5 percent
Shadow, sandy loam surface and similar soils: 5 percent
Soils with subalpine fir trees and similar soils: 5 percent

Management Considerations

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

Shadow, stony loam surface
- Steep slopes
- Erodible surface
- High windthrow hazard

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard

- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shadow, sandy loam surface
- Steep slopes
- Erodible surface
- High windthrow hazard

Soils with subalpine fir trees
- On-site required

126—Shedhorn clay loam, 8 to 25 percent slopes

Setting

Elevation: 6,000 to 9,500
Mean annual precipitation: 15 to 50 inches
Frost-free period: 40 to 70 days

Component Description

Shedhorn and similar soils
Composition: 85 percent
Taxonomic class: Fine, mixed, superactive Typic Haplocryolls
Landform: Mountainsides
Slope: 8 to 25 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Moderately well drained
Parent material:
- Clayey sandstone and shale colluvium
- Till

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.5 inches
Typical profile:
A—0 to 12 inches; clay loam
Bw—12 to 40 inches; clay
BC—40 to 60 inches; channery clay

Additional Components

Mikesell, forested and similar soils: 7 percent
Shallow soils on steep slopes and similar soils: 6 percent
Poorly drained soils and similar soils: 2 percent

Management Considerations

Shedhorn
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mikesell, forested
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shallow soils on steep slopes
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

Poorly drained soils
- On-site required

127—Shedhorn, cool-Garlet, cool-Rock outcrop complex, 30 to 70 percent slopes

Setting

Elevation: 4,500 to 9,500
Mean annual precipitation: 18 to 50 inches
Frost-free period: 30 to 90 days

Component Description

Shedhorn and similar soils
Composition: 40 percent
Taxonomic class: Fine, mixed, superactive Typic Haplocryolls
Landform:
- Drainageways
- Footslope on mountains

Slope: 30 to 70 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Moderately well drained
Parent material:
- Clayey sandstone and shale colluvium
- Till

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.5 inches
Typical profile:
A—0 to 12 inches; clay loam
Bw—12 to 40 inches; clay
BC—40 to 60 inches; channery clay

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Mountainsides
Slope: 30 to 70 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Very flaggy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly sandstone colluvium
- Metaquartzite
- Andesite

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 15 inches; very flaggy loam
Bw—15 to 26 inches; very channery sandy loam
C—26 to 60 inches; very channery sandy loam

Rock outcrop
Composition: 20 percent
Landform: None assigned

Additional Components

Mikesell and similar soils: 5 percent
Whitore and similar soils: 5 percent

Management Considerations

Shedhorn
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Mikesell
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

128—Shedhorn-Rock outcrop complex, 15 to 45 percent slopes

Setting

Elevation: 4,500 to 9,500
Mean annual precipitation: 15 to 50 inches
Frost-free period: 30 to 90 days

Component Description

Shedhorn and similar soils
Composition: 70 percent
Taxonomic class: Fine, mixed, superactive Typic Haplocryolls
Landform:
- Moraines
- Mountainsides

Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Moderately well drained
Parent material:
- Clayey sandstone and shale colluvium
- Till

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.5 inches
Typical profile:
A—0 to 12 inches; clay loam
Bw—12 to 40 inches; clay
BC—40 to 60 inches; channery clay

Rock outcrop
Composition: 15 percent
Landform: None assigned

Additional Components

Mikesell, forested and similar soils: 4 percent
Rubble land: 3 percent
Shallow soils over shale and similar soils: 3 percent
Whitore, forested and similar soils: 3 percent
Poorly drained soils and similar soils: 2 percent

Management Considerations

Shedhorn
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Mikesell, forested
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Shallow soils over shale
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Whitore, forested
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poorly drained soils
- On-site required

130—Shurley-Rock outcrop complex, 25 to 60 percent slopes

Setting

Elevation: 1,900 to 6,500
Mean annual precipitation: 10 to 15 inches
Frost-free period: 90 to 135 days

Component Description

Rock outcrop
Composition: 40 percent
Landform: None assigned

Shurley and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed, frigid Aridic Haplustepts
Landform:
- Hills
- Mountainsides

Slope: 25 to 60 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very flaggy coarse sandy loam
Depth to restrictive feature: None noted

Drainage class: Well drained
Parent material: Sandy and gravelly granite and gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.5 inches
Typical profile:
A—0 to 4 inches; very flaggy coarse sandy loam
Bw—4 to 10 inches; very flaggy coarse sandy loam
Bk—10 to 60 inches; very flaggy loamy coarse sand

Additional Components

Rentsac and similar soils: 7 percent
Yetull and similar soils: 7 percent
Nuley, lesser slopes and similar soils: 6 percent

Management Considerations

Rock outcrop
- Nonsoil material

Shurley
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rentsac
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

Yetull
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential

Nuley, lesser slopes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

134—Tiban cobbly loam, 2 to 15 percent slopes

Setting

Elevation: 4,500 to 8,000
Mean annual precipitation: 15 to 35 inches
Frost-free period: 50 to 90 days

Component Description

Tiban and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Footslope on hills
- Backslope on hills
- Stream terraces

Slope: 2 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly till
- Alluvium
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.9 inches
Typical profile:
A—0 to 8 inches; cobbly loam
Bw—8 to 14 inches; very cobbly loam
Bk—14 to 60 inches; very cobbly loam

Additional Components

Leavitt and similar soils: 5 percent
Rock outcrop, igneous: 5 percent
Sebud and similar soils: 5 percent

Management Considerations

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Leavitt
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop, igneous
- Nonsoil material

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

135—Tiban very stony loam, 15 to 45 percent slopes

Setting

Elevation: 4,500 to 8,000
Mean annual precipitation: 15 to 35 inches
Frost-free period: 30 to 70 days

Component Description

Tiban and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Backslope on hills
- Footslope on hills
- Moraines

Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly till
- Alluvium
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
A—0 to 7 inches; very stony loam
Bw—7 to 22 inches; very cobbly loam
Bk—22 to 60 inches; very cobbly loam

Additional Components

Hapgood and similar soils: 5 percent
Rock outcrop: 5 percent
Sebud and similar soils: 5 percent

Management Considerations

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hapgood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

141—Trimad very stony loam, 2 to 8 percent slopes

Setting

Elevation: 2,200 to 6,500
Mean annual precipitation: 10 to 14 inches
Frost-free period: 80 to 130 days

Component Description

Trimad and similar soils
Composition: 90 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Aridic Calciustolls
Landform:
- Alluvial fans
- Stream terraces

Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A—0 to 2 inches; very stony loam
Bw—2 to 9 inches; gravelly loam
Bk1—9 to 18 inches; very gravelly loam
Bk2—18 to 60 inches; extremely gravelly sandy loam

Additional Components

Attewan and similar soils: 5 percent
Beaverell, loam and similar soils: 5 percent

Management Considerations

Trimad
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Attewan
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Beaverell, loam
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

145E—Redchief-Mollet complex, 15 to 35 percent slopes

Setting

Elevation: 5,600 to 6,700
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Redchief and similar soils
Composition: 50 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls

Landform:
- Backslope on hills
- Footslope on hills
- Mountainbases

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey igneous colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A—0 to 6 inches; cobbly loam
Bt—6 to 10 inches; very gravelly clay
C—10 to 60 inches; very gravelly clay

Mollet and similar soils
Composition: 35 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform:
- Fans
- Mountainbases
- Terraces

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.1 inches
Typical profile:
A—0 to 8 inches; loam
Bt1—8 to 28 inches; clay
Bt2—28 to 60 inches; gravelly clay

Additional Components

Libeg and similar soils: 8 percent
Maciver and similar soils: 7 percent

Management Considerations

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

147—Varney clay loam, 2 to 8 percent slopes

Setting

Elevation: 4,300 to 6,500
Mean annual precipitation: 10 to 14 inches
Frost-free period: 90 to 105 days

Component Description

Varney and similar soils
Composition: 90 percent
Taxonomic class: Fine-loamy, mixed, superactive, frigid Calcidic Argiustolls
Landform:
- Alluvial fans
- Footslope on hills
- Stream terraces

Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.4 inches
Typical profile:
A—0 to 5 inches; clay loam
Bt—5 to 16 inches; gravelly clay loam
Bk—16 to 48 inches; gravelly sandy clay loam
BC—48 to 60 inches; stratified gravelly loamy sand to loam

Additional Components

Varney, cobbly loam and similar soils: 7 percent
Rock outcrop: 3 percent

Management Considerations

Varney
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Varney, cobbly loam
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

149—Varney cobbly clay loam, 8 to 45 percent slopes

Setting

Elevation: 1,900 to 6,500
Mean annual precipitation: 10 to 14 inches
Frost-free period: 80 to 135 days

Component Description

Varney and similar soils
Composition: 85 percent
Taxonomic class: Fine-loamy, mixed, superactive, frigid Calcidic Argiustolls
Landform:
- Drainageways
- Escarpments
- Footslope on hills
- Stream terraces

Slope: 8 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Fine-loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.2 inches
Typical profile:
A—0 to 5 inches; cobbly clay loam
Bt—5 to 16 inches; gravelly clay loam
Bk—16 to 48 inches; gravelly sandy clay loam
BC—48 to 60 inches; stratified gravelly loamy sand to loam

Additional Components

Amesha and similar soils: 4 percent
Blackhall and similar soils: 4 percent
Trimad and similar soils: 4 percent
Marias, clayier soils and similar soils: 3 percent

Management Considerations

Varney
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Amesha
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Blackhall
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

Trimad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Marias, clayier soils
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

152—Whitecow-Rock outcrop complex, 25 to 70 percent slopes

Setting

Elevation: 3,500 to 8,000
Mean annual precipitation: 17 to 30 inches
Frost-free period: 50 to 110 days

Component Description

Whitecow and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calciustepts
Landform: Mountainsides
Slope: 25 to 70 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Extremely channery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.8 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 9 inches; extremely channery loam
Bk1—9 to 20 inches; very channery loam
Bk2—20 to 60 inches; extremely channery loam

Rock outcrop
Composition: 25 percent
Landform: None assigned

Additional Components

Ustic Calcicryolls and similar soils: 13 percent
Clayey soils and similar soils: 12 percent

Management Considerations

Whitecow
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Ustic Calcicryolls
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Clayey soils
- On-site required

153—Whitore complex, 15 to 45 percent slopes

Setting

Elevation: 4,500 to 8,500
Mean annual precipitation: 16 to 35 inches
Frost-free period: 30 to 90 days

Component Description

Whitore and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform:
- Moraines
- Mountainsides

Slope: 15 to 45 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Channery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 12 inches; channery loam
Bk—12 to 60 inches; very channery loam

Whitore, stony and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform:
- Moraines
- Mountainsides

Slope: 15 to 45 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 12 inches; stony loam
Bk—12 to 60 inches; extremely channery loam

Additional Components

Hanson and similar soils: 5 percent
Mikesell and similar soils: 5 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mikesell
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

155—Whitore-Rock outcrop complex, 25 to 70 percent slopes

Setting

Elevation: 4,500 to 8,500
Mean annual precipitation: 16 to 35 inches
Frost-free period: 30 to 90 days

Component Description

Whitore and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Mountainsides
Slope: 25 to 70 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Channery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 12 inches; channery loam
Bk—12 to 60 inches; very channery loam

Whitore, stony and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Mountainsides
Slope: 25 to 70 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 12 inches; stony loam
Bk—12 to 60 inches; extremely channery loam

Rock outcrop
Composition: 15 percent
Landform: None assigned

Additional Components

Hanson and similar soils: 3 percent
Mikesell and similar soils: 2 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mikesell
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

156—Woodhall gravelly loam, 4 to 15 percent slopes

Setting

Elevation: 4,500 to 10,000
Mean annual precipitation: 15 to 30 inches
Frost-free period: 30 to 90 days

Component Description

Woodhall and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Ridges
- Structural benches

Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material:
- Gravelly argillite residuum
- Metaquartzite

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
A—0 to 10 inches; gravelly loam
Bt—10 to 30 inches; very stony clay loam
R—30 to 60 inches; unweathered bedrock

Additional Components

Adel and similar soils: 3 percent
Hapgood and similar soils: 3 percent
Leavitt and similar soils: 3 percent
Rock outcrop: 2 percent
Shallow soils and similar soils: 2 percent
Woodhall, stony and similar soils: 2 percent

Management Considerations

Woodhall
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hapgood
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Leavitt
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Shallow soils
- High windthrow hazard
- Shallow soil

Woodhall, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

157—Woodhall-Blaine-Hapgood complex, 4 to 25 percent slopes

Setting

Elevation: 4,500 to 8,000
Mean annual precipitation: 15 to 35 inches
Frost-free period: 30 to 80 days

Component Description

Woodhall and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Hillsides
- Structural benches

Slope: 4 to 25 percent
Native plant cover type: Rangeland

Plant associations: None noted
Surface layer texture: Stony loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material:
- Gravelly argillite residuum
- Metaquartzite

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
A—0 to 10 inches; stony loam
Bt—10 to 30 inches; very stony clay loam
R—30 to 60 inches; unweathered bedrock

Blaine and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Hillsides
- Ridges

Slope: 4 to 25 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Stony loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Igneous residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 6 inches; stony loam
Bt—6 to 10 inches; very stony clay loam
Bk—10 to 25 inches; very stony loam
R—25 to 60 inches; bedrock

Hapgood and similar soils
Composition: 10 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform:
- Drainageways
- Swales

Slope: 4 to 25 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Bouldery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly argillite colluvium
- Metaquartzite

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches

Typical profile:
A—0 to 18 inches; bouldery loam
C—18 to 60 inches; very cobbly loam

Additional Components

Hapgood and similar soils: 2 percent
Poorly drained soils and similar soils: 2 percent
Rock outcrop: 2 percent
Sebud and similar soils: 2 percent
Tiban and similar soils: 2 percent

Management Considerations

Woodhall
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Blaine
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hapgood
- High windthrow hazard
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Hapgood
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poorly drained soils
- On-site required

Rock outcrop
- Nonsoil material

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

158—Worock gravelly sandy loam, 8 to 35 percent slopes

Setting

Elevation: 4,500 to 8,500
Mean annual precipitation: 15 to 35 inches
Frost-free period: 30 to 70 days

Component Description

Worock and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:
- Alluvial fans
- Mountainsides

Slope: 8 to 35 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Till
- Gravelly tuff, welded colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 14 inches; gravelly sandy loam
Bt—14 to 28 inches; gravelly clay loam
Bk—28 to 60 inches; very gravelly clay loam

Additional Components

Hapgood, no trees and similar soils: 5 percent
Shadow and similar soils: 5 percent
Worock, very stony and similar soils: 5 percent

Management Considerations

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hapgood, no trees
- High windthrow hazard
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

Worock, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

158Vra—Sig family-Rock outcrop-Roman family, complex, steep glaciated mountain slopes and ridges

Interpretive focus: High-elevation resource areas
Field investigation intensity: Order 4

Setting

Elevation: 7,700 to 9,580
Mean annual precipitation: 39 to 53 inches
Frost-free period: 20 to 40 days

Component Description

Sig and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Dystrocryepts
Landform: Glaciated mountain slopes
Slope: 10 to 35 percent
Native plant cover type: Forestland
Plant associations:
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Very stony loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Till over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.0 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 5 inches; very stony loam
AC—5 to 15 inches; very cobbly sandy loam
R—15 to 60 inches; bedrock

Rock outcrop
Composition: 25 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Roman and similar soils
Composition: 15 percent
Taxonomic class: Sandy-skeletal, mixed Andic Dystrocryepts
Landform: Glaciated mountain slopes
Slope: 10 to 35 percent
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Very bouldery ashy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Volcanic ash over granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.1 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
E—1 to 2 inches; very bouldery ashy loam

Bw—2 to 10 inches; very bouldery ashy loam
2BC—10 to 20 inches; very gravelly sandy loam
2C—20 to 60 inches; very gravelly loamy coarse sand

Additional Components

Finn and similar soils: 10 percent
Lowder and similar soils: 10 percent
Bata and similar soils: 5 percent
Priestlake and similar soils: 5 percent

Management Considerations

Sig
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

Roman
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Finn
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Priestlake
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

159—Worock-Mikesell complex, 15 to 45 percent slopes

Setting

Elevation: 4,000 to 8,500
Mean annual precipitation: 18 to 35 inches
Frost-free period: 30 to 70 days

Component Description

Worock and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform:
- Backslope on hills
- Summit on hills
- Moraines

Slope: 15 to 45 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Very stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Till
- Gravelly tuff, welded colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 18 inches; very stony loam
Bt—18 to 52 inches; very gravelly clay loam
Bk—52 to 60 inches; very gravelly clay loam

Mikesell and similar soils
Composition: 40 percent
Taxonomic class: Fine, smectitic Eutric Haplocryalfs
Landform:
- Footslope on mountains
- Mountainsides

Slope: 15 to 45 percent
Native plant cover type: Forestland
Plant associations: None noted
Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.2 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 8 inches; clay loam
Bt—8 to 60 inches; gravelly clay

Additional Components

Loberg and similar soils: 3 percent
Shadow and similar soils: 3 percent
Poorly drained soils and similar soils: 2 percent
Worock, bouldery loam and similar soils: 2 percent

Management Considerations

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mikesell
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Loberg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

Poorly drained soils
- On-site required

Worock, bouldery loam
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

172F—Ratiopeak-Sixbeacon-Tiban complex, 15 to 45 percent slopes, extremely stony

Setting

Elevation: 5,200 to 6,330
Mean annual precipitation: 14 to 16 inches
Frost-free period: 50 to 75 days

Component Description

Ratiopeak, extremely stony and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:
- Backslope on southerly facing hills
- Shoulder on southerly facing hills

Slope: 15 to 40 percent, west to southeast aspects
Plant associations: None noted
Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 3 to 15 percent stones, 3 to 10 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.4 inches
Typical profile:
A—0 to 8 inches; cobbly loam
Bt—8 to 15 inches; very gravelly sandy clay loam
Bk1—15 to 24 inches; very gravelly loam
Bk2—24 to 45 inches; very cobbly loam
BC—45 to 60 inches; very gravelly coarse sandy loam

Sixbeacon, extremely stony and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Aridic Haplustolls
Landform:
- Shoulder on southerly facing hills
- Backslope on southerly facing hills

Slope: 20 to 45 percent, southeast to west aspects
Plant associations: None noted
Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 3 to 15 percent stones, 3 to 10 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A—0 to 6 inches; cobbly loam
Bw—6 to 12 inches; very cobbly loam
Bk1—12 to 35 inches; very gravelly loam
Bk2—35 to 60 inches; very gravelly sandy loam

Tiban, extremely stony and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Nose slope on northerly facing hills
- Ridges

Slope: 20 to 35 percent
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 3 to 15 percent stones, 3 to 10 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material: Alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
A—0 to 8 inches; very cobbly loam
Bw—8 to 16 inches; very cobbly loam
Bk—16 to 60 inches; very gravelly loam

Additional Components

Sebud, very stony and similar soils: 10 percent
Sixbeacon, rubbly and similar soils: 5 percent

Management Considerations

Ratiopeak, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sixbeacon, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban, extremely stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sixbeacon, rubbly
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

190E—Blackleaf, stony-Twinadams-Rock outcrop complex, 8 to 35 percent slopes

Setting

Elevation: 5,500 to 6,500
Mean annual precipitation: 10 to 14 inches
Frost-free period: 70 to 90 days

Component Description

Blackleaf and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustalfs
Landform: Hills
Slope: 8 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very channery sandy loam
Rock fragments on the soil surface: 0.01 to 0.10 percent boulders
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Sandstone and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
A—0 to 4 inches; very channery sandy loam
Bt—4 to 8 inches; very channery sandy clay loam
Bk—8 to 13 inches; extremely channery loam
R—13 to 60 inches; unweathered bedrock

Twinadams and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Calcidic Haplustalfs
Landform: Strike ridges
Slope: 8 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 36 inches
- Lithic bedrock: 30 to 40 inches

Drainage class: Well drained
Parent material: Sandstone and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.9 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bt—4 to 9 inches; very channery clay loam
Bk—9 to 28 inches; very channery sandy loam
Cr—28 to 36 inches; weathered bedrock
R—36 to 60 inches; unweathered bedrock

Rock outcrop
Composition: 20 percent
Landform: None assigned

Additional Components

Zbart and similar soils: 8 percent
Pensore and similar soils: 7 percent
Haxby and similar soils: 4 percent
Rencot and similar soils: 4 percent
Twinadams, stony and similar soils: 2 percent

Management Considerations

Blackleaf
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Twinadams
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Zbart
- High windthrow hazard
- Shallow soil
- Low bearing strength

Pensore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Haxby
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rencot
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Twinadams, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

211Vr—Matcher-Cowood families-Rock outcrop complex, cirque headwalls

Setting

Elevation: 7,080 to 10,700
Mean annual precipitation: 21 to 52 inches
Frost-free period: 20 to 40 days

Component Description

Matcher and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Humic Dystrocryepts
Landform: Cirque headwalls

Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Stony sandy loam
Rock fragments on the soil surface: 1 to 5 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Gneiss till
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.1 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 10 inches; stony sandy loam
Bw—10 to 23 inches; very stony sandy loam
C—23 to 60 inches; very stony sand

Cowood and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform: Cirque headwalls
Slope: 30 to 80 percent
Plant associations:
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Very stony coarse sandy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, gneiss
Depth to restrictive feature:
- Paralithic bedrock: 10 to 19 inches
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Gneiss residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.0 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 6 inches; very stony coarse sandy loam
Bw—6 to 17 inches; very gravelly sandy loam
Cr—17 to 19 inches; bedrock
R—19 to 60 inches; bedrock

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform:
- Cirques
- Headwalls

Additional Components

Como and similar soils: 10 percent
Leighcan and similar soils: 5 percent
Moran and similar soils: 5 percent
Rubble land: 5 percent

Management Considerations

Matcher
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Cowood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Moran
- Steep slopes
- Erodible surface
- High windthrow hazard

Rubble land
- Nonsoil material

213Vr—Garlet family-Rock outcrop-Tenrag family, complex, cirque headwalls

Setting

Elevation: 7,720 to 10,100
Mean annual precipitation: 24 to 35 inches
Frost-free period: 20 to 40 days

Component Description

Garlet and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Cirque headwalls

Slope: 30 to 80 percent
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform:
- Cirques
- Headwalls

Tenrag and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Cirque headwalls
Slope: 30 to 80 percent
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Conglomerate till

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Additional Components

Comad and similar soils: 10 percent
Tropal and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Tropal
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

214A—Foolhen-Mooseflat-Water complex, 0 to 2 percent slopes

Setting

Elevation: 5,740 to 7,000
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Foolhen and similar soils
Composition: 35 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls
Landform: Flood plains
Slope: 0 to 2 percent
Native plant cover type: Rangeland
Plant associations: None noted

Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Fine-loamy alluvium
Flooding: None
Water table: Present
Ponding duration: Brief
Available water capacity to 60 inch depth: Approximately 7.2 inches
Typical profile:
Oi—0 to 6 inches; slightly decomposed plant material
Oe—6 to 11 inches; mucky peat
A—11 to 18 inches; loam
Bg—18 to 29 inches; loam
Cg1—29 to 36 inches; loam
Cg2—36 to 60 inches; gravelly loam

Mooseflat and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Flood plains
Slope: 0 to 2 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Loamy alluvium over sandy and gravelly alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
A—1 to 11 inches; loam
Bw—11 to 23 inches; loam
2C—23 to 60 inches; very cobbly sand

Water
Composition: 25 percent
Definition: Streams, lakes, and ponds. These areas are covered with water in most years, at least during the period that is warm enough for plants to grow. Many areas are covered throughout the year.
Landform: None assigned

Additional Components

Dunkleber and similar soils: 8 percent
Finn and similar soils: 7 percent

Management Considerations

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

Dunkleber
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Finn
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

216Vr—Whitore-Tropal families-Rock outcrop association, cirque headwalls

Setting

Elevation: 7,430 to 10,600
Mean annual precipitation: 24 to 46 inches
Frost-free period: 20 to 40 days

Component Description

Whitore and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Cirque headwalls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Limestone till
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Tropal and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocryepts
Landform: Cirque headwalls
Slope: 30 to 80 percent
Plant associations:
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Stony loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Till over limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.5 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 4 inches; stony loam
Bk1—4 to 13 inches; very gravelly loam
Bk2—13 to 18 inches; very gravelly loam
R—18 to 60 inches; bedrock

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Cirque headwalls

Additional Components

Helmville and similar soils: 10 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tropal
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Helmville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

217Sr—Garlet-Como families-Rock outcrop complex, cirque headwalls

Setting

Elevation: 7,370 to 9,770
Mean annual precipitation: 20 to 39 inches
Frost-free period: 20 to 50 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Cirque headwalls
Slope: 30 to 80 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Cirque headwalls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Cirque headwalls

Additional Components

Matcher and similar soils: 10 percent
Rubble land: 5 percent
Worock and similar soils: 5 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Matcher
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rubble land
- Nonsoil material

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

217Vr—Leighcan-Como families-Rock outcrop complex, cirque headwalls

Setting

Elevation: 7,310 to 10,700
Mean annual precipitation: 20 to 42 inches
Frost-free period: 20 to 40 days

Component Description

Leighcan and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Cirque headwalls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Quartzite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Como and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Cirque headwalls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Cirque headwalls

Additional Components

Rubble land: 5 percent
Worock and similar soils: 5 percent

Management Considerations

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

217Vra—Rock outcrop-Jeru-Rubycreek families, complex, cirque headwalls

Setting

Elevation: 7,610 to 10,400
Mean annual precipitation: 25 to 52 inches
Frost-free period: 20 to 40 days

Component Description

Rock outcrop
Composition: 30 percent
Definition: Exposures of bare bedrock

Landform:
- Shoulder on valley sides
- Backslope on valley sides

Jeru and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Cirque headwalls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Bouldery ashy loam
Rock fragments on the soil surface: 1 to 5 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Colluvium
- Quartzite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.8 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 7 inches; bouldery ashy loam
Bw—7 to 35 inches; very cobbly sandy loam
C—35 to 60 inches; very cobbly loamy sand

Rubycreek and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Dystrocryepts
Landform: Cirque headwalls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Ashy silt loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 3 inches; ashy silt loam
Bw—3 to 12 inches; ashy silt loam
2Bw—12 to 20 inches; very stony loam

2BC—20 to 29 inches; very cobbly loam
2C—29 to 60 inches; very cobbly sandy loam

Additional Components

Cowood and similar soils: 10 percent
Rubble land: 10 percent
Littlesalmon and similar soils: 5 percent

Management Considerations

Rock outcrop
- Nonsoil material

Jeru
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubycreek
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Cowood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rubble land
- Nonsoil material

Littlesalmon
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

218Sr—Comad-Como families-Rock outcrop complex, cirque headwalls

Setting

Elevation: 7,320 to 9,170
Mean annual precipitation: 29 to 39 inches
Frost-free period: 20 to 50 days

Component Description

Comad and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Cirque headwalls
Slope: 30 to 80 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony sandy loam
Rock fragments on the soil surface: 1 to 5 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; stony sandy loam
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Cirque headwalls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/elk sedge
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock

Landform:
- Cirques
- Headwalls

Additional Components

Garlet and similar soils: 10 percent
Matcher and similar soils: 5 percent
Rubble land: 5 percent

Management Considerations

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Matcher
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rubble land
- Nonsoil material

218Vr—Como-Matcher families-Rock outcrop complex, cirque headwalls

Setting

Elevation: 7,180 to 10,700
Mean annual precipitation: 25 to 50 inches
Frost-free period: 20 to 40 days

Component Description

Como and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts

Landform: Cirque headwalls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Matcher and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Humic Dystrocryepts
Landform: Cirque headwalls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- whitebark pine/subalpine fir
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Stony sandy loam
Rock fragments on the soil surface: 1 to 5 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Colluvium
- Granite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.1 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 10 inches; stony sandy loam
Bw—10 to 23 inches; very stony sandy loam
C—23 to 60 inches; very stony sand

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform:
- Cirques
- Headwalls

Additional Components

Comad and similar soils: 10 percent
Leighcan and similar soils: 5 percent
Rubble land: 5 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Matcher
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Rubble land
- Nonsoil material

218Vra—Cowood family-Rock outcrop-Littlesalmon family, complex, cirque headwalls

Setting

Elevation: 6,950 to 10,100
Mean annual precipitation: 27 to 51 inches
Frost-free period: 20 to 40 days

Component Description

Cowood and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform: Cirque headwalls
Slope: 30 to 80 percent
Plant associations:
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Very stony coarse sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 0.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 4 inches; very stony coarse sandy loam
Bw1—4 to 10 inches; very stony sandy loam
Bw2—10 to 13 inches; very stony sandy loam
R—13 to 60 inches; bedrock

Rock outcrop
Composition: 30 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Littlesalmon and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Andic Haplocryepts
Landform: Cirque headwalls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Very bouldery ashy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over colluvium over granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; very bouldery ashy loam
Bw1—4 to 12 inches; very bouldery ashy loam
2Bw2—12 to 22 inches; very gravelly sandy loam
2C—22 to 60 inches; very gravelly loamy coarse sand

Additional Components

Priestlake and similar soils: 10 percent
Jeru and similar soils: 5 percent
Rubble land: 5 percent

Management Considerations

Cowood
- Steep slopes
- Erodible surface

- High windthrow hazard
- Shallow soil

Rock outcrop
- Nonsoil material

Littlesalmon
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Priestlake
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Jeru
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

221S—Garlet-Como-Matcher families, complex, valley trough walls

Setting

Elevation: 6,350 to 9,520
Mean annual precipitation: 20 to 42 inches
Frost-free period: 20 to 50 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform:
- Backslope on glacial-valley walls
- Shoulder on glacial-valley walls

Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Matcher and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Humic Dystrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony sandy loam
Rock fragments on the soil surface: 1 to 5 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Colluvium
- Gneiss till

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.1 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 10 inches; stony sandy loam
Bw—10 to 23 inches; very stony sandy loam
C—23 to 60 inches; very stony sand

Additional Components

Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Matcher
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

221Sr—Garlet-Como families-Rock outcrop complex, valley trough walls

Setting

Elevation: 6,590 to 10,100
Mean annual precipitation: 20 to 40 inches
Frost-free period: 20 to 50 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent

Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform:
- Shoulder on glacial-valley walls
- Backslope on glacial-valley walls

Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/elk sedge
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform:
- Backslope on valley sides
- Shoulder on valley sides

Additional Components

Matcher and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Matcher
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rubble land
- Nonsoil material

221V—Como-Leighcan-Matcher families, complex, valley trough walls

Setting

Elevation: 7,350 to 10,200
Mean annual precipitation: 21 to 49 inches
Frost-free period: 20 to 40 days

Component Description

Como and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform:
- Backslope on glacial-valley walls
- Shoulder on glacial-valley walls

Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Leighcan and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Glacial-valley walls
Slope: 30 to 70 percent
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Gneiss till

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Matcher and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Humic Dystrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Stony sandy loam
Rock fragments on the soil surface: 1 to 5 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained

Parent material:
- Colluvium
- Gneiss till

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.1 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 10 inches; stony sandy loam
Bw—10 to 23 inches; very stony sandy loam
C—23 to 60 inches; very stony sand

Additional Components

Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Matcher
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

221Vr—Matcher-Como families-Rock outcrop association, valley trough walls

Setting

Elevation: 7,080 to 10,900
Mean annual precipitation: 21 to 51 inches
Frost-free period: 20 to 40 days

Component Description

Matcher and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Humic Dystrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent

Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Stony sandy loam
Rock fragments on the soil surface: 1 to 5 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Colluvium
- Gneiss till

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.1 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 10 inches; stony sandy loam
Bw—10 to 23 inches; very stony sandy loam
C—23 to 60 inches; very stony sand

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform:
- Backslope on glacial-valley walls
- Shoulder on glacial-valley walls

Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform:
- Backslope on valley sides
- Shoulder on valley sides

Additional Components

Leighcan and similar soils: 10 percent
Rubble land: 10 percent

Management Considerations

Matcher
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Rubble land
- Nonsoil material

222S—Garlet family-Rock outcrop-Tenrag family, complex, valley trough walls

Setting

Elevation: 7,150 to 9,940
Mean annual precipitation: 24 to 42 inches
Frost-free period: 20 to 40 days

Component Description

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, volcanic
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material:
- Andesite colluvium
- Tuff
- Rhyolite

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Rock outcrop
Composition: 25 percent
Definition: Exposures of bare bedrock
Landform: Glacial-valley walls

Tenrag and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/heartleaf arnica
- subalpine fir/pinegrass
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, volcanic
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite till
- Tuff
- Rhyolite

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Additional Components

Moran and similar soils: 10 percent
Worock and similar soils: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Moran
- Steep slopes
- Erodible surface
- High windthrow hazard

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

224S—Garlet-Whitore-Yellowmule families, complex, valley trough walls

Setting

Elevation: 5,900 to 9,450
Mean annual precipitation: 20 to 35 inches
Frost-free period: 20 to 50 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches

Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Whitore and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Limestone, sandstone, and shale till

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Yellowmule and similar soils
Composition: 20 percent
Taxonomic class: Fine, mixed, superactive Eutric Haplocryalfs
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Limestone, sandstone, and shale till
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; loam

Bt1—11 to 19 inches; clay
Bt2—19 to 48 inches; cobbly clay loam
BC—48 to 72 inches; very cobbly clay loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

226Sr—Whitore-Helmville families-Rock outcrop complex, valley trough walls

Setting

Elevation: 6,400 to 9,890
Mean annual precipitation: 24 to 39 inches
Frost-free period: 20 to 60 days

Component Description

Whitore and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material:
- Colluvium
- Limestone till

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Helmville and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Glacial-valley walls
Slope: 30 to 70 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Limestone till

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Glacial-valley walls

Additional Components

Tropal and similar soils: 10 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Helmville
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Tropal
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

226Vr—Whitore family-Rock outcrop-Tropal family, complex, valley trough walls

Setting

Elevation: 7,080 to 10,400
Mean annual precipitation: 24 to 49 inches
Frost-free period: 20 to 40 days

Component Description

Whitore and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Limestone till

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Rock outcrop
Composition: 25 percent
Definition: Exposures of bare bedrock
Landform: Glacial-valley walls

Tropal and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Plant associations:
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Stony loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Till over limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.5 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 4 inches; stony loam
Bk1—4 to 13 inches; very gravelly loam
Bk2—13 to 18 inches; very gravelly loam
R—18 to 60 inches; bedrock

Additional Components

Helmville and similar soils: 10 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Tropal
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Helmville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

227C—Kamack-Ledgefork-Wander families, complex, valley trough walls

Setting

Elevation: 6,960 to 10,000
Mean annual precipitation: 21 to 35 inches
Frost-free period: 20 to 60 days

Component Description

Kamack and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Haplocryolls
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Quartzite till
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; cobbly loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Ledgefork and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Haplocryolls
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Colluvium
- Quartzite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Wander and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Argicryolls
Landform: Glacial-valley walls
Slope: 30 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Quartzite till
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A—0 to 7 inches; stony loam
Bt—7 to 29 inches; very stony sandy clay loam
BC—29 to 60 inches; very cobbly sandy loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Kamack
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ledgefork
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Wander
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

227Pr—Elve-Howardsville families-Rock outcrop complex, valley trough walls

Setting

Elevation: 6,160 to 8,920
Mean annual precipitation: 20 to 34 inches
Frost-free period: 30 to 60 days

Component Description

Elve and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Backslope on glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/white spirea
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Howardsville and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Quartzite till
- Colluvium

Flooding: None

Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform:
- Backslope on valley sides
- Shoulder on valley sides

Management Considerations

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Howardsville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

227Sa—Petty-Garlet families, complex, valley trough walls

Setting

Elevation: 6,150 to 9,430
Mean annual precipitation: 18 to 45 inches
Frost-free period: 30 to 60 days

Component Description

Petty and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Glacial-valley walls
Slope: 40 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Ashy silt loam

Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over quartzite till over colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 5 inches; ashy silt loam
Bw1—5 to 10 inches; ashy silt loam
Bw2—10 to 14 inches; ashy silt loam
2Bw3—14 to 22 inches; very stony loam
2BC—22 to 31 inches; very cobbly loam
2C—31 to 60 inches; very cobbly sandy loam

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 40 to 80 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Additional Components

Cowood and similar soils: 10 percent
Rubble land: 0 to 10 percent
Rock outcrop: 0 to 10 percent

Management Considerations

Petty
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Cowood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rubble land
- Nonsoil material

Rock outcrop
- Nonsoil material

227Sr—Garlet-Worock families-Rock outcrop complex, valley trough walls

Setting

Elevation: 6,330 to 9,840
Mean annual precipitation: 18 to 45 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Worock and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Quartzite till
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Glacial-valley walls

Additional Components

Como and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rubble land
- Nonsoil material

227Sra—Petty-Garlet families-Rubble land complex, valley trough walls

Setting

Elevation: 6,290 to 8,960
Mean annual precipitation: 21 to 49 inches
Frost-free period: 30 to 60 days

Component Description

Petty and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Glacial-valley walls
Slope: 40 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over colluvium over quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 5 inches; ashy silt loam
Bw1—5 to 10 inches; ashy silt loam
Bw2—10 to 14 inches; ashy silt loam
2Bw3—14 to 22 inches; very stony loam
2BC—22 to 31 inches; very cobbly loam
2C—31 to 60 inches; very cobbly sandy loam

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 40 to 80 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches

Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Rubble land
Composition: 15 percent
Definition: Areas of boulders, stones, and cobbles
Landform:
- Backslope on valley sides
- Shoulder on valley sides

Additional Components

Rock outcrop: 10 percent

Management Considerations

Petty
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Rock outcrop
- Nonsoil material

227Vr—Leighcan-Como families-Rock outcrop complex, valley trough walls

Setting

Elevation: 7,170 to 10,100
Mean annual precipitation: 20 to 41 inches
Frost-free period: 20 to 40 days

Component Description

Leighcan and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Quartzite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Glacial-valley walls

Additional Components

Worock and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

227Vra—Rock outcrop-Rubycreek-Jeru families, complex, trough walls

Setting

Elevation: 7,560 to 10,600
Mean annual precipitation: 25 to 49 inches
Frost-free period: 20 to 40 days

Component Description

Rock outcrop
Composition: 25 percent
Definition: Exposures of bare bedrock
Landform:
- Backslope on valley sides
- Shoulder on valley sides

Rubycreek and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Dystrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Ashy silt loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 3 inches; ashy silt loam
Bw—3 to 12 inches; ashy silt loam
2Bw—12 to 20 inches; very stony loam
2BC—20 to 29 inches; very cobbly loam
2C—29 to 60 inches; very cobbly sandy loam

Jeru and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Bouldery ashy loam
Rock fragments on the soil surface: 1 to 5 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Colluvium
- Quartzite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.8 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 7 inches; bouldery ashy loam
Bw—7 to 35 inches; very cobbly sandy loam
C—35 to 60 inches; very cobbly loamy sand

Additional Components

Cowood and similar soils: 10 percent
Rubble land: 10 percent
Littlesalmon and similar soils: 5 percent
Moran and similar soils: 5 percent

Management Considerations

Rock outcrop
- Nonsoil material

Rubycreek
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer

- Low bearing strength
- Surface compaction hazard

Jeru
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Cowood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rubble land
- Nonsoil material

Littlesalmon
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Moran
- Steep slopes
- Erodible surface
- High windthrow hazard

227Xr—Garlet-Kamack families-Rock outcrop complex, valley trough walls

Setting

Elevation: 6,720 to 9,580
Mean annual precipitation: 21 to 37 inches
Frost-free period: 30 to 70 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Rangeland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly sandy loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Kamack and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Haplocryolls
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Quartzite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; stony loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform:
- Backslope on oversteepened glacial-valley walls
- Shoulder on oversteepened glacial-valley walls

Additional Components

Ledgefork and similar soils: 10 percent
Como and similar soils: 5 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Kamack
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Ledgefork
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

228Pr—Bearmouth-Comad families-Rock outcrop complex, valley trough walls

Setting

Elevation: 5,880 to 8,060
Mean annual precipitation: 20 to 29 inches
Frost-free period: 30 to 60 days

Component Description

Bearmouth and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform:
- Backslope on glacial-valley walls
- Shoulder on glacial-valley walls

Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; very cobbly loam
Bw—8 to 15 inches; very cobbly sandy loam
C—15 to 60 inches; very cobbly loamy sand

Comad and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform:
- Backslope on glacial-valley walls
- Shoulder on glacial-valley walls

Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/elk sedge
- Douglas-fir/pinegrass
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Stony loamy sand
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; stony loamy sand
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform:
- Backslope on valley sides
- Shoulder on valley sides

Additional Components

Howardsville and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Howardsville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rubble land
- Nonsoil material

228Sa—Como-Littlesalmon families, complex, valley trough walls

Setting

Elevation: 6,310 to 8,610
Mean annual precipitation: 20 to 47 inches
Frost-free period: 20 to 55 days

Component Description

Como and similar soils
Composition: 45 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform:
- Backslope on glacial-valley walls
- Shoulder on glacial-valley walls

Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Littlesalmon and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Andic Haplocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Very bouldery ashy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over colluvium over granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; very bouldery ashy loam
Bw1—4 to 12 inches; very bouldery ashy loam
2Bw2—12 to 22 inches; very gravelly sandy loam
2BC—22 to 60 inches; very gravelly loamy coarse sand

Additional Components

Cowood and similar soils: 10 percent
Rock outcrop: 0 to 10 percent
Rubble land: 0 to 10 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Littlesalmon
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Cowood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

228Sr—Como-Worock families-Rock outcrop complex, valley trough walls

Setting

Elevation: 5,800 to 9,390
Mean annual precipitation: 21 to 42 inches
Frost-free period: 30 to 60 days

Component Description

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Worock and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Granite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Glacial-valley walls

Additional Components

Garlet and similar soils: 10 percent
Comad and similar soils: 5 percent
Rubble land: 5 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rubble land
- Nonsoil material

228Sra—Littlesalmon-Como families-Rock outcrop complex, valley trough walls

Setting

Elevation: 6,230 to 9,210
Mean annual precipitation: 20 to 47 inches
Frost-free period: 20 to 55 days

Component Description

Littlesalmon and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Andic Haplocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Very bouldery ashy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over granite till over colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; very bouldery ashy loam
Bw1—4 to 12 inches; very bouldery ashy loam
2Bw2—12 to 22 inches; very gravelly sandy loam
2BC—22 to 60 inches; very gravelly loamy coarse sand

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform:
- Backslope on glacial-valley walls
- Shoulder on glacial-valley walls

Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform:
- Backslope on valley sides
- Shoulder on valley sides

Additional Components

Rubble land: 10 percent
Petty and similar soils: 5 percent

Management Considerations

Littlesalmon
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

Petty
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

228Vr—Comad-Como families-Rock outcrop complex, valley trough walls

Setting

Elevation: 6,720 to 11,100
Mean annual precipitation: 29 to 45 inches
Frost-free period: 20 to 40 days

Component Description

Comad and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; stony sandy loam
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam

BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Glacial-valley walls

Additional Components

Worock and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

228Vra—Littlesalmon-Cowood families-Rock outcrop complex, valley trough walls

Setting

Elevation: 6,370 to 9,650
Mean annual precipitation: 25 to 51 inches
Frost-free period: 20 to 40 days

Component Description

Littlesalmon and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Andic Haplocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Very bouldery ashy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over colluvium over granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; very bouldery ashy loam
Bw1—4 to 12 inches; very bouldery ashy loam
2Bw2—12 to 22 inches; very gravelly sandy loam
2BC—22 to 60 inches; very gravelly loamy coarse sand

Cowood and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Plant associations:
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Very stony coarse sandy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 0.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 4 inches; very stony coarse sandy loam
Bw1—4 to 10 inches; very stony sandy loam
Bw2—10 to 13 inches; very stony sandy loam
R—13 to 60 inches; bedrock

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform:
- Backslope on valley sides
- Shoulder on valley sides

Additional Components

Priestlake and similar soils: 10 percent
Jeru and similar soils: 5 percent
Rubble land: 5 percent

Management Considerations

Littlesalmon
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Cowood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

Rock outcrop
- Nonsoil material

Priestlake
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Jeru
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

228X—Como-Wander-Ledgefork families, complex, valley trough walls

Setting

Elevation: 6,440 to 8,650
Mean annual precipitation: 23 to 43 inches
Frost-free period: 30 to 70 days

Component Description

Como and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform:
- Backslope on glacial-valley walls
- Shoulder on glacial-valley walls

Slope: 30 to 80 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Wander and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Argicryolls
Landform: Glacial-valley walls
Slope: 30 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Granite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
A—0 to 10 inches; gravelly sandy loam
Bt1—10 to 19 inches; very cobbly sandy clay loam
Bt2—19 to 60 inches; very cobbly sandy loam

Ledgefork and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Haplocryolls
Landform: Glacial-valley walls
Slope: 30 to 80 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Colluvium
- Granite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Additional Components

Rock outcrop: 10 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Wander
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ledgefork
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

231U—Como-Garlet-Lowder families, complex, trough bottoms

Setting

Elevation: 6,390 to 8,980
Mean annual precipitation: 25 to 51 inches
Frost-free period: 20 to 60 days

Component Description

Como and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Glacial-valley floors
Slope: 0 to 20 percent
Native plant cover type: Forestland

Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss glaciofluvial deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Glacial-valley floors
Slope: 0 to 20 percent
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss glaciofluvial deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Lowder and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform:
- Drainageways
- Glacial-valley floors

Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Gneiss glaciofluvial deposits

Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Lilylake and similar soils: 10 percent

Management Considerations

Como
- High windthrow hazard
- Low bearing strength

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lilylake
- Flooding
- High water table
- High windthrow hazard

237U—Garlet-Como-Lilylake families, complex, trough bottoms

Setting

Elevation: 5,920 to 8,070
Mean annual precipitation: 16 to 38 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Glacial-valley floors
Slope: 0 to 20 percent
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material: Quartzite glaciofluvial deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Glacial-valley floors
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite glaciofluvial deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Lilylake and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Histic Cryaquepts
Landform:
- Drainageways
- Glacial-valley floors

Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Muck
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Quartzite glaciofluvial deposits
Flooding: Occasional
Water table: Present
Ponding duration: Brief
Available water capacity to 60 inch depth: Approximately 1.5 inches

Typical profile:
Oa—0 to 12 inches; muck
C1—12 to 15 inches; gravelly coarse sand
C2—15 to 60 inches; extremely gravelly coarse sand

Additional Components

Elvick and similar soils: 10 percent
Lowder and similar soils: 10 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- High windthrow hazard
- Low bearing strength

Lilylake
- Flooding
- High water table
- High windthrow hazard

Elvick
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

237Ua—Rubycreek-Bata-Lowder families, complex, trough bottoms

Setting

Elevation: 6,490 to 8,760
Mean annual precipitation: 20 to 49 inches
Frost-free period: 20 to 60 days

Component Description

Rubycreek and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Dystrocryepts
Landform: Glacial-valley floors
Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Ashy silt loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over quartzite glaciofluvial deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 3 inches; ashy silt loam
Bw—3 to 12 inches; ashy silt loam
2Bw—12 to 20 inches; very stony loam
2BC—20 to 29 inches; very cobbly loam
2C—29 to 60 inches; very cobbly sandy loam

Bata and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs
Landform: Glacial-valley floors
Slope: 0 to 10 percent
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly ashy silt loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 12 inches; gravelly ashy silt loam
2E/Bt—12 to 23 inches; very gravelly sandy loam
2Bt—23 to 60 inches; very gravelly sandy clay loam

Lowder and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform:
- Drainageways
- Glacial-valley floors

Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Quartzite glaciofluvial deposits

Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Lilylake and similar soils: 10 percent
Littlesalmon and similar soils: 10 percent
Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Rubycreek
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bata
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lilylake
- Flooding
- High water table
- High windthrow hazard

Littlesalmon
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

238U—Como-Lowder-Lilylake families, complex, trough bottoms

Setting

Elevation: 5,780 to 8,760
Mean annual precipitation: 16 to 45 inches
Frost-free period: 20 to 60 days

Component Description

Como and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Glacial-valley floors
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite glaciofluvial deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Lowder and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform:
- Drainageways
- Glacial-valley floors

Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite glaciofluvial deposits
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam

Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Lilylake and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Histic Cryaquepts
Landform:
- Drainageways
- Glacial-valley floors

Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Muck
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite glaciofluvial deposits
Flooding: Occasional
Water table: Present
Ponding duration: Brief
Available water capacity to 60 inch depth: Approximately 1.5 inches
Typical profile:
Oa—0 to 12 inches; muck
C1—12 to 15 inches; gravelly coarse sand
C2—15 to 60 inches; extremely gravelly coarse sand

Additional Components

Elvick and similar soils: 10 percent

Management Considerations

Como
- High windthrow hazard
- Low bearing strength

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lilylake
- Flooding
- High water table
- High windthrow hazard

Elvick
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

238Ua—Littlesalmon-Como-Lowder families, complex, trough bottoms

Setting

Elevation: 6,060 to 8,780
Mean annual precipitation: 20 to 47 inches
Frost-free period: 20 to 60 days

Component Description

Littlesalmon and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Andic Haplocryepts
Landform: Glacial-valley floors
Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Very bouldery ashy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; very bouldery ashy loam
Bw1—4 to 12 inches; very bouldery ashy loam
2Bw2—12 to 22 inches; very gravelly sandy loam
2BC—22 to 60 inches; very gravelly loamy coarse sand

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Glacial-valley floors
Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite glaciofluvial deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam

BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Lowder and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform:
- Drainageways
- Glacial-valley floors

Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite glaciofluvial deposits
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Bata and similar soils: 10 percent
Lilylake and similar soils: 5 percent
Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Littlesalmon
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Como
- High windthrow hazard
- Low bearing strength

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bata
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Lilylake
- Flooding
- High water table
- High windthrow hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

241F—Whitlash, very stony-Rock outcrop-Perma, very stony complex, 25 to 60 percent slopes

Setting

Elevation: 5,600 to 6,910
Mean annual precipitation: 15 to 19 inches
Frost-free period: 70 to 90 days

Component Description

Whitlash and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustolls
Landform:
- Escarpments
- Hillsides
- Ridges

Slope: 25 to 60 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material:
- Gravelly basalt residuum
- Gravelly sandstone residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 0.9 inches
Typical profile:
A—0 to 3 inches; very cobbly loam
Bw—3 to 11 inches; extremely gravelly loam
R—11 to 60 inches; unweathered bedrock

Rock outcrop, volcanic
Composition: 25 percent
Definition: Mainly exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock. Boulders and stones occupy a small part of the area.
Landform: None assigned

Perma and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Landform:
- Escarpments
- Hillsides
- Ridges

Slope: 25 to 60 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Gravelly basalt colluvium
- Gravelly metavolcanics colluvium
- Gravelly basalt slope alluvium
- Gravelly metavolcanics slope alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 13 inches; cobbly loam
Bw—13 to 44 inches; very gravelly loam
BC—44 to 60 inches; extremely gravelly sandy loam

Additional Components

Brickner and similar soils: 5 percent
Wickes and similar soils: 5 percent

Management Considerations

Whitlash
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic
- Nonsoil material

Perma
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Brickner
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Wickes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

242B—Beavrock-Dillon silt loams, 0 to 4 percent slopes

Setting

Elevation: 4,800 to 5,870
Mean annual precipitation: 10 to 14 inches
Frost-free period: 90 to 105 days

Component Description

Beavrock and similar soils
Composition: 55 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, calcareous, frigid Typic Fluvaquents
Landform: Flood plains
Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material: Alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 8 inches; silt loam
C—8 to 23 inches; stratified clay loam to silty clay loam to sandy loam
Cg1—23 to 28 inches; silty clay loam
2Cg2—28 to 60 inches; extremely gravelly sand

Dillon and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Oxyaquic Haplustepts
Landform:
- Flood plains
- Stream terraces

Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
A—0 to 4 inches; silt loam
Bw—4 to 11 inches; silt loam
BC—11 to 31 inches; loam
2C1—31 to 36 inches; loamy sand
2C2—36 to 60 inches; very gravelly sand

Additional Components

Blossberg and similar soils: 3 percent
Rivra and similar soils: 3 percent
Threeriv and similar soils: 3 percent
Ashbough and similar soils: 2 percent
Madbeaver and similar soils: 2 percent
Water: 2 percent

Management Considerations

Beavrock
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dillon
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Blossberg
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rivra
- High windthrow hazard

Threeriv
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ashbough
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Madbeaver
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

251S—Como-Garlet families, complex, cirque basins

Setting

Elevation: 7,220 to 9,550
Mean annual precipitation: 29 to 49 inches
Frost-free period: 20 to 50 days

Component Description

Como and similar soils
Composition: 50 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Plant associations:
- subalpine fir/heartleaf arnica
- subalpine fir/pinegrass
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Como
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

251Vr—Como family-Rock outcrop-Worock family, complex, cirque basins

Setting

Elevation: 7,760 to 10,400
Mean annual precipitation: 24 to 51 inches
Frost-free period: 20 to 40 days

Component Description

Como and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Cirque floors

Worock and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Stony loam
Rock fragments on the soil surface: 1 to 5 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Additional Components

Leighcan and similar soils: 10 percent
Matcher and similar soils: 10 percent

Management Considerations

Como
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Leighcan
- High windthrow hazard

Matcher
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

254S—Garlet-Tenrag-Tibson families, complex, cirque basins

Setting

Elevation: 7,170 to 9,420
Mean annual precipitation: 29 to 43 inches
Frost-free period: 20 to 40 days

Component Description

Garlet and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0 to 2 percent boulders, sandstone
- 0 to 2 percent boulders, limestone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Tenrag and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/elk sedge
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0 to 2 percent boulders, limestone
- 0 to 2 percent boulders, sandstone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale till

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Tibson and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0 to 2 percent boulders, sandstone
- 0 to 2 percent boulders, limestone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

255C—Philipsburg-Yellowmule-Midfork families, complex, cirque basins

Setting

Elevation: 8,530 to 9,800
Mean annual precipitation: 37 to 45 inches
Frost-free period: 20 to 60 days

Component Description

Philipsburg and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Loam
Rock fragments on the soil surface:
- 0 to 2 percent boulders, sandstone
- 0 to 2 percent boulders, limestone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale till
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.3 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Yellowmule and similar soils
Composition: 30 percent
Taxonomic class: Fine, mixed, superactive Eutric Haplocryalfs
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Loam
Rock fragments on the soil surface:
- 0 to 2 percent boulders, limestone
- 0 to 2 percent boulders, sandstone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale till
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
A—0 to 8 inches; loam
Bt1—8 to 19 inches; clay

Bt2—19 to 48 inches; cobbly clay loam
BC—48 to 72 inches; very cobbly clay loam

Midfork and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Haplocryolls
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0 to 2 percent boulders, sandstone
- 0 to 2 percent boulders, limestone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very gravelly loam

Additional Components

Rock outcrop: 10 percent
Adel and similar soils: 5 percent
Finn and similar soils: 5 percent

Management Considerations

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Yellowmule
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Midfork
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- Flooding
- High water table

- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

256B—Whitore-Starley families, complex, cirque basins

Setting

Elevation: 8,040 to 10,300
Mean annual precipitation: 24 to 39 inches
Frost-free period: 20 to 40 days

Component Description

Whitore and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.
- Ross' avens-arctic sandwort c.t.

Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
A—0 to 6 inches; cobbly loam
Bw—6 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Starley and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform: Cirque floors
Slope: 0 to 25 percent
Plant associations:
- Idaho fescue/diverseleafed cinquefoil c.t.
- blackroot sedge c.t.
- Ross' avens-arctic sandwort c.t.

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, limestone
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Till over limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.7 inches

Typical profile:
A—0 to 9 inches; gravelly loam
Bk1—9 to 12 inches; very cobbly loam
Bk2—12 to 15 inches; very cobbly loam
R—15 to 60 inches; bedrock

Additional Components

Rock outcrop: 10 percent

Management Considerations

Whitore
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Starley
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

256S—Whitore-Helmville families, complex, cirque basins

Setting

Elevation: 7,260 to 8,820
Mean annual precipitation: 29 to 39 inches
Frost-free period: 20 to 50 days

Component Description

Whitore and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Helmville and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Additional Components

Foolhen and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Whitore
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Helmville
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

256T—Hanson-Whitore families-Rock outcrop complex, cirque basins

Setting

Elevation: 7,840 to 9,430
Mean annual precipitation: 24 to 37 inches
Frost-free period: 30 to 70 days

Component Description

Hanson and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Whitore and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Cirque floors

Additional Components

Tibson and similar soils: 10 percent
Foolhen and similar soils: 5 percent

Management Considerations

Hanson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

257S—Garlet-Worock-Lowder families, complex, cirque basins

Setting

Elevation: 6,870 to 9,470
Mean annual precipitation: 20 to 39 inches
Frost-free period: 20 to 50 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted

Drainage class: Well drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Worock and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Stony loam
Rock fragments on the soil surface: 1 to 5 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Lowder and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform:
- Cirque floors
- Drainageways

Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Quartzite glaciofluvial deposits
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches

Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Rock outcrop: 10 percent
Como and similar soils: 5 percent
Elkner and similar soils: 5 percent
Lilylake and similar soils: 5 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Como
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Elkner
- High windthrow hazard

Lilylake
- Flooding
- High water table
- High windthrow hazard

257Sa—Waldbillig-Bata-Lowder families, complex, cirque basins

Setting

Elevation: 6,640 to 9,270
Mean annual precipitation: 21 to 55 inches
Frost-free period: 20 to 40 days

Component Description

Waldbillig and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 4 inches; gravelly ashy loam
Bw—4 to 10 inches; gravelly ashy loam
2E—10 to 43 inches; very gravelly sandy loam
2E/Bw—43 to 60 inches; very gravelly sandy loam

Bata and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs
Landform: Cirque floors
Slope: 0 to 25 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 12 inches; gravelly ashy silt loam
2E/Bt—12 to 23 inches; very gravelly sandy loam
2Bt—23 to 60 inches; very gravelly sandy clay loam

Lowder and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts

Landform:
- Cirque floors
- Drainageways

Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Quartzite glaciofluvial deposits
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:

Oi—0 to 2 inches; peat
A—2 to 9 inches; very cobbly loam
Bg—9 to 33 inches; very gravelly sandy clay loam
BCg—33 to 60 inches; very gravelly sandy loam

Additional Components

Petty and similar soils: 10 percent
Garlet and similar soils: 5 percent
Lilylake and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Waldbillig
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Petty
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lilylake
- Flooding
- High water table
- High windthrow hazard

Rock outcrop
- Nonsoil material

257Vr—Leighcan-Moran families-Rock outcrop complex, cirque basins

Setting

Elevation: 7,630 to 9,940
Mean annual precipitation: 20 to 51 inches
Frost-free period: 20 to 40 days

Component Description

Leighcan and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- whitebark pine
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Moran and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Humic Dystrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Very stony sandy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 7 inches; very stony sandy loam
Bw—7 to 16 inches; very stony sandy loam
C—16 to 60 inches; very stony sandy loam

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Cirques

Additional Components

Cowood and similar soils: 10 percent
Lowder and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Leighcan
- High windthrow hazard

Moran
- High windthrow hazard

Rock outcrop
- Nonsoil material

Cowood
- High windthrow hazard
- Shallow soil

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

258S—Garlet-Como-Worock families, complex, cirque basins

Setting

Elevation: 6,830 to 9,630
Mean annual precipitation: 24 to 47 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Worock and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/heartleaf arnica
- subalpine fir/pinegrass
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony loam
Rock fragments on the soil surface: 1 to 5 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

258Sa—Upsata-Bata-Lowder families, complex, cirque basins

Setting

Elevation: 6,490 to 9,450
Mean annual precipitation: 25 to 49 inches
Frost-free period: 20 to 40 days

Component Description

Upsata and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Andic Eutrocryepts
Landform: Cirque floors
Slope: 10 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Volcanic ash over granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 13 inches; gravelly ashy silt loam
2E—13 to 20 inches; gravelly fine sandy loam
2E/Bw—20 to 60 inches; extremely gravelly loamy sand

Bata and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs
Landform: Cirque floors
Slope: 10 to 25 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches

Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 12 inches; gravelly ashy silt loam
2E/Bt—12 to 23 inches; very gravelly sandy loam
2Bt—23 to 60 inches; very gravelly sandy clay loam

Lowder and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform:
- Cirque floors
- Drainageways

Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite glaciofluvial deposits
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Rock outcrop: 10 percent
Como and similar soils: 5 percent
Lilylake and similar soils: 5 percent
Petty and similar soils: 5 percent

Management Considerations

Upsata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Bata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Como
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Lilylake
- Flooding
- High water table
- High windthrow hazard

Petty
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

258U—Como-Elvick-Worock families, complex, cirque basins

Setting

Elevation: 7,210 to 8,810
Mean annual precipitation: 25 to 39 inches
Frost-free period: 20 to 60 days

Component Description

Como and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Elvick and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint
- spruce/common horsetail
- spruce/sweetscented bedstraw
- subalpine fir/queencup beadlily
- subalpine fir/sweetscented bedstraw

Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Granite till
Flooding: None
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 4 inches; slightly decomposed plant material
E1—4 to 11 inches; very cobbly loam
E2—11 to 22 inches; very cobbly loam
E/Bw—22 to 42 inches; very cobbly coarse sandy loam
BC—42 to 60 inches; extremely cobbly coarse sandy loam

Worock and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/twinflower
- spruce/twinflower
- subalpine fir/menziesia

Surface layer texture: Stony loam
Rock fragments on the soil surface: 1 to 5 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam

Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Como
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Elvick
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

258Vr—Como-Leighcan families-Rock outcrop complex, cirque basins

Setting

Elevation: 7,240 to 10,200
Mean annual precipitation: 25 to 51 inches
Frost-free period: 20 to 40 days

Component Description

Como and similar soils
Composition: 45 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Leighcan and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Cirques

Additional Components

Lowder and similar soils: 10 percent

Management Considerations

Como
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Leighcan
- High windthrow hazard

Rock outcrop
- Nonsoil material

Lowder
- Flooding
- High water table
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

272F—Rencot, stony-Spudbar-Rock outcrop complex, 25 to 50 percent slopes

Setting

Elevation: 5,000 to 6,580
Mean annual precipitation: 10 to 14 inches
Frost-free period: 90 to 105 days

Component Description

Rencot, stony and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Calciustepts
Landform: Hills
Slope: 25 to 50 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent boulders, 40 to 100 feet apart
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material:
- Rhyolite residuum
- Rhyolite colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
A—0 to 3 inches; very cobbly loam
Bk1—3 to 9 inches; very gravelly loam
Bk2—9 to 15 inches; extremely gravelly sandy loam
R—15 to 60 inches; unweathered bedrock

Spudbar and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Aridic Calciustolls
Landform: Hills
Slope: 25 to 50 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material:
- Sandstone and siltstone residuum
- Sandstone and shale residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 1.9 inches

Typical profile:
A—0 to 6 inches; very cobbly loam
Bk1—6 to 18 inches; very gravelly loam
Bk2—18 to 22 inches; extremely gravelly sandy loam
R—22 to 60 inches; unweathered bedrock

Rock outcrop
Composition: 15 percent
Landform: None assigned

Additional Components

Rubble land: 10 percent
Spudbar, lesser slopes and similar soils: 10 percent
Rencot, very stony and similar soils: 9 percent
Zbart and similar soils: 6 percent

Management Considerations

Rencot, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Spudbar
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

Spudbar, lesser slopes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rencot, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Zbart
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

280E—Comad-Elkner-Rock outcrop complex, 15 to 35 percent slopes

Setting

Elevation: 6,800 to 8,590
Mean annual precipitation: 20 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Comad and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Mountain slopes
Slope: 15 to 35 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/twinflower
- subalpine fir/blue huckleberry

Surface layer texture: Extremely bouldery sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Sandy and gravelly granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; extremely bouldery sandy loam
E2—6 to 18 inches; very bouldery sandy loam
E and Bt—18 to 31 inches; extremely bouldery loamy sand
C—31 to 60 inches; extremely bouldery loamy sand

Elkner and similar soils
Composition: 25 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Mountain slopes
Slope: 15 to 35 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/twinflower
- subalpine fir/blue huckleberry

Surface layer texture: Bouldery sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Coarse-loamy granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; bouldery sandy loam
E and Bt1—8 to 17 inches; bouldery coarse sandy loam
E and Bt2—17 to 37 inches; gravelly coarse sandy loam
BC—37 to 60 inches; gravelly coarse sandy loam

Rock outcrop
Composition: 25 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Additional Components

Rubble land: 10 percent

Management Considerations

Comad
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Elkner
- High windthrow hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

280F—Stecum-Rock outcrop-Comad complex, 35 to 70 percent slopes

Setting

Elevation: 5,380 to 7,960
Mean annual precipitation: 19 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Stecum and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents
Landform: Mountainflanks
Slope: 35 to 70 percent
Plant associations:
- Douglas-fir/pinegrass-pinegrass phase
- subalpine fir/grouse whortleberry

Surface layer texture: Very stony loamy coarse sand
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches
- Lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained
Parent material: Granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.2 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 7 inches; very stony loamy coarse sand
BC—7 to 25 inches; very stony coarse sand
Cr—25 to 38 inches; bedrock
R—38 to 60 inches; bedrock

Rock outcrop
Composition: 30 percent
Definition: Strongly indurated quartz monzonite of the Boulder Batholith.
Landform: None assigned

Comad and similar soils
Composition: 15 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Mountainflanks
Slope: 35 to 70 percent
Plant associations: lodgepole pine/grouse whortleberry
Surface layer texture: Very stony loamy coarse sand
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.2 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 8 inches; very stony loamy coarse sand
E and Bt—8 to 26 inches; very stony loamy coarse sand
C—26 to 60 inches; extremely stony sand

Additional Components

Goldflint and similar soils: 13 percent
Peeler and similar soils: 2 percent

Management Considerations

Stecum
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Goldflint
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Cutslope slumping
- Cutslope erosion

Peeler
- High windthrow hazard

300E—Poin-Barbarela-Rock outcrop complex, 15 to 45 percent slopes

Setting

Elevation: 5,900 to 6,820
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Poin and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform: Mountain slopes
Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Sandy loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Gravelly igneous and metamorphic residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.9 inches
Typical profile:
A1—0 to 4 inches; sandy loam
A2—4 to 8 inches; gravelly sandy loam
Bw—8 to 16 inches; very gravelly sandy loam
C—16 to 19 inches; extremely channery loamy sand
R—19 to 60 inches; unweathered bedrock

Barbarela and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls
Landform: Mountain slopes
Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material:
- Granite and gneiss residuum
- Schist residuum
- Schist colluvium
- Granite and gneiss colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.1 inches
Typical profile:
A—0 to 4 inches; loam
AB—4 to 10 inches; gravelly loam
Bt1—10 to 17 inches; gravelly sandy clay loam
Bt2—17 to 25 inches; gravelly sandy clay loam

Cr—25 to 42 inches; weathered bedrock
R—42 to 60 inches; unweathered bedrock

Rock outcrop
Composition: 15 percent
Landform: None assigned

Additional Components

Poin, very bouldery and similar soils: 5 percent

Management Considerations

Poin
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

Barbarela
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Poin, very bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

301D—Barbarela-Poin complex, 4 to 15 percent slopes

Setting

Elevation: 5,900 to 6,500
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Barbarela and similar soils
Composition: 60 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls
Landform: Mountain slopes
Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material:
- Granite and gneiss colluvium
- Schist colluvium over granite and gneiss residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.1 inches
Typical profile:
A—0 to 4 inches; loam
AB—4 to 10 inches; gravelly loam
Bt1—10 to 17 inches; gravelly sandy clay loam
Bt2—17 to 25 inches; gravelly sandy clay loam
Cr—25 to 42 inches; weathered bedrock
R—42 to 60 inches; unweathered bedrock

Poin and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform: Mountain slopes
Slope: 4 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Sandy loam
Depth to restrictive feature:
• Lithic bedrock: 10 to 20 inches
Drainage class: Well drained
Parent material: Gravelly igneous and metamorphic residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.9 inches
Typical profile:
A1—0 to 4 inches; sandy loam
A2—4 to 8 inches; gravelly sandy loam
Bw—8 to 16 inches; very gravelly sandy loam
C—16 to 19 inches; extremely channery loamy sand
R—19 to 60 inches; unweathered bedrock

Additional Components

Rock outcrop: 5 percent

Management Considerations

Barbarela
• High windthrow hazard
• Mass movement potential
• Low bearing strength
• Surface compaction hazard
Poin
• High windthrow hazard
• Shallow soil
Rock outcrop
• Nonsoil material

313E—Beeftrail-Dinnen-Highrye complex, 8 to 45 percent slopes

Setting

Elevation: 5,430 to 7,530
Mean annual precipitation: 15 to 17 inches
Frost-free period: 50 to 70 days

Component Description

Beeftrail and similar soils
Composition: 30 percent
Taxonomic class: Sandy, mixed Ustic Haplocryolls
Landform: Side slope on south-tending hills
Slope: 15 to 45 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Gravelly coarse sandy loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches
- Lithic bedrock: 28 to 56 inches

Drainage class: Somewhat excessively drained
Parent material: Granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.1 inches
Typical profile:
A—0 to 7 inches; gravelly coarse sandy loam
Bw—7 to 14 inches; gravelly coarse sandy loam
BC—14 to 26 inches; gravelly loamy coarse sand
Cr—26 to 35 inches; bedrock
R—35 to 60 inches; bedrock

Dinnen and similar soils
Composition: 20 percent
Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls
Landform: Side slope on south-tending hills
Slope: 15 to 35 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Coarse sandy loam
Depth to restrictive feature:
- Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained
Parent material: Granite colluvium over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.4 inches
Typical profile:
A—0 to 9 inches; coarse sandy loam
Bw—9 to 21 inches; gravelly coarse sandy loam
BC—21 to 41 inches; gravelly coarse sandy loam
C—41 to 53 inches; gravelly loamy coarse sand
Cr—53 to 60 inches; bedrock

Highrye and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform: Side slope on north-tending hills
Slope: 15 to 45 percent, northwest to east aspects
Plant associations: None noted
Surface layer texture: Coarse sandy loam
Depth to restrictive feature:
- Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained
Parent material: Granite colluvium over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
A—0 to 11 inches; coarse sandy loam
Bt—11 to 32 inches; gravelly sandy clay loam
BC—32 to 46 inches; gravelly coarse sandy loam
C—46 to 56 inches; very gravelly coarse sand
Cr—56 to 60 inches; bedrock

Dinnen, loam and similar soils
Composition: 15 percent
Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls
Landform: Base slope on hills
Slope: 8 to 25 percent
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature:
- Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained
Parent material: Granite colluvium over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.6 inches
Typical profile:
A—0 to 9 inches; loam
Bw—9 to 21 inches; gravelly coarse sandy loam
BC—21 to 41 inches; gravelly coarse sandy loam
C—41 to 53 inches; gravelly loamy coarse sand
Cr—53 to 60 inches; bedrock

Additional Components

Fleecer and similar soils: 5 percent
Zonite and similar soils: 5 percent
Rock outcrop: 3 percent
Bavdark and similar soils: 2 percent

Management Considerations

Beeftrail
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope erosion

Dinnen
- High windthrow hazard

Highrye
- Steep slopes
- Erodible surface

- High windthrow hazard
- Surface compaction hazard

Dinnen, loam
- High windthrow hazard

Fleecer
- High windthrow hazard

Zonite
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Bavdark
- High windthrow hazard
- Low bearing strength

315F—Stecum-Hiore complex, 20 to 50 percent slopes

Setting

Elevation: 5,280 to 7,500
Mean annual precipitation: 15 to 17 inches
Frost-free period: 50 to 70 days

Component Description

Stecum and similar soils
Composition: 50 percent
Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents
Landform: Side slope on hills
Slope: 20 to 50 percent, west to east aspects
Plant associations: Douglas-fir/pinegrass
Surface layer texture: Gravelly coarse sandy loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches
- Lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained
Parent material: Granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 7 inches; gravelly coarse sandy loam
BC—7 to 25 inches; very gravelly loamy coarse sand
Cr—25 to 38 inches; bedrock
R—38 to 60 inches; bedrock

Hiore and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Head slope on hills
Slope: 20 to 50 percent, west to east aspects

Plant associations: Douglas-fir/pinegrass
Surface layer texture: Gravelly coarse sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.1 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 14 inches; gravelly coarse sandy loam
Bw—14 to 29 inches; very gravelly coarse sandy loam
BC—29 to 60 inches; very gravelly loamy coarse sand

Additional Components

Rock outcrop: 10 percent
Zonite and similar soils: 6 percent
Stecum, very stony coarse sandy loam and similar soils: 4 percent

Management Considerations

Stecum
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Hiore
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

Zonite
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Cutslope slumping
- Cutslope erosion

Stecum, very stony coarse sandy loam
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

316F—Stecum-Rock outcrop-Zonite complex, 20 to 50 percent slopes, very bouldery

Setting

Elevation: 5,280 to 8,460
Mean annual precipitation: 15 to 23 inches
Frost-free period: 50 to 70 days

Component Description

Stecum, very bouldery and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents
Landform: Mountain slopes
Slope: 20 to 50 percent, east to west aspects
Plant associations: Douglas-fir/common juniper
Surface layer texture: Gravelly coarse sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent boulders, 20 to 83 feet apart, granite
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches
- Lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained
Parent material: Granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 7 inches; gravelly coarse sandy loam
BC—7 to 25 inches; very gravelly loamy coarse sand
Cr—25 to 38 inches; bedrock
R—38 to 60 inches; bedrock

Rock outcrop
Composition: 25 percent
Definition: Moderately to strongly indurated quartz monzonite of the Boulder Batholith.
Landform: None assigned

Zonite, very bouldery and similar soils
Composition: 15 percent
Taxonomic class: Sandy-skeletal, mixed Lithic Cryorthents
Landform: Mountain slopes
Slope: 20 to 50 percent, east to west aspects
Plant associations:
- Douglas-fir/common juniper
- Douglas-fir/bluebunch wheatgrass

Surface layer texture: Very gravelly coarse sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent boulders, 20 to 83 feet apart, granite
Depth to restrictive feature:
- Lithic bedrock: 6 to 14 inches

Drainage class: Somewhat excessively drained
Parent material: Granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 0.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 4 inches; very gravelly coarse sandy loam
BC—4 to 9 inches; very gravelly loamy coarse sand
R—9 to 60 inches; bedrock

Additional Components

Caseypeak, very bouldery and similar soils: 10 percent
Hiore, very bouldery and similar soils: 10 percent
Comad, very bouldery and similar soils: 5 percent

Management Considerations

Stecum, very bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope erosion

Rock outcrop
- Nonsoil material

Zonite, very bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Cutslope erosion

Caseypeak, very bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

Hiore, very bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard

Comad, very bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope erosion

327E—Bronec-Spudbar-Rencot complex, 8 to 35 percent slopes

Setting

Elevation: 5,000 to 6,400
Mean annual precipitation: 10 to 14 inches
Frost-free period: 90 to 105 days

Component Description

Bronec and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Aridic Calciustepts
Landform:
- Hills
- Ridges

Slope: 8 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
A—0 to 5 inches; gravelly loam
Bk1—5 to 17 inches; very gravelly sandy loam
Bk2—17 to 31 inches; very gravelly sandy loam
Bk3—31 to 60 inches; extremely gravelly sandy loam

Spudbar and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Aridic Calciustolls
Landform:
- Hills
- Ridges

Slope: 8 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Colluvium over sandstone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.9 inches
Typical profile:
A—0 to 6 inches; very cobbly loam
Bk1—6 to 18 inches; very gravelly loam
Bk2—18 to 22 inches; extremely gravelly sandy loam
R—22 to 60 inches; unweathered bedrock

Rencot and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Calciustepts
Landform:
- Hills
- Ridges

Slope: 8 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Sandstone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
A—0 to 3 inches; very cobbly loam
Bk1—3 to 9 inches; very gravelly loam

Bk2—9 to 15 inches; extremely gravelly sandy loam
R—15 to 60 inches; unweathered bedrock

Additional Components

Bronec, very stony and similar soils: 7 percent
Spudbar, greater slopes and similar soils: 4 percent
Kalsted and similar soils: 3 percent
Amesha and similar soils: 2 percent
Rock outcrop: 2 percent
Blackleaf and similar soils: 1 percent
Bronec, bouldery and similar soils: 1 percent

Management Considerations

Bronec
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Spudbar
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rencot
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Bronec, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Spudbar, greater slopes
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Kalsted
- High windthrow hazard

Amesha
- High windthrow hazard
- Low bearing strength

Rock outcrop
- Nonsoil material

Blackleaf
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Bronec, bouldery
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

341E—Bearmouth-Beeftrail-Marcetta families, complex, glacial moraines

Setting

Elevation: 6,240 to 9,120
Mean annual precipitation: 20 to 39 inches
Frost-free period: 30 to 70 days

Component Description

Bearmouth and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Beeftrail and similar soils
Composition: 20 percent
Taxonomic class: Sandy, mixed Ustic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Coarse sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
A—0 to 7 inches; coarse sandy loam
Bw—7 to 22 inches; gravelly coarse sandy loam
BC—22 to 60 inches; gravelly loamy coarse sand

Marcetta and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss till
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.5 inches
Typical profile:
A1—0 to 10 inches; gravelly loam
A2—10 to 17 inches; very gravelly loam
Bw—17 to 48 inches; very gravelly loam
C—48 to 60 inches; very gravelly loam

Additional Components

Rock outcrop: 10 percent
Sebud and similar soils: 10 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Beeftrail
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Marcetta
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

341S—Como-Garlet-Lowder families, complex, glacial moraines

Setting

Elevation: 6,090 to 9,240
Mean annual precipitation: 16 to 47 inches
Frost-free period: 20 to 60 days

Component Description

Como and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam

E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Lowder and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform:
- Ground moraines
- Potholes

Slope: 2 to 10 percent
Native plant cover type: Forestland
Plant associations:
- beaked sedge h.t.
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Gneiss glaciofluvial deposits
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Rock outcrop: 10 percent
Worock and similar soils: 10 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

341V—Leighcan-Matcher-Como families, complex, glacial moraines

Setting

Elevation: 7,080 to 9,960
Mean annual precipitation: 20 to 49 inches
Frost-free period: 20 to 40 days

Component Description

Leighcan and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Matcher and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Humic Dystrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir

- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Stony sandy loam
Rock fragments on the soil surface: 1 to 5 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.1 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 10 inches; stony sandy loam
Bw—10 to 23 inches; very stony sandy loam
C—23 to 60 inches; very stony sand

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- whitebark pine/subalpine fir
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, gneiss
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Additional Components

Cowood and similar soils: 10 percent
Rock outcrop: 10 percent
Lowder and similar soils: 5 percent
Moran and similar soils: 5 percent

Management Considerations

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Matcher
- Steep slopes
- Erodible surface
- High windthrow hazard

- Cutslope slumping
- Cutslope erosion

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Cowood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Moran
- Steep slopes
- Erodible surface
- High windthrow hazard

342S—Garlet-Tenrag-Relyea families, complex, glacial moraines

Setting

Elevation: 6,820 to 9,690
Mean annual precipitation: 24 to 43 inches
Frost-free period: 20 to 40 days

Component Description

Garlet and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Ground moraines
Slope: 0 to 25 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0 to 1 percent boulders, andesite
- 0 to 1 percent boulders, rhyolite
- 0 to 1 percent boulders, tuff

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite till
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Tenrag and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Ground moraines
Slope: 0 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0 to 1 percent boulders, tuff
- 0 to 1 percent boulders, andesite
- 0 to 1 percent boulders, rhyolite

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite till
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Relyea and similar soils
Composition: 25 percent
Taxonomic class: Clayey-skeletal, mixed, superactive Eutric Glossocryalfs
Landform: Ground moraines
Slope: 0 to 25 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0 to 1 percent boulders, tuff
- 0 to 1 percent boulders, rhyolite
- 0 to 1 percent boulders, andesite

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Rhyolite
- Andesite till
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 6 inches; gravelly loam
Bt/E—6 to 9 inches; very gravelly clay loam
Bt—9 to 18 inches; very gravelly clay loam
Btk—18 to 31 inches; very gravelly clay loam
Bk—31 to 60 inches; very cobbly clay loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Relyea
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

343S—Garlet-Tenrag-Yellowmule families, complex, glacial moraines

Setting

Elevation: 6,320 to 9,350
Mean annual precipitation: 21 to 32 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 1 percent boulders, conglomerate
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Conglomerate till
- Shale

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Tenrag and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 1 percent boulders, conglomerate
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Conglomerate till
- Shale

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Yellowmule and similar soils
Composition: 25 percent
Taxonomic class: Fine, mixed, superactive Eutric Haplocryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Loam
Rock fragments on the soil surface: 0 to 1 percent boulders, conglomerate
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Shale till
- Conglomerate

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; loam
Bt1—11 to 19 inches; clay
Bt2—19 to 48 inches; cobbly clay loam
BC—48 to 72 inches; very cobbly clay loam

Additional Components

Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

344E—Libeg-Tiban families, complex, glacial moraines

Setting

Elevation: 6,510 to 9,150
Mean annual precipitation: 20 to 32 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface:
- 0.0 to 1.5 percent boulders, sandstone
- 0.0 to 1.5 percent boulders, limestone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
A—0 to 10 inches; very cobbly sandy loam
Bt1—10 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery sandy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Tiban and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0.0 to 1.5 percent boulders, sandstone
- 0.0 to 1.5 percent boulders, limestone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 7 inches; gravelly loam
Bw—7 to 13 inches; very cobbly loam

Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Additional Components

Bridger and similar soils: 10 percent
Rock outcrop: 10 percent
Marcetta and similar soils: 5 percent

Management Considerations

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Marcetta
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

344S—Swifton-Garlet-Tenrag families, complex, glacial moraines

Setting

Elevation: 7,600 to 8,600
Mean annual precipitation: 25 to 45 inches
Frost-free period: 20 to 60 days

Component Description

Swifton and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Palecryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Loam
Rock fragments on the soil surface:
- 0.0 to 1.5 percent boulders, sandstone
- 0.0 to 1.5 percent boulders, limestone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale till
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 10 inches; loam
B/E—10 to 43 inches; gravelly sandy clay loam
Bt—43 to 72 inches; very gravelly sandy clay loam

Garlet and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0.0 to 1.5 percent boulders, sandstone
- 0.0 to 1.5 percent boulders, limestone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Tenrag and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir/heartleaf arnica
- subalpine fir/pinegrass
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0.0 to 1.5 percent boulders, sandstone
- 0.0 to 1.5 percent boulders, limestone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale till
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Additional Components

Relyea and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Swifton
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Relyea
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

344T—Garlet-Tibson families, complex, glacial moraines

Setting

Elevation: 6,810 to 9,710
Mean annual precipitation: 25 to 39 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0.0 to 1.5 percent boulders, limestone
- 0.0 to 1.5 percent boulders, sandstone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Tibson and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0.0 to 1.5 percent boulders, limestone
- 0.0 to 1.5 percent boulders, sandstone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches

Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Additional Components

Rock outcrop: 10 percent
Tenrag and similar soils: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

346S—Whitore-Helmville-Foolhen families, complex, glacial moraines

Setting

Elevation: 6,380 to 9,980
Mean annual precipitation: 23 to 41 inches
Frost-free period: 20 to 60 days

Component Description

Whitore and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Helmville and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Foolhen and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls
Landform: Depression on ground moraines
Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Limestone glaciofluvial deposits
Flooding: Rare
Water table: Present

Available water capacity to 60 inch depth: Approximately 9.6 inches
Typical profile:
Oi—0 to 1 inch; peat
A—1 to 8 inches; loam
Bg—8 to 18 inches; loam
Cg1—18 to 25 inches; loam
Cg2—25 to 60 inches; gravelly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Helmville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

346T—Hanson-Whitore-Foolhen families, complex, glacial moraines

Setting

Elevation: 6,480 to 9,410
Mean annual precipitation: 21 to 41 inches
Frost-free period: 30 to 70 days

Component Description

Hanson and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, limestone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Whitore and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Foolhen and similar soils
Composition: 15 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls
Landform: Depression on ground moraines
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Limestone glaciofluvial deposits
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 9.6 inches
Typical profile:
Oi—0 to 1 inch; peat
A—1 to 8 inches; loam

Bg—8 to 18 inches; loam
Cg1—18 to 25 inches; loam
Cg2—25 to 60 inches; gravelly loam

Additional Components

Maciver and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maciver
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

347E—Gateview-Sebud-Bearmouth families, complex, glacial moraines

Setting

Elevation: 6,540 to 9,060
Mean annual precipitation: 20 to 39 inches
Frost-free period: 30 to 70 days

Component Description

Gateview and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland

Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 39 inches; very gravelly loam
2C—39 to 60 inches; very cobbly sand

Sebud and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; cobbly loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Bearmouth and similar soils
Composition: 15 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches

Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Additional Components

Finn and similar soils: 5 percent
Libeg and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Gateview
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Finn
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

347S—Garlet-Worock-Como families, complex, glacial moraines

Setting

Elevation: 6,160 to 9,080
Mean annual precipitation: 18 to 39 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Worock and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony loam
Rock fragments on the soil surface: 1 to 5 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent

Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:

Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Additional Components

Elkner and similar soils: 10 percent
Lowder and similar soils: 10 percent
Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Lowder
- Flooding
- High water table
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

347Sa—Waldbillig-Bata-Upsata families, complex, glacial moraines

Setting

Elevation: 6,670 to 8,790
Mean annual precipitation: 18 to 41 inches
Frost-free period: 20 to 60 days

Component Description

Waldbillig and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 4 inches; gravelly ashy loam
Bw—4 to 10 inches; gravelly ashy loam
2E—10 to 43 inches; very gravelly sandy loam
2E/Bw—43 to 60 inches; very gravelly sandy loam

Bata and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam

Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 12 inches; gravelly ashy silt loam
2E/Bt—12 to 23 inches; very gravelly sandy loam
2Bt—23 to 60 inches; very gravelly sandy clay loam

Upsata and similar soils
Composition: 15 percent
Taxonomic class: Sandy-skeletal, mixed Andic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Volcanic ash over quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 13 inches; gravelly ashy silt loam
2E—13 to 20 inches; gravelly fine sandy loam
2E/Bw—20 to 60 inches; extremely gravelly loamy sand

Additional Components

Lowder and similar soils: 10 percent
Elkner and similar soils: 5 percent
Garlet and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Waldbillig
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bata
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Upsata
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

347Vr—Leighcan family-Rock outcrop-Worock family, complex, glacial moraines

Setting

Elevation: 7,390 to 9,570
Mean annual precipitation: 20 to 34 inches
Frost-free period: 20 to 40 days

Component Description

Leighcan and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Ground moraines

Worock and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine/subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Stony loam
Rock fragments on the soil surface: 1 to 5 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Additional Components

Como and similar soils: 10 percent
Lowder and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

347X—Elve-Gateview-Sebud families, complex, glacial moraines

Setting

Elevation: 6,560 to 8,660
Mean annual precipitation: 18 to 31 inches
Frost-free period: 30 to 70 days

Component Description

Elve and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly sandy loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Gateview and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 39 inches; very gravelly loam
2C—39 to 60 inches; very cobbly sand

Sebud and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Stony loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; stony loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Como and similar soils: 10 percent
Libeg and similar soils: 10 percent

Management Considerations

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gateview
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

348E—Bearmouth-Libeg-Beeftrail families, complex, glacial moraines

Setting

Elevation: 5,740 to 10,000
Mean annual precipitation: 16 to 38 inches
Frost-free period: 30 to 70 days

Component Description

Bearmouth and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland

Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Libeg and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.4 inches
Typical profile:
A—0 to 10 inches; very cobbly sandy loam
Bt—10 to 22 inches; very channery loam
BC—22 to 60 inches; very cobbly sandy loam

Beeftrail and similar soils
Composition: 20 percent
Taxonomic class: Sandy, mixed Ustic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Coarse sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches

Typical profile:
A—0 to 10 inches; coarse sandy loam
Bw—10 to 21 inches; gravelly coarse sandy loam
BC—21 to 60 inches; gravelly loamy coarse sand

Additional Components

Gateview and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Beeftrail
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Gateview
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

348P—Bearmouth-Howardsville-Tepecreek families, complex, glacial moraines

Setting

Elevation: 6,100 to 8,520
Mean annual precipitation: 18 to 36 inches
Frost-free period: 30 to 60 days

Component Description

Bearmouth and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent

Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; very cobbly loam
Bw—8 to 15 inches; very cobbly sandy loam
C—15 to 60 inches; very cobbly loamy sand

Howardsville and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/elk sedge
- Douglas-fir/pinegrass
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Tepecreek and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass

- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Very gravelly sandy clay loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches
- Lithic bedrock: 30 to 60 inches

Drainage class: Well drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 10 inches; very gravelly sandy clay loam
Bt—10 to 20 inches; very gravelly sandy clay loam
BC—20 to 37 inches; very gravelly coarse sandy loam
Cr—37 to 54 inches; bedrock
R—54 to 60 inches; bedrock

Additional Components

Libeg and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Howardsville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Tepecreek
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

348S—Como-Elkner-Lowder families, complex, glacial moraines

Setting

Elevation: 6,360 to 9,640
Mean annual precipitation: 20 to 45 inches
Frost-free period: 20 to 60 days

Component Description

Como and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Elkner and similar soils
Composition: 30 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Stony sandy loam
Rock fragments on the soil surface: 1 to 5 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches

Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 10 inches; stony sandy loam
E2—10 to 19 inches; stony sandy loam
E and Bt—19 to 39 inches; gravelly coarse sandy loam
BC—39 to 60 inches; stony loamy coarse sand

Lowder and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform:
- Ground moraines
- Potholes

Slope: 2 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite glaciofluvial deposits
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Rock outcrop: 10 percent
Comad and similar soils: 5 percent
Worock and similar soils: 5 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Lowder
- Flooding
- High water table
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

348Sa—Upsata-Bata-Petty families, complex, glacial moraines

Setting

Elevation: 6,110 to 9,150
Mean annual precipitation: 20 to 47 inches
Frost-free period: 20 to 60 days

Component Description

Upsata and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Andic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Volcanic ash over granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 13 inches; gravelly ashy silt loam
2E—13 to 20 inches; gravelly fine sandy loam
2E/Bw—20 to 60 inches; extremely gravelly loamy sand

Bata and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 12 inches; gravelly ashy silt loam
2E/Bt—12 to 23 inches; very gravelly sandy loam
2Bt—23 to 60 inches; very gravelly sandy clay loam

Petty and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Ashy silt loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 5 inches; ashy silt loam
Bw1—5 to 10 inches; ashy silt loam
Bw2—10 to 14 inches; ashy silt loam
2Bw3—14 to 22 inches; very stony loam
2BC—22 to 31 inches; very cobbly loam
2C—31 to 60 inches; very cobbly sandy loam

Additional Components

Lowder and similar soils: 10 percent
Como and similar soils: 5 percent

Lilylake and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Upsata
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Bata
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Petty
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Lilylake
- Flooding
- High water table
- High windthrow hazard

Rock outcrop
- Nonsoil material

348U—Lowder-Como families, complex, glacial moraines

Setting

Elevation: 6,690 to 8,820
Mean annual precipitation: 20 to 37 inches
Frost-free period: 20 to 60 days

Component Description

Lowder and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform:
- Ground moraines
- Potholes

Slope: 2 to 15 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite glaciofluvial deposits
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Additional Components

Elkner and similar soils: 10 percent
Rock outcrop: 10 percent
Worock and similar soils: 10 percent

Management Considerations

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

348X—Bearmouth-Gateview-Tepecreek families, complex, glacial moraines

Setting

Elevation: 6,170 to 7,880
Mean annual precipitation: 18 to 35 inches
Frost-free period: 30 to 70 days

Component Description

Bearmouth and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches

Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Gateview and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 39 inches; very gravelly loam
2C—39 to 60 inches; very cobbly sand

Tepecreek and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/mountain snowberry

Surface layer texture: Very gravelly sandy clay loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches
- Lithic bedrock: 30 to 60 inches

Drainage class: Well drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 10 inches; very gravelly sandy clay loam
Bt—10 to 20 inches; very gravelly sandy clay loam
BC—20 to 37 inches; very gravelly coarse sandy loam
Cr—37 to 54 inches; bedrock
R—54 to 60 inches; bedrock

Additional Components

Beeftrail and similar soils: 10 percent
Rock outcrop: 5 percent
Sebud and similar soils: 5 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Gateview
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tepecreek
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Beeftrail
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

354D—Libeg-Redchief complex, 8 to 15 percent slopes

Setting

Elevation: 5,800 to 7,400
Mean annual precipitation: 15 to 23 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:
- Alluvial fans
- Side slope on hills
- Riser on terraces

Slope: 8 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
A—0 to 6 inches; gravelly loam
Bt1—6 to 16 inches; very channery clay loam
Bt2—16 to 30 inches; very channery clay loam
C—30 to 60 inches; very cobbly sandy loam

Redchief and similar soils
Composition: 25 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform:
- Footslope on hills
- Backslope on hills
- Mountainbases

Slope: 8 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey igneous colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 10 inches; cobbly loam
Bt1—10 to 18 inches; very gravelly clay
Bt2—18 to 28 inches; very gravelly clay loam
C—28 to 60 inches; very gravelly clay

Additional Components

Adel and similar soils: 5 percent
Mollet and similar soils: 5 percent
Monad and similar soils: 5 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monad
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

368Sr—Elkner-Como families-Rock outcrop complex, recessional moraines

Setting

Elevation: 6,710 to 8,760
Mean annual precipitation: 22 to 35 inches
Frost-free period: 20 to 60 days

Component Description

Elkner and similar soils
Composition: 35 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony sandy loam
Rock fragments on the soil surface: 1 to 5 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 10 inches; stony sandy loam
E2—10 to 19 inches; stony sandy loam
E and Bt—19 to 39 inches; gravelly coarse sandy loam
BC—39 to 60 inches; stony loamy coarse sand

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite till
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 25 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Additional Components

Lowder and similar soils: 10 percent

Management Considerations

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

387E—Danaher-Loberg complex, 15 to 35 percent slopes

Setting

Elevation: 5,990 to 6,720
Mean annual precipitation: 20 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Danaher and similar soils
Composition: 50 percent
Taxonomic class: Fine, mixed, superactive Ustic Glossocryalfs
Landform: Mountain slopes
Slope: 15 to 35 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower
- subalpine fir/blue huckleberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.7 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
Oi—1 to 3 inches; slightly decomposed plant material
E—3 to 6 inches; loam
Bt/E—6 to 10 inches; clay loam
Bt—10 to 60 inches; gravelly clay

Loberg and similar soils
Composition: 35 percent
Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs
Landform:
- Mountainbases
- Mountainflanks

Slope: 15 to 35 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/twinflower
- subalpine fir/twinflower

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
Oe—1 to 3 inches; moderately decomposed plant material
E—3 to 15 inches; gravelly loam

E/Bt—15 to 30 inches; very cobbly clay
Bt1—30 to 52 inches; very cobbly clay loam
Bt2—52 to 69 inches; very channery clay loam
BC—69 to 72 inches; very cobbly clay loam

Additional Components

Relyea and similar soils: 5 percent
Rock outcrop: 5 percent
Worock and similar soils: 5 percent

Management Considerations

Danaher
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Loberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Relyea
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

414A—Mooseflat-Foxgulch complex, 0 to 4 percent slopes

Setting

Elevation: 5,580 to 6,920
Mean annual precipitation: 14 to 19 inches
Frost-free period: 30 to 70 days

Component Description

Mooseflat and similar soils
Composition: 60 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Flood plains
Slope: 0 to 2 percent
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Alluvium
Flooding: Rare
Water table: Present

Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 12 inches; loam
Bg—12 to 18 inches; sandy loam
BCg—18 to 26 inches; very gravelly loamy sand
2Cg—26 to 60 inches; very cobbly loamy coarse sand

Foxgulch and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Fluvaquentic Haplocryolls
Landform: Flood-plain steps
Slope: 1 to 4 percent
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Alluvium
Flooding: Very rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 12 inches; loam
Bw—12 to 30 inches; loam
BC—30 to 46 inches; sandy clay loam
2C—46 to 60 inches; very gravelly coarse sand

Additional Components

Kilgore and similar soils: 10 percent
Water: 5 percent

Management Considerations

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foxgulch
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Kilgore
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

419E—Peeler-Comad complex, 8 to 30 percent slopes, very stony

Setting

Elevation: 6,120 to 7,430
Mean annual precipitation: 19 to 22 inches
Frost-free period: 30 to 50 days

Component Description

Peeler, very stony and similar soils
Composition: 45 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Glossocryalfs
Landform: Mountainflank on north-tending mountainsides
Slope: 12 to 30 percent, west to southeast aspects
Plant associations: spruce/cleft-leaf groundsel
Surface layer texture: Gravelly loamy coarse sand
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 10 to 40 feet apart, granite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
Oe—1 to 2 inches; slightly decomposed plant material
E—2 to 14 inches; gravelly loamy coarse sand
E/Bt—14 to 24 inches; gravelly coarse sandy loam
Bt—24 to 38 inches; gravelly sandy clay loam
BC—38 to 60 inches; very gravelly loamy coarse sand

Comad, very stony and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Mountainflank on north-tending mountainsides
Slope: 8 to 30 percent, west to southeast aspects
Plant associations: lodgepole pine/grouse whortleberry
Surface layer texture: Gravelly loamy coarse sand
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 10 to 40 feet apart, granite
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 8 inches; gravelly loamy coarse sand
E and Bt—8 to 26 inches; very gravelly loamy coarse sand
C—26 to 60 inches; very gravelly coarse sand

Additional Components

Goldflint and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Peeler, very stony
- High windthrow hazard

Comad, very stony
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Goldflint
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

454D—Libeg-Macabre-Redchief complex, 8 to 15 percent slopes

Setting

Elevation: 5,600 to 6,600
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 90 days

Component Description

Libeg and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Alluvial fans
- Side slope on hills
- Riser on terraces

Slope: 8 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
A—0 to 14 inches; gravelly loam
Bt—14 to 60 inches; very channery clay loam

Macabre and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Vitrandic Argiustolls
Landform:
- Nose slope on hills
- Mountaintops
- Ridges

Slope: 8 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Ashy loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 60 inches

Drainage class: Well drained
Parent material:
- Gravelly colluvium
- Rhyolite residuum
- Tuff, welded

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
A—0 to 7 inches; ashy loam
Bt—7 to 17 inches; very gravelly ashy sandy clay loam
BC—17 to 27 inches; very gravelly ashy sandy clay loam
Cr—27 to 41 inches; weathered bedrock
R—41 to 60 inches; unweathered bedrock

Redchief and similar soils
Composition: 20 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform:
- Footslope on hills
- Backslope on hills

Slope: 8 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey igneous colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 10 inches; cobbly loam
Bt1—10 to 18 inches; very gravelly clay
Bt2—18 to 28 inches; very gravelly clay loam
C—28 to 60 inches; very gravelly clay

Additional Components

Adel and similar soils: 4 percent
Monad and similar soils: 4 percent
Rock outcrop: 4 percent
Mollet and similar soils: 3 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Macabre
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monad
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

454E—Libeg-Macabre-Redchief complex, 15 to 35 percent slopes

Setting

Elevation: 5,600 to 6,600
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 90 days

Component Description

Libeg and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Alluvial fans
- Side slope on hills
- Riser on terraces

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
A—0 to 14 inches; gravelly loam
Bt—14 to 60 inches; very channery clay loam

Macabre and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Vitrandic Argiustolls
Landform:
- Nose slope on hills
- Mountaintops
- Ridges

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Ashy loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 60 inches

Drainage class: Well drained
Parent material:
- Gravelly colluvium
- Rhyolite residuum
- Tuff, welded

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
A—0 to 7 inches; ashy loam
Bt—7 to 17 inches; very gravelly ashy sandy clay loam
BC—17 to 27 inches; very gravelly ashy sandy clay loam
Cr—27 to 41 inches; weathered bedrock
R—41 to 60 inches; unweathered bedrock

Redchief and similar soils
Composition: 20 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform:
- Footslope on hills
- Backslope on hills

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey igneous colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 10 inches; cobbly loam
Bt1—10 to 18 inches; very gravelly clay
Bt2—18 to 28 inches; very gravelly clay loam
C—28 to 60 inches; very gravelly clay

Additional Components

Adel and similar soils: 4 percent
Monad and similar soils: 4 percent
Rock outcrop: 4 percent
Mollet and similar soils: 3 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Macabre
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monad
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

454F—Libeg-Macabre-Redchief complex, 35 to 60 percent slopes

Setting

Elevation: 5,600 to 6,600
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 90 days

Component Description

Libeg and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Alluvial fans
- Side slope on hills
- Riser on terraces

Slope: 35 to 60 percent
Native plant cover type: Rangeland

Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
A—0 to 14 inches; gravelly loam
Bt—14 to 60 inches; very channery clay loam

Macabre and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Vitrandic Argiustolls
Landform:
- Nose slope on hills
- Mountaintops
- Ridges

Slope: 35 to 60 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Ashy loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 60 inches

Drainage class: Well drained
Parent material:
- Gravelly colluvium
- Rhyolite residuum
- Tuff, welded

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
A—0 to 7 inches; ashy loam
Bt—7 to 17 inches; very gravelly ashy sandy clay loam
BC—17 to 27 inches; very gravelly ashy sandy clay loam
Cr—27 to 41 inches; weathered bedrock
R—41 to 60 inches; unweathered bedrock

Redchief and similar soils
Composition: 20 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform:
- Footslope on hills
- Backslope on hills

Slope: 35 to 60 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey igneous colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches

Typical profile:
A—0 to 10 inches; cobbly loam
Bt1—10 to 18 inches; very gravelly clay
Bt2—18 to 28 inches; very gravelly clay loam
C—28 to 60 inches; very gravelly clay

Additional Components

Adel and similar soils: 4 percent
Monad and similar soils: 4 percent
Rock outcrop: 4 percent
Mollet and similar soils: 3 percent

Management Considerations

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Macabre
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Mollet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

463E—Philipsburg-Prudy-Tibson families, complex, ice-margin slopes

Setting

Elevation: 6,070 to 8,800
Mean annual precipitation: 18 to 31 inches
Frost-free period: 30 to 70 days

Component Description

Philipsburg and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Rock fragments on the soil surface: 0 to 3 percent boulders, conglomerate
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Conglomerate till
- Shale
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 8.3 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Prudy and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Haplocryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Rock fragments on the soil surface: 0 to 3 percent boulders, conglomerate
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Conglomerate till
- Shale
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 8.6 inches

Typical profile:
A—0 to 10 inches; loam
Bk—10 to 60 inches; gravelly loam

Tibson and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, conglomerate
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Conglomerate till

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Additional Components

Stecum and similar soils: 10 percent
Elve and similar soils: 5 percent
Mooseflat and similar soils: 5 percent
Redchief and similar soils: 5 percent

Management Considerations

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Prudy
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Stecum
- High windthrow hazard

Elve
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

463P—Elkner-Philipsburg-Prudy families, complex, ice-margin slopes

Setting

Elevation: 6,140 to 8,540
Mean annual precipitation: 20 to 31 inches
Frost-free period: 30 to 60 days

Component Description

Elkner and similar soils
Composition: 30 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Stony sandy loam
Rock fragments on the soil surface: 1 to 5 percent boulders, conglomerate
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Alluvium
- Conglomerate till

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 10 inches; stony sandy loam
E2—10 to 19 inches; stony sandy loam
E and Bt—19 to 39 inches; gravelly coarse sandy loam
BC—39 to 60 inches; stony loamy coarse sand

Philipsburg and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent

Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Loam
Rock fragments on the soil surface: 0 to 3 percent boulders, conglomerate
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Shale
- Conglomerate till
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 8.2 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; loam
Bt—8 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Prudy and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Haplocryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Loam
Rock fragments on the soil surface: 0 to 3 percent boulders, conglomerate
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Conglomerate till
- Alluvium
- Shale

Flooding: None
Available water capacity to 60 inch depth: Approximately 8.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 10 inches; loam
Bk—10 to 60 inches; gravelly loam

Additional Components

Bearmouth and similar soils: 10 percent
Wetopa and similar soils: 10 percent

Management Considerations

Elkner
- High windthrow hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Prudy
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- High windthrow hazard
- Low bearing strength

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

464E—Tibson-Adel-Tiban families, complex, ice-margin slopes

Setting

Elevation: 6,570 to 9,140
Mean annual precipitation: 20 to 35 inches
Frost-free period: 30 to 70 days

Component Description

Tibson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0.0 to 1.5 percent boulders, limestone
- 0.0 to 1.5 percent boulders, sandstone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Limestone, sandstone, and shale till

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam

Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Adel and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Loam
Rock fragments on the soil surface:
- 0.0 to 1.5 percent boulders, limestone
- 0.0 to 1.5 percent boulders, sandstone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Limestone, sandstone, and shale till

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 32 inches; loam
Bw—32 to 60 inches; gravelly loam

Tiban and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0.0 to 1.5 percent boulders, sandstone
- 0.0 to 1.5 percent boulders, limestone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Limestone, sandstone, and shale till

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 7 inches; gravelly loam
Bw—7 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Additional Components

Elve and similar soils: 10 percent
Philipsburg and similar soils: 10 percent
Woodhurst and similar soils: 10 percent

Management Considerations

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

464X—Tiban-Tibson-Woodhurst families, complex, ice-margin slopes

Setting

Elevation: 6,730 to 8,390
Mean annual precipitation: 20 to 31 inches
Frost-free period: 30 to 70 days

Component Description

Tiban and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0.0 to 1.5 percent boulders, limestone
- 0.0 to 1.5 percent boulders, sandstone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Limestone, sandstone, and shale till
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; gravelly loam
Bw—8 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Tibson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0.0 to 1.5 percent boulders, sandstone
- 0.0 to 1.5 percent boulders, limestone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Limestone, sandstone, and shale till

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Woodhurst and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Argicryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.-*geranium viscosissimum* phase
Surface layer texture: Loam

Rock fragments on the soil surface:
- 0.0 to 1.5 percent boulders, limestone
- 0.0 to 1.5 percent boulders, sandstone

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Limestone, sandstone, and shale till

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 16 inches; gravelly loam
Bt1—16 to 30 inches; very cobbly clay loam
Bt2—30 to 60 inches; extremely cobbly clay loam

Additional Components

Elve and similar soils: 10 percent
Philipsburg and similar soils: 10 percent

Management Considerations

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

467E—Philipsburg-Redchief-Sebud families, complex, ice-margin slopes

Setting

Elevation: 6,730 to 8,310
Mean annual precipitation: 18 to 32 inches
Frost-free period: 30 to 70 days

Component Description

Philipsburg and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Quartzite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 8.3 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Redchief and similar soils
Composition: 30 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Quartzite till
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 10 inches; gravelly loam
Bt1—10 to 18 inches; very gravelly clay loam
Bt2—18 to 28 inches; very gravelly clay
Bt3—28 to 60 inches; very gravelly clay

Sebud and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland

Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Quartzite till
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; cobbly loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Gateview and similar soils: 10 percent
Libeg and similar soils: 10 percent

Management Considerations

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gateview
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

467G—Libeg-Finn-Sebud families, complex, ice-margin slopes

Setting

Elevation: 6,740 to 7,290
Mean annual precipitation: 18 to 27 inches
Frost-free period: 30 to 60 days

Component Description

Libeg and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Stony loam
Rock fragments on the soil surface: 1 to 5 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Quartzite till
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A—0 to 10 inches; stony loam
Bt—10 to 29 inches; very stony sandy clay loam
BC—29 to 60 inches; very cobbly sandy loam

Finn and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Ice-margin mountain slopes
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material:
- Quartzite glaciofluvial deposits
- Alluvium

Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
Oi—0 to 2 inches; peat
A—2 to 10 inches; loam
Bw1—10 to 16 inches; very gravelly loam
Bw2—16 to 22 inches; very gravelly sandy loam
BC—22 to 60 inches; very cobbly sandy loam

Sebud and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Stony loam
Rock fragments on the soil surface: 1 to 5 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Quartzite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; stony loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Foolhen and similar soils: 10 percent
Gateview and similar soils: 10 percent
Bearmouth and similar soils: 5 percent
Wichup and similar soils: 5 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gateview
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- High windthrow hazard
- Low bearing strength

Wichup
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

467P—Elve-Gambler-Sebud families, complex, ice-margin slopes

Setting

Elevation: 6,660 to 8,310
Mean annual precipitation: 16 to 35 inches
Frost-free period: 30 to 60 days

Component Description

Elve and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Quartzite till
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly sandy loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Gambler and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/heartleaf arnica

- Douglas-fir/white spirea
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge

Surface layer texture: Loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Quartzite till
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 14 inches; loam
E/Bt1—14 to 22 inches; gravelly clay loam
E/Bt2—22 to 60 inches; very cobbly clay loam

Sebud and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/elk sedge
- Douglas-fir/pinegrass
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Quartzite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 4 inches; cobbly loam
A2—4 to 11 inches; very stony sandy loam
Bw1—11 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Libeg and similar soils: 10 percent
Philipsburg and similar soils: 10 percent

Management Considerations

Elve
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gambler
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

468G—Ledgefork-Dunkleber-Wichup families, complex, ice-margin slopes

Setting

Elevation: 7,480 to 8,160
Mean annual precipitation: 25 to 29 inches
Frost-free period: 30 to 70 days

Component Description

Ledgefork and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Haplocryolls
Landform: Ice-margin mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0 to 3 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Alluvium
- Granite till

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches

Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Dunkleber and similar soils
Composition: 20 percent
Taxonomic class: Euic Typic Cryofibrists
Landform: Ice-margin mountain slopes
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Organic over granite till
Flooding: None
Water table: Present
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi1—0 to 12 inches; mucky peat
Oi2—12 to 52 inches; mucky peat
2C—52 to 60 inches; loam

Wichup and similar soils
Composition: 20 percent
Taxonomic class: Coarse-loamy, mixed, superactive Histic Cryaquolls
Landform:
- Drainageways
- Ice-margin mountain slopes

Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material:
- Alluvium
- Granite glaciofluvial deposits

Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
Oe—0 to 12 inches; peat
A—12 to 24 inches; sandy loam
Bg—24 to 60 inches; gravelly sandy loam

Additional Components

Foolhen and similar soils: 10 percent
Lowder and similar soils: 10 percent
Mooseflat and similar soils: 10 percent

Management Considerations

Ledgefork
- High windthrow hazard
- Low bearing strength

Dunkleber
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Wichup
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

521E—Beeftrail-Marcetta-Woodhurst families, complex, gentle mountain slopes

Setting

Elevation: 6,330 to 8,410
Mean annual precipitation: 16 to 39 inches
Frost-free period: 30 to 70 days

Component Description

Beeftrail and similar soils
Composition: 45 percent
Taxonomic class: Sandy, mixed Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland

Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Coarse sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
A—0 to 7 inches; coarse sandy loam
Bw—7 to 22 inches; gravelly coarse sandy loam
BC—22 to 60 inches; gravelly loamy coarse sand

Marcetta and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.5 inches
Typical profile:
A1—0 to 10 inches; gravelly loam
A2—10 to 17 inches; very gravelly loam
Bw—17 to 48 inches; very gravelly loam
C—48 to 60 inches; very gravelly loam

Woodhurst and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 16 inches; gravelly loam

Bt1—16 to 30 inches; very cobbly clay loam
Bt2—30 to 60 inches; extremely cobbly clay loam

Additional Components

Shadow and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Beeftrail
- High windthrow hazard

Marcetta
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shadow
- High windthrow hazard

Rock outcrop
- Nonsoil material

521P—Shadow-Beeftrail-Sebud families, complex, gentle mountain slopes

Setting

Elevation: 6,400 to 8,200
Mean annual precipitation: 16 to 29 inches
Frost-free period: 30 to 60 days

Component Description

Shadow and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches

Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 5 inches; very cobbly sandy loam
E—5 to 19 inches; very cobbly sandy loam
Bw—19 to 32 inches; extremely cobbly sandy loam
BC—32 to 60 inches; extremely cobbly sandy loam

Beeftrail and similar soils
Composition: 25 percent
Taxonomic class: Sandy, mixed Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/elk sedge
- Douglas-fir/pinegrass
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Coarse sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; coarse sandy loam
Bw—8 to 22 inches; gravelly coarse sandy loam
BC—22 to 60 inches; gravelly loamy coarse sand

Sebud and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/white spirea
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 4 inches; very stony sandy loam
A2—4 to 11 inches; very stony sandy loam

Bw1—11 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Comad and similar soils: 5 percent
Rock outcrop: 5 percent
Woodhurst and similar soils: 5 percent

Management Considerations

Shadow
- High windthrow hazard

Beeftrail
- High windthrow hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Comad
- High windthrow hazard

Rock outcrop
- Nonsoil material

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

521S—Elkner-Garlet families, complex, gentle mountain slopes

Setting

Elevation: 6,540 to 9,450
Mean annual precipitation: 21 to 41 inches
Frost-free period: 20 to 60 days

Component Description

Elkner and similar soils
Composition: 60 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches

Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 10 inches; stony sandy loam
E2—10 to 19 inches; stony sandy loam
E and Bt—19 to 39 inches; gravelly coarse sandy loam
BC—39 to 60 inches; stony loamy coarse sand

Garlet and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Additional Components

Comad and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Elkner
- High windthrow hazard

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Comad
- High windthrow hazard

Rock outcrop
- Nonsoil material

521X—Libeg-Sebud-Shadow families, complex, gentle mountain slopes

Setting

Elevation: 6,200 to 9,170
Mean annual precipitation: 20 to 41 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
A—0 to 10 inches; very cobbly sandy loam
Bt1—10 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery sandy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Sebud and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
A1—0 to 4 inches; very stony sandy loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Shadow and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland

Plant associations:
- Douglas-fir/Idaho fescue
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 5 inches; very cobbly sandy loam
E—5 to 19 inches; very cobbly sandy loam
Bw—19 to 32 inches; extremely cobbly sandy loam
BC—32 to 60 inches; extremely cobbly sandy loam

Additional Components

Rock outcrop: 10 percent
Comad and similar soils: 5 percent
Marcetta and similar soils: 5 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shadow
- High windthrow hazard

Rock outcrop
- Nonsoil material

Comad
- High windthrow hazard

Marcetta
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

522C—Wander-Wetopa-Wesdy families, complex, gentle mountain slopes

Setting

Elevation: 7,050 to 9,470
Mean annual precipitation: 25 to 43 inches
Frost-free period: 20 to 60 days

Component Description

Wander and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
A—0 to 6 inches; gravelly loam
Bt1—6 to 16 inches; very cobbly loam
Bt2—16 to 30 inches; very cobbly clay loam
BC—30 to 60 inches; extremely cobbly loam

Wetopa and similar soils
Composition: 30 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches

Typical profile:
A—0 to 10 inches; clay loam
Bt—10 to 34 inches; clay
BC—34 to 60 inches; clay loam

Wesdy and similar soils
Composition: 25 percent
Taxonomic class: Clayey-skeletal, smectitic Typic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
A—0 to 10 inches; very gravelly loam
Bt1—10 to 33 inches; very gravelly clay
Bt2—33 to 60 inches; very cobbly clay loam

Additional Components

Foolhen and similar soils: 10 percent

Management Considerations

Wander
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wesdy
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

522D—Foolhen, rarely flooded-Silas-Vitroff complex, 2 to 15 percent slopes

Setting

Elevation: 5,590 to 6,890
Mean annual precipitation: 15 to 19 inches
Frost-free period: 50 to 70 days

Component Description

Foolhen and similar soils
Composition: 40 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls
Landform: Lower edges of drainageways
Slope: 2 to 4 percent
Plant associations: None noted
Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material: Alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
Oe—0 to 4 inches; mucky peat
A—4 to 16 inches; loam
Bw—16 to 40 inches; sandy clay loam
Cg—40 to 72 inches; gravelly coarse sandy loam

Silas and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Cumulic Haplocryolls
Landform: Higher edges of drainageways
Slope: 2 to 8 percent
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Moderately well drained
Parent material: Alluvium
Flooding: None
Water table: Present
Available water capacity to 60 inch depth: Approximately 11.2 inches
Typical profile:
Oe—0 to 2 inches; moderately decomposed plant material
A1—2 to 18 inches; loam
A2—18 to 38 inches; loam
C—38 to 72 inches; loam

Vitroff and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs
Landform: Footslope on mountain slopes
Slope: 4 to 15 percent
Plant associations: None noted

Surface layer texture: Ashy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Colluvium
- Volcanic alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; ashy loam
E2—7 to 13 inches; gravelly ashy sandy loam
Bt and E—13 to 21 inches; gravelly ashy sandy clay loam
Bt—21 to 33 inches; gravelly ashy sandy clay loam
BC—33 to 60 inches; very gravelly ashy sandy loam

Additional Components

Mooseflat and similar soils: 10 percent

Management Considerations

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Silas
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Vitroff
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

522E—Adel-Redchief-Woodhurst families, complex, gentle mountain slopes

Setting

Elevation: 6,310 to 9,650
Mean annual precipitation: 20 to 41 inches
Frost-free period: 30 to 70 days

Component Description

Adel and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Gentle mountain slopes

Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 32 inches; loam
Bw—32 to 60 inches; gravelly loam

Redchief and similar soils
Composition: 25 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
A—0 to 10 inches; very gravelly loam
Bt1—10 to 33 inches; very gravelly clay
Bt2—33 to 60 inches; very cobbly clay loam

Woodhurst and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 16 inches; gravelly loam
Bt1—16 to 30 inches; very cobbly clay loam
Bt2—30 to 60 inches; extremely cobbly clay loam

Shadow and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.7 inches
Typical profile:
A—0 to 5 inches; very cobbly sandy loam
E—5 to 19 inches; very cobbly sandy loam
Bw—19 to 32 inches; extremely cobbly sandy loam
BC—32 to 60 inches; extremely cobbly sandy loam

Additional Components

Elkner and similar soils: 10 percent

Management Considerations

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shadow
- High windthrow hazard

Elkner
- High windthrow hazard

522P—Tiban-Wetopa families, complex, gentle mountain slopes

Setting

Elevation: 6,360 to 7,130
Mean annual precipitation: 21 to 25 inches
Frost-free period: 30 to 60 days

Component Description

Tiban and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; gravelly loam
Bw—8 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Wetopa and similar soils
Composition: 30 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/elk sedge
- Douglas-fir/pinegrass
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.6 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 11 inches; clay loam
Bt—11 to 34 inches; clay
BC—34 to 60 inches; clay loam

Additional Components

Adel and similar soils: 10 percent

Management Considerations

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

522S—Elkner-Tenrag-Garlet families, complex, gentle mountain slopes

Setting

Elevation: 6,560 to 9,330
Mean annual precipitation: 21 to 47 inches
Frost-free period: 20 to 40 days

Component Description

Elkner and similar soils
Composition: 40 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 10 inches; stony sandy loam
E2—10 to 19 inches; stony sandy loam
E and Bt—19 to 39 inches; gravelly coarse sandy loam
BC—39 to 60 inches; stony loamy coarse sand

Tenrag and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Garlet and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/elk sedge
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Additional Components

Relyea and similar soils: 10 percent

Management Considerations

Elkner
- High windthrow hazard

Tenrag
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Relyea
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

522Xr—Shadow-Elkner families-Rock outcrop association, gentle mountain slopes

Setting

Elevation: 6,480 to 7,960
Mean annual precipitation: 16 to 29 inches
Frost-free period: 30 to 70 days

Component Description

Shadow and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland

Plant associations:
- Douglas-fir/snowberry
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 5 inches; very cobbly sandy loam
E—5 to 19 inches; very cobbly sandy loam
Bw—19 to 32 inches; extremely cobbly sandy loam
BC—32 to 60 inches; extremely cobbly sandy loam

Elkner and similar soils
Composition: 20 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/white spirea
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry
- Douglas-fir/elk sedge
- Douglas-fir/heartleaf arnica

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
E1—0 to 10 inches; stony sandy loam
E2—10 to 19 inches; stony sandy loam
E and Bt—19 to 39 inches; gravelly coarse sandy loam
BC—39 to 60 inches; stony loamy coarse sand

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Gambler and similar soils: 10 percent

Management Considerations

Shadow
- High windthrow hazard

Elkner
- High windthrow hazard

Rock outcrop
- Nonsoil material

Gambler
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

523C—Wetopa-Philipsburg-Prudy families, complex, gentle mountain slopes

Setting

Elevation: 7,040 to 8,740
Mean annual precipitation: 18 to 33 inches
Frost-free period: 20 to 60 days

Component Description

Wetopa and similar soils
Composition: 40 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches
Typical profile:
A—0 to 10 inches; clay loam
Bt—10 to 34 inches; clay
BC—34 to 60 inches; clay loam

Philipsburg and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls

Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.3 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Prudy and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.6 inches
Typical profile:
A—0 to 10 inches; loam
Bk—10 to 60 inches; gravelly loam

Finn and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Drainageway on gentle mountain slopes
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Shale alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.5 inches

Typical profile:
Oi—0 to 2 inches; peat
A—2 to 10 inches; loam
Bw1—10 to 16 inches; very gravelly loam
Bw2—16 to 22 inches; very gravelly loam
C—22 to 60 inches; very cobbly sandy clay loam

Management Considerations

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Prudy
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

523E—Rooset-Woodhurst-Tiban families, complex, gentle mountain slopes

Setting

Elevation: 6,030 to 9,080
Mean annual precipitation: 16 to 35 inches
Frost-free period: 30 to 70 days

Component Description

Rooset and similar soils
Composition: 40 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.9 inches

Typical profile:
A—0 to 7 inches; gravelly loam
AB—7 to 11 inches; gravelly clay loam
Bt—11 to 21 inches; very gravelly clay loam
Bk1—21 to 30 inches; very gravelly clay loam
Bk2—30 to 60 inches; very gravelly clay loam

Woodhurst and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
• *Artemisia tridentata/Festuca idahoensis* h.t.
• *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 16 inches; gravelly loam
Bt1—16 to 30 inches; very cobbly clay loam
Bt2—30 to 60 inches; extremely cobbly clay loam

Tiban and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
• *Artemisia tridentata/Festuca idahoensis* h.t.
• *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 7 inches; gravelly loam
Bw—7 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Finn and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Drainageway on gentle mountain slopes
Slope: 0 to 10 percent

Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Shale alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
Oi—0 to 2 inches; peat
A—2 to 10 inches; loam
Bw1—10 to 16 inches; very gravelly loam
Bw2—16 to 22 inches; very gravelly loam
C—22 to 60 inches; very cobbly sandy clay loam

Management Considerations

Rooset
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

523P—Prudy-Maciver-Philipsburg families, complex, gentle mountain slopes

Setting

Elevation: 6,240 to 7,170
Mean annual precipitation: 18 to 27 inches
Frost-free period: 30 to 60 days

Component Description

Prudy and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Haplocryolls

Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 10 inches; loam
Bk—10 to 60 inches; gravelly loam

Maciver and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; loam
Bt—8 to 12 inches; very gravelly clay loam
Bk—12 to 60 inches; very gravelly loam

Philipsburg and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea

- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.2 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; loam
Bt—8 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Additional Components

Elkner and similar soils: 10 percent
Wetopa and similar soils: 10 percent
Adel and similar soils: 5 percent
Woodhurst and similar soils: 5 percent

Management Considerations

Prudy
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elkner
- High windthrow hazard

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

523S—Elkner-Garlet-Yellowmule families, complex, gentle mountain slopes

Setting

Elevation: 7,540 to 8,720
Mean annual precipitation: 29 to 33 inches
Frost-free period: 20 to 60 days

Component Description

Elkner and similar soils
Composition: 30 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 10 inches; stony sandy loam
E2—10 to 19 inches; stony sandy loam
E and Bt—19 to 39 inches; gravelly coarse sandy loam
BC—39 to 60 inches; stony loamy coarse sand

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam

Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Yellowmule and similar soils
Composition: 20 percent
Taxonomic class: Fine, mixed, superactive Eutric Haplocryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; loam
Bt1—11 to 19 inches; clay
Bt2—19 to 48 inches; cobbly clay loam
BC—48 to 72 inches; very cobbly clay loam

Additional Components

Relyea and similar soils: 10 percent
Tenrag and similar soils: 10 percent

Management Considerations

Elkner
- High windthrow hazard

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Yellowmule
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Relyea
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

523X—Woodhurst-Philipsburg-Prudy families, complex, gentle mountain slopes

Setting

Elevation: 6,190 to 8,220
Mean annual precipitation: 16 to 31 inches
Frost-free period: 30 to 70 days

Component Description

Woodhurst and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.-*geranium viscosissimum* phase
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 16 inches; gravelly loam
Bt1—16 to 30 inches; very cobbly clay loam
Bt2—30 to 60 inches; extremely cobbly clay loam

Philipsburg and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.2 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; loam

Bt—8 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Prudy and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.6 inches
Typical profile:
A—0 to 10 inches; loam
Bk—10 to 60 inches; gravelly loam

Additional Components

Bridger and similar soils: 10 percent
Elkner and similar soils: 5 percent
Elve and similar soils: 5 percent
Wetopa and similar soils: 5 percent

Management Considerations

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Prudy
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elkner
- High windthrow hazard

Elve
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

524C—Adel-Levengood-Trout Creek families, complex, gentle mountain slopes

Setting

Elevation: 6,410 to 9,710
Mean annual precipitation: 20 to 47 inches
Frost-free period: 20 to 60 days

Component Description

Adel and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 32 inches; loam
Bw—32 to 60 inches; gravelly loam

Levengood and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Pachic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
A—0 to 36 inches; very gravelly loam
Bk—36 to 60 inches; very cobbly sandy loam

Trout Creek and similar soils
Composition: 25 percent
Taxonomic class: Fine, smectitic Typic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent

Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
A—0 to 9 inches; clay loam
Bt—9 to 24 inches; gravelly clay loam
Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; very gravelly loam

Additional Components

Midfork and similar soils: 10 percent
Tibson and similar soils: 10 percent

Management Considerations

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Levengood
- High windthrow hazard
- Surface compaction hazard

Trout Creek
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Midfork
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

524E—Tiban-Raynesford-Woodhurst families, complex, gentle mountain slopes

Setting

Elevation: 6,250 to 9,130
Mean annual precipitation: 16 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Tiban and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 7 inches; gravelly loam
Bw—7 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Raynesford and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, carbonatic Calcic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.1 inches
Typical profile:
A—0 to 16 inches; gravelly loam
Bk1—16 to 28 inches; gravelly loam
Bk2—28 to 60 inches; very gravelly loam

Woodhurst and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 16 inches; gravelly loam
Bt1—16 to 30 inches; very cobbly clay loam
Bt2—30 to 60 inches; extremely cobbly clay loam

Additional Components

Philipsburg and similar soils: 10 percent
Rooset and similar soils: 10 percent
Finn and similar soils: 5 percent

Management Considerations

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Raynesford
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rooset
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

524P—Tampico-Bridger-Maciver families, complex, gentle mountain slopes

Setting

Elevation: 6,970 to 8,490
Mean annual precipitation: 18 to 33 inches
Frost-free period: 30 to 60 days

Component Description

Tampico and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/white spirea
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 11 inches; loam
Bw1—11 to 32 inches; loam
Bw2—32 to 60 inches; gravelly loam

Bridger and similar soils
Composition: 25 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/mountain snowberry
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 9 inches; clay loam
Bt—9 to 24 inches; gravelly clay loam
Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; very gravelly loam

Maciver and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Gentle mountain slopes

Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/white spirea
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/mountain snowberry
- Douglas-fir/heartleaf arnica

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; loam
Bt—8 to 12 inches; very gravelly clay loam
Bk—12 to 60 inches; very gravelly loam

Additional Components

Raynesford and similar soils: 10 percent
Tiban and similar soils: 10 percent
Tibson and similar soils: 5 percent

Management Considerations

Tampico
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Raynesford
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

524S—Garlet-Swifton-Tenrag families, complex, gentle mountain slopes

Setting

Elevation: 6,680 to 9,610
Mean annual precipitation: 18 to 45 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Swifton and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Palecryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 10 inches; gravelly loam

B/E—10 to 43 inches; gravelly sandy clay loam
Bt—43 to 72 inches; very gravelly sandy clay loam

Tenrag and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Additional Components

Relyea and similar soils: 10 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Swifton
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Relyea
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

524V—Garlet-Relyea-Yellowmule families, complex, gentle mountain slopes

Setting

Elevation: 7,510 to 9,550
Mean annual precipitation: 20 to 41 inches
Frost-free period: 20 to 40 days

Component Description

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Relyea and similar soils
Composition: 25 percent
Taxonomic class: Clayey-skeletal, mixed, superactive Eutric Glossocryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- whitebark pine
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 6 inches; gravelly loam
Bt/E—6 to 9 inches; very gravelly clay loam

Bt—9 to 18 inches; very gravelly clay loam
Btk—18 to 31 inches; very gravelly clay loam
Bk—31 to 60 inches; very cobbly clay loam

Yellowmule and similar soils
Composition: 25 percent
Taxonomic class: Fine, mixed, superactive Eutric Haplocryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; loam
Bt1—11 to 19 inches; clay
Bt2—19 to 48 inches; cobbly clay loam
BC—48 to 72 inches; very cobbly clay loam

Additional Components

Rock outcrop: 10 percent
Swifton and similar soils: 10 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Relyea
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Yellowmule
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Swifton
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

524X—Rooset-Bridger-Montez families, complex, gentle mountain slopes

Setting

Elevation: 6,060 to 9,020
Mean annual precipitation: 18 to 39 inches
Frost-free period: 30 to 70 days

Component Description

Rooset and similar soils
Composition: 30 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.-*geranium viscosissimum* phase
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.9 inches
Typical profile:
A—0 to 7 inches; gravelly loam
AB—7 to 11 inches; gravelly clay loam
Bt—11 to 21 inches; very gravelly clay loam
Bk1—21 to 30 inches; very gravelly clay loam
Bk2—30 to 60 inches; very gravelly clay loam

Bridger and similar soils
Composition: 25 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
A—0 to 9 inches; clay loam
Bt—9 to 24 inches; gravelly clay loam
Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; very gravelly loam

Montez and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Palecryalfs
Landform: Gentle mountain slopes

Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/white spirea
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 25 inches; loam
B/E—25 to 55 inches; very gravelly sandy clay loam
Bt—55 to 72 inches; gravelly sandy clay loam

Additional Components

Elve and similar soils: 10 percent
Prudy and similar soils: 10 percent

Management Considerations

Rooset
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Montez
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Prudy
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

526C—Tibson-Levengood families, complex, gentle mountain slopes

Setting

Elevation: 6,590 to 9,640
Mean annual precipitation: 18 to 45 inches
Frost-free period: 20 to 60 days

Component Description

Tibson and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Levengood and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Pachic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
A—0 to 36 inches; very gravelly loam
Bk—36 to 60 inches; very cobbly sandy loam

Additional Components

Trout Creek and similar soils: 10 percent
Hanson and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Levengood
- High windthrow hazard
- Surface compaction hazard

Trout Creek
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

526E—Hanson-Bridger-Maciver families, complex, gentle mountain slopes

Setting

Elevation: 6,030 to 9,570
Mean annual precipitation: 13 to 38 inches
Frost-free period: 30 to 70 days

Component Description

Hanson and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Bridger and similar soils
Composition: 20 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform: Gentle mountain slopes

Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
A—0 to 9 inches; clay loam
Bt—9 to 24 inches; gravelly clay loam
Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; very gravelly loam

Maciver and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Additional Components

Levengood and similar soils: 10 percent
Tiban and similar soils: 10 percent

Management Considerations

Hanson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Levengood
- High windthrow hazard
- Surface compaction hazard

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

526P—Whitore-Hanson-Tibson families, complex, gentle mountain slopes

Setting

Elevation: 6,850 to 8,490
Mean annual precipitation: 16 to 33 inches
Frost-free period: 30 to 60 days

Component Description

Whitore and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Hanson and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge

- Douglas-fir/white spirea
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Tibson and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Additional Components

Rock outcrop: 10 percent
Skaggs and similar soils: 10 percent

Management Considerations

Whitore
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Skaggs
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

526S—Whitore-Helmville families, complex, gentle mountain slopes

Setting

Elevation: 6,580 to 9,310
Mean annual precipitation: 16 to 61 inches
Frost-free period: 20 to 60 days

Component Description

Whitore and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Helmville and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica

- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Additional Components

Tropal and similar soils: 10 percent
Yellowmule and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Whitore
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Helmville
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tropal
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Yellowmule
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

526Sr—Whitore-Helmville families-Rock outcrop complex, gentle mountain slopes

Setting

Elevation: 7,510 to 8,400
Mean annual precipitation: 25 to 33 inches
Frost-free period: 20 to 60 days

Component Description

Whitore and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Helmville and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Tropal and similar soils: 10 percent

Management Considerations

Whitore
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Helmville
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Tropal
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

526X—Tibson-Whitore-Hanson families, complex, gentle mountain slopes

Setting

Elevation: 6,180 to 9,100
Mean annual precipitation: 16 to 43 inches
Frost-free period: 30 to 70 days

Component Description

Tibson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Whitore and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Gentle mountain slopes

Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Hanson and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Additional Components

Starley and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Starley
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

527C—Wander-Woodhurst-Philipsburg families, complex, gentle mountain slopes

Setting

Elevation: 6,950 to 9,750
Mean annual precipitation: 20 to 47 inches
Frost-free period: 20 to 60 days

Component Description

Wander and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
A—0 to 6 inches; very cobbly sandy loam
Bt1—6 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery clay loam
BC—30 to 60 inches; very cobbly sandy loam

Woodhurst and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Loam

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 16 inches; gravelly loam
Bt1—16 to 30 inches; very cobbly clay loam
Bt2—30 to 60 inches; extremely cobbly clay loam

Philipsburg and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.9 inches
Typical profile:
A—0 to 7 inches; cobbly loam
Bt—7 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Additional Components

Trout Creek and similar soils: 10 percent

Management Considerations

Wander
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Trout Creek
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

527E—Bearmouth-Sebud-Gateview families, complex, gentle mountain slopes

Setting

Elevation: 6,040 to 8,930
Mean annual precipitation: 16 to 37 inches
Frost-free period: 30 to 70 days

Component Description

Bearmouth and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Sebud and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; cobbly loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Gateview and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 39 inches; very gravelly loam
2C—39 to 60 inches; very cobbly sand

Additional Components

Libeg and similar soils: 10 percent
Philipsburg and similar soils: 10 percent

Management Considerations

Bearmouth
- High windthrow hazard
- Low bearing strength

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gateview
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

527P—Howardsville-Elve-Libeg families, complex, gentle mountain slopes

Setting

Elevation: 5,920 to 8,940
Mean annual precipitation: 18 to 35 inches
Frost-free period: 30 to 60 days

Component Description

Howardsville and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E--1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Elve and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly sandy loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Libeg and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Gentle mountain slopes

Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:

Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 11 inches; very cobbly sandy loam
Bt1—11 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery clay loam
BC—30 to 60 inches; very cobbly sandy loam

Additional Components

Gambler and similar soils: 10 percent
Sebud and similar soils: 10 percent

Management Considerations

Howardsville
- High windthrow hazard
- Low bearing strength

Elve
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gambler
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

527S—Garlet-Worock-Como families, complex, gentle mountain slopes

Setting

Elevation: 6,120 to 9,290
Mean annual precipitation: 16 to 35 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Worock and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam

Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/elk sedge
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Additional Components

Relyea and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- High windthrow hazard
- Low bearing strength

Relyea
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

527Sa—Bata-Holloway-Garlet families, complex, gentle mountain slopes

Setting

Elevation: 6,710 to 9,020
Mean annual precipitation: 23 to 41 inches
Frost-free period: 30 to 60 days

Component Description

Bata and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 12 inches; gravelly ashy silt loam
2E/Bt—12 to 23 inches; very gravelly sandy loam
2Bt—23 to 60 inches; very gravelly sandy clay loam

Holloway and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.5 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 13 inches; gravelly ashy silt loam
2E—13 to 20 inches; extremely gravelly loam

2E and Bt—20 to 55 inches; extremely gravelly loam
2C—55 to 60 inches; extremely gravelly loam

Garlet and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Additional Components

Como and similar soils: 10 percent

Management Considerations

Bata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Holloway
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- High windthrow hazard
- Low bearing strength

527V—Leighcan-Como-Worock families, complex, gentle mountain slopes

Setting

Elevation: 7,020 to 9,580
Mean annual precipitation: 20 to 47 inches
Frost-free period: 20 to 40 days

Component Description

Leighcan and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam

BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Worock and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Leighcan
- High windthrow hazard

Como
- High windthrow hazard
- Low bearing strength

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

527X—Elve-Libeg-Sebud families, complex, gentle mountain slopes

Setting

Elevation: 6,260 to 8,690
Mean annual precipitation: 20 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Elve and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/white spirea
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly sandy loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Libeg and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
A—0 to 10 inches; very cobbly sandy loam
Bt1—10 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery clay loam
BC—30 to 60 inches; very cobbly sandy loam

Sebud and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; cobbly loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Gambler and similar soils: 10 percent
Howardsville and similar soils: 5 percent

Management Considerations

Elve
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gambler
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Howardsville
- High windthrow hazard
- Low bearing strength

528E—Beeftrail-Bearmouth-Libeg families, complex, gentle mountain slopes

Setting

Elevation: 5,960 to 8,140
Mean annual precipitation: 16 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Beeftrail and similar soils
Composition: 40 percent
Taxonomic class: Sandy, mixed Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland

Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Coarse sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
A—0 to 10 inches; coarse sandy loam
Bw—10 to 21 inches; gravelly coarse sandy loam
BC—21 to 60 inches; gravelly loamy coarse sand

Bearmouth and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Libeg and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.4 inches
Typical profile:
A—0 to 10 inches; very cobbly sandy loam
Bt—10 to 22 inches; very channery loam
BC—22 to 60 inches; very cobbly sandy loam

Additional Components

Rock outcrop: 10 percent
Alta and similar soils: 5 percent
Marcetta and similar soils: 5 percent

Management Considerations

Beeftrail
- High windthrow hazard

Bearmouth
- High windthrow hazard
- Low bearing strength

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Alta
- High windthrow hazard
- Surface boulders

Marcetta
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

528P—Tepecreek-Comad-Libeg families, complex, gentle mountain slopes

Setting

Elevation: 6,190 to 7,760
Mean annual precipitation: 16 to 35 inches
Frost-free period: 30 to 60 days

Component Description

Tepecreek and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very gravelly sandy clay loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches
- Lithic bedrock: 30 to 60 inches

Drainage class: Well drained
Parent material: Colluvium over granite residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 10 inches; very gravelly sandy clay loam
Bt—10 to 20 inches; very gravelly sandy clay loam
BC—20 to 37 inches; very gravelly coarse sandy loam
Cr—37 to 54 inches; bedrock
R—54 to 60 inches; bedrock

Comad and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Stony loamy sand
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; stony loamy sand
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Libeg and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 11 inches; very cobbly sandy loam
Bt—11 to 22 inches; very channery loam
BC—22 to 60 inches; very cobbly sandy loam

Additional Components

Bearmouth and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Tepecreek
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Comad
- High windthrow hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- High windthrow hazard
- Low bearing strength

Rock outcrop
- Nonsoil material

528S—Como-Worock-Comad families, complex, gentle mountain slopes

Setting

Elevation: 6,230 to 8,700
Mean annual precipitation: 18 to 35 inches
Frost-free period: 20 to 60 days

Component Description

Como and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Worock and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/elk sedge
- subalpine fir/heartleaf arnica
- subalpine fir/pinegrass

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Comad and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/elk sedge
- subalpine fir/heartleaf arnica
- subalpine fir/pinegrass

Surface layer texture: Stony loamy sand
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; stony loamy sand
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Additional Components

Rock outcrop: 10 percent

Management Considerations

Como
- High windthrow hazard
- Low bearing strength

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Comad
- High windthrow hazard

Rock outcrop
- Nonsoil material

528Sa—Petty-Como-Bata families, complex, gentle mountain slopes

Setting

Elevation: 6,300 to 9,750
Mean annual precipitation: 21 to 47 inches
Frost-free period: 30 to 60 days

Component Description

Petty and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 5 inches; ashy silt loam
Bw1—5 to 10 inches; ashy silt loam
Bw2—10 to 14 inches; ashy silt loam
2Bw3—14 to 22 inches; very stony loam
2BC—22 to 31 inches; very cobbly loam
2C—31 to 60 inches; very cobbly sandy loam

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Bata and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 12 inches; gravelly ashy silt loam
2E/Bt—12 to 23 inches; very gravelly sandy loam
2Bt—23 to 60 inches; very gravelly sandy clay loam

Additional Components

Garlet and similar soils: 10 percent

Management Considerations

Petty
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer

- Low bearing strength
- Surface compaction hazard

Como
- High windthrow hazard
- Low bearing strength

Bata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

528V—Comad-Leighcan-Como families, complex, gentle mountain slopes

Setting

Elevation: 8,400 to 9,070
Mean annual precipitation: 35 to 37 inches
Frost-free period: 20 to 40 days

Component Description

Comad and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; stony sandy loam
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Leighcan and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Como and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Additional Components

Rock outcrop: 10 percent
Matcher and similar soils: 5 percent

Management Considerations

Comad
- High windthrow hazard

Leighcan
- High windthrow hazard

Como
- High windthrow hazard
- Low bearing strength

Rock outcrop
- Nonsoil material

Matcher
- High windthrow hazard

528X—Tepecreek-Beeftrail-Bearmouth families, complex, gentle mountain slopes

Setting

Elevation: 6,040 to 8,050
Mean annual precipitation: 16 to 29 inches
Frost-free period: 30 to 70 days

Component Description

Tepecreek and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Very gravelly sandy clay loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches
- Lithic bedrock: 30 to 60 inches

Drainage class: Well drained
Parent material: Colluvium over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 10 inches; very gravelly sandy clay loam
Bt—10 to 20 inches; very gravelly sandy clay loam
BC—20 to 37 inches; very gravelly coarse sandy loam
Cr—37 to 54 inches; bedrock
R—54 to 60 inches; bedrock

Beeftrail and similar soils
Composition: 30 percent
Taxonomic class: Sandy, mixed Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent

Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Coarse sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
A—0 to 10 inches; coarse sandy loam
Bw—10 to 21 inches; gravelly coarse sandy loam
BC—21 to 60 inches; gravelly loamy coarse sand

Bearmouth and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Additional Components

Comad and similar soils: 5 percent
Libeg and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Tepecreek
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Beeftrail
- High windthrow hazard

Bearmouth
- High windthrow hazard
- Low bearing strength

Comad
- High windthrow hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

531E—Bearmouth-Sebud families, complex, moderately steep mountain slopes

Setting

Elevation: 6,190 to 9,900
Mean annual precipitation: 13 to 38 inches
Frost-free period: 30 to 70 days

Component Description

Bearmouth and similar soils
Composition: 45 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Sebud and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
A1—0 to 4 inches; very stony sandy loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Rock outcrop: 10 percent
Beeftrail and similar soils: 5 percent
Elkner and similar soils: 5 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Beeftrail
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

531O—Bearmouth-Cheadle-Sebud families, complex, moderately steep mountain slopes

Setting

Elevation: 6,080 to 7,920
Mean annual precipitation: 18 to 29 inches
Frost-free period: 20 to 60 days

Component Description

Bearmouth and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained

Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; very cobbly loam
Bw—8 to 15 inches; very cobbly sandy loam
C—15 to 60 inches; very cobbly loamy sand

Cheadle and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Cobbly loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material:
- Gneiss residuum
- Gneiss colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 1.3 inches
Typical profile:
A—0 to 7 inches; cobbly loam
Bk—7 to 12 inches; very stony sandy loam
R—12 to 60 inches; bedrock

Sebud and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 4 inches; very stony sandy loam
A2—4 to 11 inches; very stony sandy loam
Bw1—11 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Cheadle
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

531P—Bearmouth-Libeg-Sebud families, complex, moderately steep mountain slopes

Setting

Elevation: 5,820 to 9,220
Mean annual precipitation: 16 to 39 inches
Frost-free period: 30 to 60 days

Component Description

Bearmouth and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; very cobbly loam
Bw—8 to 15 inches; very cobbly sandy loam
C—15 to 60 inches; very cobbly loamy sand

Libeg and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 11 inches; very cobbly loam
Bt1—11 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery clay loam
BC—30 to 60 inches; very cobbly sandy loam

Sebud and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 4 inches; very stony sandy loam
A2—4 to 11 inches; very stony sandy loam

Bw1—11 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Cheadle and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cheadle
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

531S—Como-Garlet families, complex, moderately steep mountain slopes

Setting

Elevation: 6,090 to 9,460
Mean annual precipitation: 18 to 49 inches
Frost-free period: 20 to 60 days

Component Description

Como and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Additional Components

Elkner and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

531V—Como-Comad families-Rock outcrop complex, moderately steep mountain slopes

Setting

Elevation: 7,370 to 9,760
Mean annual precipitation: 18 to 43 inches
Frost-free period: 20 to 40 days

Component Description

Como and similar soils
Composition: 55 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Comad and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; stony sandy loam
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

531X—Bearmouth-Alta-Marcetta families, complex, moderately steep mountain slopes

Setting

Elevation: 5,960 to 9,750
Mean annual precipitation: 13 to 38 inches
Frost-free period: 30 to 70 days

Component Description

Bearmouth and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls

Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Alta and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Pachic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.-*geranium viscosissimum* phase
Surface layer texture: Very bouldery coarse sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
A—0 to 17 inches; very bouldery coarse sandy loam
C—17 to 60 inches; very stony loamy coarse sand

Marcetta and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.-*geranium viscosissimum* phase
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.5 inches
Typical profile:
A1—0 to 10 inches; gravelly loam
A2—10 to 17 inches; very gravelly loam
Bw—17 to 48 inches; very gravelly loam
C—48 to 60 inches; very gravelly loam

Additional Components

Howardsville and similar soils: 10 percent
Shadow and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Alta
- Steep slopes
- Erodible surface
- High windthrow hazard
- Surface boulders
- Cutslope slumping
- Cutslope erosion

Marcetta
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Howardsville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

532C—Wetopa-Wesdy-Midfork families, complex, moderately steep mountain slopes

Setting

Elevation: 7,390 to 9,710
Mean annual precipitation: 23 to 41 inches
Frost-free period: 20 to 60 days

Component Description

Wetopa and similar soils
Composition: 65 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls

Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches
Typical profile:
A—0 to 10 inches; clay loam
Bt—10 to 34 inches; clay
BC—34 to 60 inches; clay loam

Wesdy and similar soils
Composition: 20 percent
Taxonomic class: Clayey-skeletal, smectitic Typic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
A—0 to 10 inches; very gravelly loam
Bt1—10 to 33 inches; very gravelly clay
Bt2—33 to 60 inches; very cobbly clay loam

Midfork and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted

Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very gravelly loam

Management Considerations

Wetopa
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wesdy
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Midfork
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

532E—Libeg-Redchief-Tiban families, complex, moderately steep mountain slopes

Setting

Elevation: 5,710 to 9,650
Mean annual precipitation: 15 to 36 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
A—0 to 10 inches; gravelly loam
Bt1—10 to 16 inches; very flaggy loam
Bt2—16 to 30 inches; very flaggy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Redchief and similar soils
Composition: 30 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
A—0 to 10 inches; very gravelly loam
Bt1—10 to 33 inches; very gravelly clay
Bt2—33 to 60 inches; very cobbly clay loam

Tiban and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None

Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 7 inches; gravelly loam
Bw—7 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Additional Components

Elkner and similar soils: 10 percent

Management Considerations

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

532P—Libeg-Tampico-Redchief families, complex, moderately steep mountain slopes

Setting

Elevation: 5,870 to 8,280
Mean annual precipitation: 15 to 33 inches
Frost-free period: 30 to 60 days

Component Description

Libeg and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/elk sedge
- Douglas-fir/pinegrass

- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 11 inches; gravelly loam
Bt1—11 to 16 inches; very flaggy loam
Bt2—16 to 30 inches; very flaggy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Tampico and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 11 inches; loam
Bw1—11 to 32 inches; loam
Bw2—32 to 60 inches; gravelly loam

Redchief and similar soils
Composition: 20 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland

Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:

Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 11 inches; very gravelly loam
Bt1—11 to 33 inches; very gravelly clay
Bt2—33 to 60 inches; very cobbly clay loam

Additional Components

Rock outcrop: 10 percent
Shadow and similar soils: 10 percent

Management Considerations

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tampico
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

532S—Garlet-Tenrag families, complex, moderately steep mountain slopes

Setting

Elevation: 6,710 to 9,200
Mean annual precipitation: 23 to 41 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Tenrag and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

532V—Tenrag-Swifton-Garlet families, complex, moderately steep mountain slopes

Setting

Elevation: 8,120 to 9,630
Mean annual precipitation: 29 to 41 inches
Frost-free period: 20 to 40 days

Component Description

Tenrag and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Swifton and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Palecryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 10 inches; loam
B/E—10 to 43 inches; gravelly sandy clay loam
Bt—43 to 72 inches; very gravelly sandy clay loam

Garlet and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Additional Components

Relyea and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Swifton
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Relyea
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

532X—Libeg-Shadow-Redchief families, complex, moderately steep mountain slopes

Setting

Elevation: 6,060 to 9,140
Mean annual precipitation: 15 to 41 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.-*geranium viscosissimum* phase
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
A—0 to 10 inches; gravelly loam
Bt1—10 to 16 inches; very flaggy loam
Bt2—16 to 30 inches; very flaggy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Shadow and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 5 inches; very cobbly sandy loam
E—5 to 19 inches; very cobbly sandy loam
Bw—19 to 32 inches; extremely cobbly sandy loam
BC—32 to 60 inches; extremely cobbly sandy loam

Redchief and similar soils
Composition: 20 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.-*geranium viscosissimum* phase
Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
A—0 to 10 inches; very gravelly loam
Bt1—10 to 33 inches; very gravelly clay
Bt2—33 to 60 inches; very cobbly clay loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

Redchief
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

533C—Elkner-Bearmouth-Prudy families, complex, moderately steep mountain slopes

Setting

Elevation: 6,470 to 9,570
Mean annual precipitation: 15 to 33 inches
Frost-free period: 20 to 60 days

Component Description

Elkner and similar soils
Composition: 40 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
E1—0 to 10 inches; stony sandy loam
E2—10 to 19 inches; stony sandy loam
E and Bt—19 to 39 inches; gravelly coarse sandy loam
BC—39 to 60 inches; stony loamy coarse sand

Bearmouth and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Prudy and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.6 inches
Typical profile:
A—0 to 10 inches; loam
Bk—10 to 60 inches; gravelly loam

Additional Components

Marcetta and similar soils: 10 percent

Management Considerations

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Prudy
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Marcetta
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

533E—Maciver-Marcetta-Philipsburg families, complex, moderately steep mountain slopes

Setting

Elevation: 6,300 to 9,190
Mean annual precipitation: 15 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Maciver and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland

Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Marcetta and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.5 inches
Typical profile:
A1—0 to 10 inches; gravelly loam
A2—10 to 17 inches; very gravelly loam
Bw—17 to 48 inches; very gravelly loam
C—48 to 60 inches; very gravelly loam

Philipsburg and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.3 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Additional Components

Bearmouth and similar soils: 10 percent
Gambler and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Maciver
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Marcetta
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Gambler
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

533P—Elve-Comad-Gambler families, complex, moderately steep mountain slopes

Setting

Elevation: 6,170 to 7,700
Mean annual precipitation: 15 to 27 inches
Frost-free period: 30 to 60 days

Component Description

Elve and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Comad and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Summit on moderately steep ridges
Slope: 20 to 45 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; stony sandy loam
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Gambler and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland

Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 14 inches; loam
E/Bt1—14 to 22 inches; gravelly clay loam
E/Bt2—22 to 60 inches; very cobbly clay loam

Additional Components

Bearmouth and similar soils: 10 percent
Rock outcrop: 10 percent
Maciver and similar soils: 5 percent

Management Considerations

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Gambler
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Maciver
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

533S—Garlet-Relyea-Tenrag families, complex, moderately steep mountain slopes

Setting

Elevation: 7,250 to 9,490
Mean annual precipitation: 15 to 33 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Relyea and similar soils
Composition: 25 percent
Taxonomic class: Clayey-skeletal, mixed, superactive Eutric Glossocryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 6 inches; gravelly loam
Bt/E—6 to 9 inches; very gravelly clay loam
Bt—9 to 18 inches; very gravelly clay loam
Btk—18 to 31 inches; very gravelly clay loam
Bk—31 to 60 inches; very cobbly clay loam

Tenrag and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Additional Components

Elkner and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Relyea
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

533X—Maciver-Philipsburg-Wepota families, complex, moderately steep mountain slopes

Setting

Elevation: 6,140 to 9,440
Mean annual precipitation: 15 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Maciver and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; loam
Bt—8 to 12 inches; very gravelly clay loam
Bk—12 to 60 inches; very gravelly loam

Philipsburg and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland

Plant associations: Artemisia tridentata/Festuca idahoensis h.t.-*geranium viscosissimum* phase
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.3 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Wetopa and similar soils
Composition: 20 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.-*geranium viscosissimum* phase
Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches
Typical profile:
A—0 to 10 inches; clay loam
Bt—10 to 34 inches; clay
BC—34 to 60 inches; clay loam

Additional Components

Gambler and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Maciver
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wetopa
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Gambler
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

534C—Benteen-Levengood-Maciver families, complex, moderately steep mountain slopes

Setting

Elevation: 6,770 to 10,100
Mean annual precipitation: 21 to 52 inches
Frost-free period: 20 to 60 days

Component Description

Benteen and similar soils
Composition: 35 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 30 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.2 inches
Typical profile:
A—0 to 4 inches; loam
Bt—4 to 22 inches; gravelly clay loam
C—22 to 60 inches; gravelly loam

Levengood and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Pachic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
A—0 to 36 inches; very gravelly loam
Bk—36 to 60 inches; very cobbly sandy loam

Maciver and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Additional Components

Midfork and similar soils: 10 percent

Management Considerations

Benteen
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Levengood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Surface compaction hazard

Maciver
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Midfork
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

534E—Maciver-Prudy-Benteen families, complex, moderately steep mountain slopes

Setting

Elevation: 5,990 to 9,620
Mean annual precipitation: 15 to 38 inches
Frost-free period: 30 to 70 days

Component Description

Maciver and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Prudy and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.6 inches
Typical profile:
A—0 to 10 inches; loam
Bk—10 to 60 inches; gravelly loam

Benteen and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent

Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.2 inches
Typical profile:
A—0 to 4 inches; loam
Bt—4 to 22 inches; gravelly clay loam
C—22 to 60 inches; gravelly loam

Additional Components

Bridger and similar soils: 10 percent
Raynesford and similar soils: 5 percent
Rock outcrop: 5 percent
Starley and similar soils: 5 percent

Management Considerations

Maciver
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Prudy
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Benteen
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Raynesford
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Starley
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

534P—Tiban-Philipsburg families, complex, moderately steep mountain slopes

Setting

Elevation: 5,920 to 9,010
Mean annual precipitation: 15 to 34 inches
Frost-free period: 30 to 60 days

Component Description

Tiban and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; gravelly loam
Bw—8 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Philipsburg and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/white spirea
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge

- Douglas-fir/mountain snowberry
- Douglas-fir/heartleaf arnica

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.2 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; loam
Bt—8 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Additional Components

Loberg and similar soils: 10 percent
Rock outcrop: 10 percent
Elve and similar soils: 5 percent

Management Considerations

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Loberg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

534S—Garlet-Yellowmule-Tenrag families, complex, moderately steep mountain slopes

Setting

Elevation: 6,200 to 9,540
Mean annual precipitation: 16 to 44 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Yellowmule and similar soils
Composition: 25 percent
Taxonomic class: Fine, mixed, superactive Eutric Haplocryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; loam
Bt1—11 to 19 inches; clay

Bt2—19 to 48 inches; cobbly clay loam
BC—48 to 72 inches; very cobbly clay loam

Tenrag and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Swifton and similar soils
Composition: 15 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Palecryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/elk sedge
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/grouse whortleberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 10 inches; loam
B/E—10 to 43 inches; gravelly sandy clay loam
Bt—43 to 72 inches; very gravelly sandy clay loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Swifton
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

534Sr—Garlet-Tenrag families-Rock outcrop complex, moderately steep mountain slopes

Setting

Elevation: 7,220 to 9,210
Mean annual precipitation: 20 to 41 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Tenrag and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Swifton and similar soils: 10 percent
Yellowmule and similar soils: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Swifton
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

534Vr—Garlet-Tenrag families-Rock outcrop complex, cold, moderately steep mountain slopes

Setting

Elevation: 7,730 to 9,860
Mean annual precipitation: 20 to 45 inches
Frost-free period: 20 to 40 days

Component Description

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Tenrag and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent

Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Swifton and similar soils
Composition: 15 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Palecryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 10 inches; loam
B/E—10 to 43 inches; gravelly sandy clay loam
Bt—43 to 72 inches; very gravelly sandy clay loam

Additional Components

Yellowmule and similar soils: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Swifton
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

534X—Elve-Bridger-Tiban families, complex, moderately steep mountain slopes

Setting

Elevation: 6,230 to 9,710
Mean annual precipitation: 15 to 45 inches
Frost-free period: 30 to 70 days

Component Description

Elve and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/snowberry
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Bridger and similar soils
Composition: 25 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.-*geranium viscosissimum* phase
Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
A—0 to 9 inches; clay loam
Bt—9 to 24 inches; gravelly clay loam
Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; very gravelly loam

Tiban and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 7 inches; gravelly loam
Bw—7 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Additional Components

Rock outcrop: 10 percent
Philipsburg and similar soils: 5 percent
Raynesford and similar soils: 5 percent

Management Considerations

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Philipsburg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Raynesford
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

536C—Midfork-Trout Creek-Wesdy families, complex, moderately steep mountain slopes

Setting

Elevation: 6,640 to 10,000
Mean annual precipitation: 18 to 47 inches
Frost-free period: 20 to 60 days

Component Description

Midfork and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Haplocryolls
Landform: Moderately steep mountain slopes

Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
A—0 to 4 inches; cobbly loam
Bw—4 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very gravelly loam

Trout Creek and similar soils
Composition: 25 percent
Taxonomic class: Fine, smectitic Typic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
A—0 to 9 inches; clay loam
Bt—9 to 24 inches; gravelly clay loam
Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; very gravelly loam

Wesdy and similar soils
Composition: 20 percent
Taxonomic class: Clayey-skeletal, smectitic Typic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches

Typical profile:
A—0 to 7 inches; gravelly loam
AB—7 to 11 inches; gravelly clay loam
Bt—11 to 24 inches; very gravelly clay loam
Bk1—24 to 30 inches; very gravelly clay loam
Bk2—30 to 60 inches; very gravelly clay loam

Additional Components

Hanson and similar soils: 10 percent
Levengood and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Midfork
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Trout Creek
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wesdy
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Levengood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

536E—Hanson-Tibson-Bridger families, complex, moderately steep mountain slopes

Setting

Elevation: 6,270 to 9,430
Mean annual precipitation: 13 to 37 inches
Frost-free period: 30 to 70 days

Component Description

Hanson and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Tibson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Bridger and similar soils
Composition: 20 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls

Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
A—0 to 9 inches; clay loam
Bt—9 to 24 inches; gravelly clay loam
Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; very gravelly loam

Additional Components

Tiban and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

536P—Whitore-Tibson families, complex, moderately steep mountain slopes

Setting

Elevation: 6,170 to 9,230
Mean annual precipitation: 13 to 37 inches
Frost-free period: 30 to 60 days

Component Description

Whitore and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Tibson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Additional Components

Hanson and similar soils: 10 percent
Raynesford and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Raynesford
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

536Pr—Whitore-Tibson families-Rock outcrop complex, moderately steep mountain slopes

Setting

Elevation: 6,480 to 8,770
Mean annual precipitation: 15 to 34 inches
Frost-free period: 30 to 60 days

Component Description

Whitore and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/mountain snowberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Tibson and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/mountain snowberry
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Rooset and similar soils: 10 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rooset
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

536S—Whitore-Helmville families, complex, moderately steep mountain slopes

Setting

Elevation: 5,950 to 9,480
Mean annual precipitation: 15 to 43 inches
Frost-free period: 20 to 60 days

Component Description

Whitore and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam

Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Helmville and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Additional Components

Rock outcrop: 10 percent
Yellowmule and similar soils: 10 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Helmville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

536Sr—Whitore-Helmville families-Rock outcrop complex, moderately steep mountain slopes

Setting

Elevation: 6,530 to 8,990
Mean annual precipitation: 15 to 34 inches
Frost-free period: 20 to 60 days

Component Description

Whitore and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Helmville and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam

Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Tropal and similar soils: 10 percent
Yellowmule and similar soils: 10 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Helmville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Tropal
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

536V—Whitore-Helmville families, complex, cold, moderately steep mountain slopes

Setting

Elevation: 7,060 to 9,600
Mean annual precipitation: 20 to 47 inches
Frost-free period: 20 to 40 days

Component Description

Whitore and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Helmville and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Additional Components

Rock outcrop: 10 percent
Yellowmule and similar soils: 10 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Helmville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

536Vr—Whitore-Helmville families-Rock outcrop complex, cold, moderately steep mountain slopes

Setting

Elevation: 7,270 to 9,870
Mean annual precipitation: 18 to 75 inches
Frost-free period: 20 to 40 days

Component Description

Whitore and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- whitebark pine-subalpine fir
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam

Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Helmville and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Yellowmule and similar soils: 10 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Helmville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

536X—Whitore-Hanson-Tibson families, complex, moderately steep mountain slopes

Setting

Elevation: 6,080 to 9,610
Mean annual precipitation: 13 to 45 inches
Frost-free period: 30 to 70 days

Component Description

Whitore and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Hanson and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches

Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Tibson and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Additional Components

Tropal and similar soils: 10 percent
Elve and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tropal
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil

- Low bearing strength
- Surface compaction hazard

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

536Xr—Whitore-Hanson families-Rock outcrop complex, moderately steep mountain slopes

Setting

Elevation: 6,260 to 8,750
Mean annual precipitation: 15 to 37 inches
Frost-free period: 30 to 70 days

Component Description

Whitore and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Hanson and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland

Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Maciver and similar soils: 10 percent
Elve and similar soils: 5 percent
Tropal and similar soils: 5 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Maciver
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Tropal
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

537C—Libeg-Branham-Sebud families, complex, moderately steep mountain slopes

Setting

Elevation: 7,480 to 9,600
Mean annual precipitation: 18 to 37 inches
Frost-free period: 20 to 60 days

Component Description

Libeg and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A—0 to 10 inches; stony loam
Bt—10 to 29 inches; very stony sandy clay loam
BC—29 to 60 inches; very cobbly sandy loam

Branham and similar soils
Composition: 25 percent
Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Coarse sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
A—0 to 13 inches; coarse sandy loam
Bw—13 to 40 inches; gravelly coarse sandy loam
BC—40 to 60 inches; gravelly loamy coarse sand

Sebud and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; stony loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Gateview and similar soils: 10 percent

Management Considerations

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Branham
- Steep slopes
- Erodible surface
- High windthrow hazard

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gateview
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

537E—Libeg-Bearmouth-Sebud families, complex, moderately steep mountain slopes

Setting

Elevation: 6,070 to 8,810
Mean annual precipitation: 15 to 37 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A—0 to 10 inches; stony loam
Bt—10 to 29 inches; very stony sandy clay loam
BC—29 to 60 inches; very cobbly sandy loam

Bearmouth and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Sebud and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Moderately steep mountain slopes

Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; stony loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Gateview and similar soils: 10 percent
Rock outcrop: 10 percent
Redchief and similar soils: 5 percent

Management Considerations

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gateview
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Redchief
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

537Er—Libeg-Cheadle families-Rock outcrop complex, moderately steep mountain slopes

Setting

Elevation: 6,980 to 9,580
Mean annual precipitation: 15 to 31 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 25 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A—0 to 10 inches; stony loam
Bt—10 to 29 inches; very stony sandy clay loam
BC—29 to 60 inches; very cobbly sandy loam

Cheadle and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 25 to 70 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Stony loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.3 inches
Typical profile:
A—0 to 7 inches; stony loam
Bk—7 to 12 inches; very stony sandy loam
R—12 to 60 inches; bedrock

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Sebud and similar soils: 10 percent

Management Considerations

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cheadle
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

537P—Elve-Gambler-Libeg families, complex, moderately steep mountain slopes

Setting

Elevation: 5,860 to 9,030
Mean annual precipitation: 18 to 37 inches
Frost-free period: 30 to 60 days

Component Description

Elve and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly sandy loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Gambler and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 14 inches; loam
E/Bt1—14 to 22 inches; gravelly clay loam
E/Bt2—22 to 60 inches; very cobbly clay loam

Libeg and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 11 inches; stony loam
Bt—11 to 29 inches; very stony sandy clay loam
BC—29 to 60 inches; very cobbly sandy loam

Additional Components

Loberg and similar soils: 10 percent
Sebud and similar soils: 10 percent

Management Considerations

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gambler
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Loberg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

537S—Garlet-Worock-Como families, complex, moderately steep mountain slopes

Setting

Elevation: 5,940 to 9,320
Mean annual precipitation: 15 to 43 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Worock and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

537Sa—Garlet-Holloway-Bata families, complex, moderately steep mountain slopes

Setting

Elevation: 6,320 to 9,360
Mean annual precipitation: 23 to 43 inches
Frost-free period: 30 to 60 days

Component Description

Garlet and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 40 percent

Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Holloway and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 40 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Volcanic ash over quartzite colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.5 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 13 inches; gravelly ashy silt loam
2E—13 to 20 inches; extremely gravelly loam
2E and Bt—20 to 55 inches; extremely gravelly loam
2C—55 to 60 inches; extremely gravelly loam

Bata and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 40 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Volcanic ash over quartzite colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 12 inches; gravelly ashy silt loam
2E/Bt—12 to 23 inches; very gravelly sandy loam
2Bt—23 to 60 inches; very gravelly sandy clay loam

Additional Components

Como and similar soils: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Holloway
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bata
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

537V—Leighcan-Como-Worock families, complex, moderately steep mountain slopes

Setting

Elevation: 7,390 to 9,400
Mean annual precipitation: 20 to 45 inches
Frost-free period: 20 to 40 days

Component Description

Leighcan and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Como and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Worock and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Additional Components

Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

537X—Elve-Sebud families, complex, moderately steep mountain slopes

Setting

Elevation: 6,080 to 8,950
Mean annual precipitation: 15 to 37 inches
Frost-free period: 30 to 70 days

Component Description

Elve and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Very gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; very gravelly sandy loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Sebud and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.1 inches
Typical profile:
A1—0 to 6 inches; cobbly loam
A2—6 to 13 inches; very stony sandy loam
Bw—13 to 60 inches; very stony sandy loam

Additional Components

Libeg and similar soils: 10 percent
Rock outcrop: 10 percent
Philipsburg and similar soils: 5 percent

Management Considerations

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Philipsburg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

538E—Bearmouth-Beeftrail-Sebud families, complex, moderately steep mountain slopes

Setting

Elevation: 6,020 to 8,910
Mean annual precipitation: 18 to 34 inches
Frost-free period: 30 to 70 days

Component Description

Bearmouth and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches

Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Beeftrail and similar soils
Composition: 25 percent
Taxonomic class: Sandy, mixed Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Coarse sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
A—0 to 10 inches; coarse sandy loam
Bw—10 to 21 inches; gravelly coarse sandy loam
BC—21 to 60 inches; gravelly loamy coarse sand

Sebud and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
A1—0 to 4 inches; very stony sandy loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Alta and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Beeftrail
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Alta
- Steep slopes
- Erodible surface
- High windthrow hazard
- Surface boulders
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

538P—Howardsville-Sebud-Libeg families, complex, moderately steep mountain slopes

Setting

Elevation: 5,950 to 7,960
Mean annual precipitation: 15 to 38 inches
Frost-free period: 30 to 60 days

Component Description

Howardsville and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/elk sedge
- Douglas-fir/pinegrass
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Sebud and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry
- Douglas-fir/white spirea
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 4 inches; very stony sandy loam
A2—4 to 11 inches; very stony sandy loam
Bw1—11 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Libeg and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/white spirea
- Douglas-fir/elk sedge
- Douglas-fir/pinegrass
- Douglas-fir/heartleaf arnica

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 11 inches; very cobbly sandy loam

Bt—11 to 22 inches; very channery loam
BC—22 to 60 inches; very cobbly sandy loam

Additional Components

Tepecreek and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Howardsville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tepecreek
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

538Pr—Comad family-Rock outcrop-Tepecreek family, complex, moderately steep mountain slopes

Setting

Elevation: 5,970 to 7,700
Mean annual precipitation: 15 to 31 inches
Frost-free period: 30 to 60 days

Component Description

Comad and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent

Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very stony loamy sand
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; very stony loamy sand
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Tepecreek and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very gravelly sandy clay loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches
- Lithic bedrock: 30 to 60 inches

Drainage class: Well drained
Parent material: Colluvium over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 10 inches; very gravelly sandy clay loam
Bt—10 to 20 inches; very gravelly sandy clay loam
BC—20 to 37 inches; very gravelly coarse sandy loam
Cr—37 to 54 inches; bedrock
R—54 to 60 inches; bedrock

Additional Components

Libeg and similar soils: 10 percent
Sebud and similar soils: 10 percent

Management Considerations

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Tepecreek
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

538S—Como-Comad-Garlet families, complex, moderately steep mountain slopes

Setting

Elevation: 5,980 to 9,450
Mean annual precipitation: 15 to 39 inches
Frost-free period: 20 to 60 days

Component Description

Como and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/elk sedge
- subalpine fir/heartleaf arnica
- subalpine fir/pinegrass

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Comad and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/heartleaf arnica
- subalpine fir/grouse whortleberry
- subalpine fir/elk sedge
- subalpine fir/pinegrass

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; very stony sandy loam
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Garlet and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/elk sedge
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Additional Components

Worock and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

538Sa—Como-Petty families, complex, moderately steep mountain slopes

Setting

Elevation: 6,220 to 9,250
Mean annual precipitation: 20 to 45 inches
Frost-free period: 30 to 60 days

Component Description

Como and similar soils
Composition: 55 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica

- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Petty and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 5 inches; ashy silt loam
Bw1—5 to 10 inches; ashy silt loam
Bw2—10 to 14 inches; ashy silt loam
2Bw3—14 to 22 inches; very stony loam
2BC—22 to 31 inches; very cobbly loam
2C—31 to 60 inches; very cobbly sandy loam

Additional Components

Garlet and similar soils: 10 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Petty
- Steep slopes
- Erodible surface
- High windthrow hazard

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

538Sr—Comad-Como families-Rock outcrop complex, moderately steep mountain slopes

Setting

Elevation: 6,560 to 9,920
Mean annual precipitation: 25 to 39 inches
Frost-free period: 20 to 60 days

Component Description

Comad and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; very stony sandy loam
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica

- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Garlet and similar soils: 10 percent
Worock and similar soils: 10 percent

Management Considerations

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

538X—Bearmouth-Gateview-Howardsville families, complex, moderately steep mountain slopes

Setting

Elevation: 6,020 to 9,010
Mean annual precipitation: 15 to 37 inches
Frost-free period: 30 to 70 days

Component Description

Bearmouth and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; very cobbly loam
Bw—8 to 15 inches; very cobbly sandy loam
C—15 to 60 inches; very cobbly loamy sand

Gateview and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.-*geranium viscosissimum* phase
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
A1—0 to 18 inches; gravelly loam
A2—18 to 42 inches; very gravelly loam
2C—42 to 60 inches; very cobbly sand

Howardsville and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Eutrocryepts
Landform: Moderately steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Additional Components

Rock outcrop: 5 percent
Tepecreek and similar soils: 5 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Gateview
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Howardsville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Tepecreek
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

541C—Marcetta-Ledgefork-Ledgefork, moderately deep, families, complex, steep mountain slopes

Setting

Elevation: 7,350 to 9,710
Mean annual precipitation: 25 to 43 inches
Frost-free period: 20 to 60 days

Component Description

Marcetta and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.5 inches
Typical profile:
A1—0 to 10 inches; gravelly loam
A2—10 to 17 inches; very gravelly loam
Bw—17 to 48 inches; very gravelly loam
C—48 to 60 inches; very gravelly loam

Ledgefork and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches

Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Ledgefork, moderately deep and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Coarse sandy loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 60 inches

Drainage class: Somewhat excessively drained
Parent material: Colluvium over gneiss residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.8 inches
Typical profile:
A—0 to 4 inches; coarse sandy loam
Bw—4 to 12 inches; gravelly coarse sandy loam
BC—12 to 31 inches; gravelly loamy coarse sand
R—31 to 60 inches; bedrock

Additional Components

Rock outcrop: 10 percent

Management Considerations

Marcetta
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ledgefork
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Ledgefork, moderately deep
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

541D—Whitlash, very stony-Brickner, stony-Rock outcrop complex, 4 to 25 percent slopes

Setting

Elevation: 5,500 to 6,500
Mean annual precipitation: 15 to 19 inches
Frost-free period: 70 to 90 days

Component Description

Whitlash and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustolls
Landform:
- Escarpments
- Hillsides
- Ridges

Slope: 4 to 25 percent
Native plant cover type: Forestland
Plant associations: Douglas-fir/Idaho fescue
Surface layer texture: Very cobbly coarse sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material:
- Gravelly basalt residuum
- Gravelly sandstone residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 0.9 inches
Typical profile:
A—0 to 3 inches; very cobbly coarse sandy loam
Bw—3 to 11 inches; extremely gravelly loam
R—11 to 60 inches; unweathered bedrock

Brickner and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustalfs
Landform:
- Escarpments
- Hillsides
- Ridges

Slope: 4 to 25 percent
Native plant cover type: Forestland
Plant associations: Douglas-fir/Idaho fescue
Surface layer texture: Gravelly sandy clay loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material:
- Gravelly basalt residuum
- Gravelly sandstone residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
A—0 to 3 inches; gravelly sandy clay loam
Bt—3 to 8 inches; very gravelly sandy clay loam
BC—8 to 12 inches; extremely gravelly coarse sandy loam
R—12 to 60 inches; unweathered bedrock

Rock outcrop, sandstone
Composition: 20 percent
Definition: Mainly exposed areas of hard, sedimentary and metamorphic bedrock. Angular boulders, stones, and cobbles litter the area and accumulate at the base of hills and escarpments.
Landform: None assigned

Additional Components

Perma and similar soils: 5 percent
Wickes and similar soils: 5 percent

Management Considerations

Whitlash
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Brickner
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, sandstone
- Nonsoil material

Perma
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wickes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

541E—Bearmouth-Branham-Marcetta families, complex, steep mountain slopes

Setting

Elevation: 6,190 to 9,180
Mean annual precipitation: 13 to 36 inches
Frost-free period: 30 to 70 days

Component Description

Bearmouth and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Branham and similar soils
Composition: 30 percent
Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Coarse sandy loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 60 inches

Drainage class: Somewhat excessively drained
Parent material: Colluvium over gneiss residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
A—0 to 7 inches; coarse sandy loam
Bw—7 to 25 inches; gravelly coarse sandy loam
BC—25 to 30 inches; gravelly loamy coarse sand
R—30 to 60 inches; bedrock

Marcetta and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted

Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.5 inches
Typical profile:
A1—0 to 10 inches; gravelly loam
A2—10 to 17 inches; very gravelly loam
Bw—17 to 48 inches; very gravelly loam
C—48 to 60 inches; very gravelly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Branham
- Steep slopes
- Erodible surface
- High windthrow hazard

Marcetta
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

541P—Bearmouth-Sebud-Shadow families, complex, steep mountain slopes

Setting

Elevation: 5,820 to 9,690
Mean annual precipitation: 18 to 37 inches
Frost-free period: 30 to 60 days

Component Description

Bearmouth and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass

- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; very cobbly loam
Bw—8 to 15 inches; very cobbly sandy loam
C—15 to 60 inches; very cobbly loamy sand

Sebud and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/mountain snowberry

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 4 inches; very stony sandy loam
A2—4 to 11 inches; very stony sandy loam
Bw1—11 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Shadow and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 5 inches; very cobbly sandy loam
E—5 to 19 inches; very cobbly sandy loam
Bw—19 to 32 inches; extremely cobbly sandy loam
BC—32 to 60 inches; extremely cobbly sandy loam

Additional Components

Comad and similar soils: 10 percent
Rock outcrop: 10 percent
Elkner and similar soils: 5 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

541Pr—Bearmouth-Sebud families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 6,370 to 9,060
Mean annual precipitation: 21 to 37 inches
Frost-free period: 30 to 60 days

Component Description

Bearmouth and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; very cobbly loam
Bw—8 to 15 inches; very cobbly sandy loam
C—15 to 60 inches; very cobbly loamy sand

Sebud and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 4 inches; very stony sandy loam
A2—4 to 11 inches; very stony sandy loam

Bw1—11 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Shadow and similar soils: 10 percent
Elkner and similar soils: 5 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

541S—Como-Garlet-Elkner families, complex, steep mountain slopes

Setting

Elevation: 5,940 to 9,750
Mean annual precipitation: 18 to 45 inches
Frost-free period: 30 to 60 days

Component Description

Como and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Elkner and similar soils
Composition: 20 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/heartleaf arnica
- subalpine fir/pinegrass
- subalpine fir/grouse whortleberry
- subalpine fir/elk sedge

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained

Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 10 inches; stony sandy loam
E2—10 to 19 inches; stony sandy loam
E and Bt—19 to 39 inches; gravelly coarse sandy loam
BC—39 to 60 inches; stony loamy coarse sand

Additional Components

Rock outcrop: 10 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

541Sr—Como-Garlet families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 6,630 to 10,000
Mean annual precipitation: 25 to 43 inches
Frost-free period: 20 to 60 days

Component Description

Como and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica

- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Elkner and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Rubble land
- Nonsoil material

541Vr—Leighcan-Como families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 7,190 to 10,400
Mean annual precipitation: 18 to 53 inches
Frost-free period: 20 to 40 days

Component Description

Leighcan and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent

Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Cowood and similar soils: 10 percent
Matcher and similar soils: 10 percent
Moran and similar soils: 5 percent

Management Considerations

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Cowood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Matcher
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Moran
- Steep slopes
- Erodible surface
- High windthrow hazard

541X—Howardsville-Bearmouth-Sebud families, complex, steep mountain slopes

Setting

Elevation: 6,110 to 9,990
Mean annual precipitation: 13 to 38 inches
Frost-free period: 30 to 60 days

Component Description

Howardsville and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Bearmouth and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss colluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Sebud and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
A1—0 to 4 inches; very stony sandy loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Rock outcrop: 10 percent
Shadow and similar soils: 10 percent

Management Considerations

Howardsville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

542O—Libeg-Tiban-Bearmouth families, complex, steep mountain slopes

Setting

Elevation: 6,110 to 7,850
Mean annual precipitation: 21 to 29 inches
Frost-free period: 40 to 70 days

Component Description

Libeg and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/Idaho fescue
- Douglas-fir/bluebunch wheatgrass

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 11 inches; gravelly loam
Bt1—11 to 16 inches; very flaggy loam
Bt2—16 to 30 inches; very flaggy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Tiban and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; gravelly loam
Bw—8 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Bearmouth and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/Idaho fescue
- Douglas-fir/bluebunch wheatgrass

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; very cobbly loam
Bw—8 to 15 inches; very cobbly sandy loam
C—15 to 60 inches; very cobbly loamy sand

Additional Components

Rock outcrop: 10 percent
Branham and similar soils: 5 percent
Shadow and similar soils: 5 percent

Management Considerations

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Branham
- Steep slopes
- Erodible surface
- High windthrow hazard

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

542P—Bearmouth-Tiban-Branham families, complex, steep mountain slopes

Setting

Elevation: 6,110 to 7,850
Mean annual precipitation: 21 to 29 inches
Frost-free period: 30 to 60 days

Component Description

Bearmouth and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/white spirea
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; very cobbly loam

Bw—8 to 15 inches; very cobbly sandy loam
C—15 to 60 inches; very cobbly loamy sand

Tiban and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; gravelly loam
Bw—8 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Branham and similar soils
Composition: 20 percent
Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Coarse sandy loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 60 inches

Drainage class: Somewhat excessively drained
Parent material: Colluvium over tuff rhyolite or andesite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; coarse sandy loam
Bw—8 to 25 inches; gravelly coarse sandy loam

BC—25 to 30 inches; gravelly loamy coarse sand
R—30 to 60 inches; bedrock

Additional Components

Rock outcrop: 10 percent
Shadow and similar soils: 10 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Branham
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

542Pr—Bearmouth-Branham families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 6,220 to 7,640
Mean annual precipitation: 21 to 27 inches
Frost-free period: 30 to 60 days

Component Description

Bearmouth and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; very cobbly loam
Bw—8 to 15 inches; very cobbly sandy loam
C—15 to 60 inches; very cobbly loamy sand

Branham and similar soils
Composition: 25 percent
Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Coarse sandy loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 60 inches

Drainage class: Somewhat excessively drained
Parent material: Colluvium over tuff rhyolite or andesite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; coarse sandy loam
Bw—8 to 25 inches; gravelly coarse sandy loam
BC—25 to 30 inches; gravelly loamy coarse sand
R—30 to 60 inches; bedrock

Rock outcrop
Composition: 25 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Tiban and similar soils: 10 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

- Cutslope slumping
- Cutslope erosion

Branham
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

542Vr—Garlet family-Rock outcrop-Como family, complex, steep mountain slopes

Setting

Elevation: 6,520 to 9,610
Mean annual precipitation: 20 to 71 inches
Frost-free period: 20 to 40 days

Component Description

Garlet and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Rock outcrop
Composition: 25 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- whitebark pine
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

542Xr—Tiban family-Rock outcrop-Shadow family, complex, steep mountain slopes

Setting

Elevation: 6,110 to 9,700
Mean annual precipitation: 15 to 31 inches
Frost-free period: 30 to 70 days

Component Description

Tiban and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 7 inches; gravelly loam
Bw—7 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Rock outcrop
Composition: 25 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Shadow and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea

- Douglas-fir/snowberry
- Douglas-fir/dwarf huckleberry

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Andesite colluvium
- Rhyolite
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 5 inches; very cobbly sandy loam
E—5 to 19 inches; very cobbly sandy loam
Bw—19 to 32 inches; extremely cobbly sandy loam
BC—32 to 60 inches; extremely cobbly sandy loam

Additional Components

Bearmouth and similar soils: 10 percent

Management Considerations

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Shadow
- Steep slopes
- Erodible surface
- High windthrow hazard

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

543C—Tibson-Starley families, complex, steep mountain slopes

Setting

Elevation: 7,650 to 10,200
Mean annual precipitation: 18 to 33 inches
Frost-free period: 20 to 60 days

Component Description

Tibson and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Starley and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Colluvium over shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.7 inches
Typical profile:
A—0 to 9 inches; gravelly loam
Bk1—9 to 12 inches; very cobbly loam
Bk2—12 to 15 inches; very cobbly loam
R—15 to 60 inches; bedrock

Additional Components

Elkner and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Starley
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

543E—Maciver-Bearmouth-Elve families, complex, steep mountain slopes

Setting

Elevation: 6,470 to 8,630
Mean annual precipitation: 15 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Maciver and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Bearmouth and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Elve and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.2 inches
Typical profile:
E—0 to 6 inches; gravelly loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Maciver
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

543P—Elkner-Tibson-Elve families, complex, steep mountain slopes

Setting

Elevation: 6,320 to 8,470
Mean annual precipitation: 15 to 27 inches
Frost-free period: 30 to 60 days

Component Description

Elkner and similar soils
Composition: 40 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 10 inches; stony sandy loam
E2—10 to 19 inches; stony sandy loam
E and Bt—19 to 39 inches; gravelly coarse sandy loam
BC—39 to 60 inches; stony loamy coarse sand

Tibson and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Elve and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/white spirea
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/mountain snowberry
- Douglas-fir/heartleaf arnica

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Additional Components

Cheadle and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cheadle
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

543S—Garlet-Comad families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 6,990 to 9,580
Mean annual precipitation: 16 to 33 inches
Frost-free period: 20 to 40 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Comad and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Steep mountain slopes

Slope: 45 to 70 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; stony sandy loam
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Elkner and similar soils: 10 percent
Tenrag and similar soils: 5 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

543Xr—Maciver-Elkner families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 6,160 to 9,830
Mean annual precipitation: 15 to 35 inches
Frost-free period: 30 to 70 days

Component Description

Maciver and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Steep mountain slopes
Slope: 45 to 60 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/heartleaf arnica
- Douglas-fir/Idaho fescue
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry
- Douglas-fir/elk sedge
- Douglas-fir/white spirea

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Elkner and similar soils
Composition: 35 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 60 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/snowberry
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Shale colluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 10 inches; stony sandy loam
E2—10 to 19 inches; stony sandy loam
E and Bt—19 to 39 inches; gravelly coarse sandy loam
BC—39 to 60 inches; stony loamy coarse sand

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Management Considerations

Maciver
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

544C—Midfork-Tibson-Wander families, complex, steep mountain slopes

Setting

Elevation: 7,240 to 9,930
Mean annual precipitation: 25 to 41 inches
Frost-free period: 20 to 60 days

Component Description

Midfork and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches

Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very gravelly loam

Tibson and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Wander and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Argicryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
A—0 to 6 inches; gravelly loam
Bt1—6 to 16 inches; very cobbly loam
Bt2—16 to 30 inches; very cobbly clay loam
BC—30 to 60 inches; extremely cobbly loam

Additional Components

Garlet and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Midfork
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wander
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

544E—Tiban-Tibson-Libeg families, complex, steep mountain slopes

Setting

Elevation: 5,910 to 9,420
Mean annual precipitation: 15 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Tiban and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches

Typical profile:
A—0 to 7 inches; gravelly loam
Bw—7 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Tibson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Libeg and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
A—0 to 10 inches; gravelly loam
Bt1—10 to 16 inches; very flaggy loam
Bt2—16 to 30 inches; very flaggy clay loam
BC—30 to 60 inches; extremely cobbly loam

Additional Components

Elve and similar soils: 10 percent
Rock outcrop: 10 percent
Rooset and similar soils: 5 percent

Management Considerations

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rooset
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

544O—Tiban-Elve-Skaggs families, complex, steep mountain slopes

Setting

Elevation: 5,870 to 7,870
Mean annual precipitation: 13 to 25 inches
Frost-free period: 40 to 70 days

Component Description

Tiban and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; gravelly loam
Bw—8 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Elve and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Skaggs and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Colluvium over limestone, sandstone, and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.1 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 10 inches; very cobbly loam
Bk1—10 to 21 inches; very gravelly loam
Bk2—21 to 32 inches; very stony loam
R—32 to 60 inches; bedrock

Additional Components

Rock outcrop: 10 percent
Stecum and similar soils: 5 percent
Tibson and similar soils: 5 percent

Management Considerations

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Skaggs
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Stecum
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

544P—Elve-Tibson-Tiban families, complex, steep mountain slopes

Setting

Elevation: 5,640 to 8,900
Mean annual precipitation: 15 to 31 inches
Frost-free period: 30 to 60 days

Component Description

Elve and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes

Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Tibson and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Tiban and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland

Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; gravelly loam
Bw—8 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Additional Components

Rock outcrop: 10 percent
Skaggs and similar soils: 10 percent
Stecum and similar soils: 5 percent

Management Considerations

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Skaggs
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Stecum
- Steep slopes
- Erodible surface

- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

544S—Garlet-Relyea-Tenrag families, complex, steep mountain slopes

Setting

Elevation: 5,950 to 9,630
Mean annual precipitation: 16 to 45 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Relyea and similar soils
Composition: 30 percent
Taxonomic class: Clayey-skeletal, mixed, superactive Eutric Glossocryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/elk sedge
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 6 inches; gravelly loam
Bt/E—6 to 9 inches; very gravelly clay loam
Bt—9 to 18 inches; very gravelly clay loam
Btk—18 to 31 inches; very gravelly clay loam
Bk—31 to 60 inches; very cobbly clay loam

Tenrag and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Relyea
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

544Sr—Garlet-Tenrag families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 6,400 to 9,510
Mean annual precipitation: 16 to 41 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Tenrag and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Relyea and similar soils: 15 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Relyea
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

544Vr—Garlet-Relyea families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 7,160 to 9,950
Mean annual precipitation: 20 to 45 inches
Frost-free period: 20 to 40 days

Component Description

Garlet and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Steep mountain slopes

Slope: 45 to 70 percent
Plant associations:
- whitebark pine
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Relyea and similar soils
Composition: 30 percent
Taxonomic class: Clayey-skeletal, mixed, superactive Eutric Glossocryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 6 inches; gravelly loam
Bt/E—6 to 9 inches; very gravelly clay loam
Bt—9 to 18 inches; very gravelly clay loam
Btk—18 to 31 inches; very gravelly clay loam
Bk—31 to 60 inches; very cobbly clay loam

Rock outcrop
Composition: 25 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Tibson and similar soils: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Relyea
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

544X—Elve-Tiban-Libeg families, complex, steep mountain slopes

Setting

Elevation: 5,900 to 9,320
Mean annual precipitation: 15 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Elve and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches

Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Tiban and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 7 inches; gravelly loam
Bw—7 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Libeg and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
A—0 to 10 inches; gravelly loam
Bt1—10 to 16 inches; very flaggy loam
Bt2—16 to 30 inches; very flaggy clay loam
BC—30 to 60 inches; extremely cobbly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

544Xr—Tiban-Elve families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 5,920 to 9,340
Mean annual precipitation: 13 to 36 inches
Frost-free period: 30 to 70 days

Component Description

Tiban and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry
- Douglas-fir/elk sedge
- Douglas-fir/white spirea

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 7 inches; gravelly loam
Bw—7 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Elve and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/snowberry
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Rock outcrop
Composition: 25 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Starley and similar soils: 10 percent

Management Considerations

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Starley
- Steep slopes
- Erodible surface
- High windthrow hazard

- Shallow soil
- Low bearing strength
- Surface compaction hazard

546C—Hanson-Wander-Skaggs families, complex, steep mountain slopes

Setting

Elevation: 7,380 to 10,000
Mean annual precipitation: 23 to 43 inches
Frost-free period: 20 to 60 days

Component Description

Hanson and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Wander and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Argicryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
A—0 to 6 inches; gravelly loam
Bt1—6 to 16 inches; very cobbly loam

Bt2—16 to 30 inches; very cobbly clay loam
BC—30 to 60 inches; extremely cobbly loam

Skaggs and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Very cobbly loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Colluvium over limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
A—0 to 10 inches; very cobbly loam
Bk1—10 to 21 inches; very gravelly loam
Bk2—21 to 32 inches; very stony loam
R—32 to 60 inches; bedrock

Additional Components

Tibson and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wander
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Skaggs
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

546Cr—Tibson-Hanson families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 7,670 to 10,300
Mean annual precipitation: 23 to 49 inches
Frost-free period: 20 to 60 days

Component Description

Tibson and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Hanson and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Skaggs and similar soils: 10 percent
Wander and similar soils: 10 percent

Management Considerations

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Skaggs
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wander
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

546E—Hanson-Maciver-Tibson families, complex, steep mountain slopes

Setting

Elevation: 5,910 to 9,220
Mean annual precipitation: 15 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Hanson and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland

Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Maciver and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Tibson and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Additional Components

Skaggs and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maciver
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Skaggs
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

546Er—Hanson-Tibson families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 5,580 to 9,710
Mean annual precipitation: 15 to 31 inches
Frost-free period: 30 to 70 days

Component Description

Hanson and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 25 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted

Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Tibson and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 25 to 70 percent
Native plant cover type: Rangeland
Plant associations:
• *Artemisia tridentata/Festuca idahoensis* h.t.
• *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Starley and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform: Steep mountain slopes
Slope: 25 to 70 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Depth to restrictive feature:
• Lithic bedrock: 10 to 20 inches
Drainage class: Well drained
Parent material: Colluvium over limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.7 inches
Typical profile:
A—0 to 9 inches; gravelly loam
Bk1—9 to 12 inches; very cobbly loam
Bk2—12 to 15 inches; very cobbly loam
R—15 to 60 inches; bedrock

Additional Components

Skaggs and similar soils: 5 percent

Management Considerations

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Starley
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Skaggs
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

546O—Skaggs-Hanson families, complex, steep mountain slopes

Setting

Elevation: 6,090 to 8,380
Mean annual precipitation: 13 to 33 inches
Frost-free period: 40 to 70 days

Component Description

Skaggs and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Colluvium over limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.1 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 10 inches; very cobbly loam
Bk1—10 to 21 inches; very gravelly loam
Bk2—21 to 32 inches; very stony loam
R—32 to 60 inches; bedrock

Hanson and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/Idaho fescue
- Douglas-fir/bluebunch wheatgrass

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Skaggs
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

546P—Whitore-Hanson families, complex, steep mountain slopes

Setting

Elevation: 5,550 to 8,630
Mean annual precipitation: 13 to 35 inches
Frost-free period: 30 to 60 days

Component Description

Whitore and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Hanson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Additional Components

Skaggs and similar soils: 10 percent
Tibson and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Skaggs
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

546Pr—Whitore-Hanson families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 5,510 to 9,040
Mean annual precipitation: 15 to 35 inches
Frost-free period: 30 to 60 days

Component Description

Whitore and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Steep mountain slopes

Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Hanson and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Skaggs and similar soils: 10 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Skaggs
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

546S—Whitore-Helmville families, complex, steep mountain slopes

Setting

Elevation: 6,220 to 9,480
Mean annual precipitation: 16 to 45 inches
Frost-free period: 20 to 60 days

Component Description

Whitore and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/heartleaf arnica
- subalpine fir/pinegrass
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam

Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Helmville and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/heartleaf arnica
- subalpine fir/pinegrass
- subalpine fir/grouse whortleberry
- subalpine fir/elk sedge

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Helmville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

546Sr—Whitore-Helmville families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 6,280 to 9,180
Mean annual precipitation: 16 to 39 inches
Frost-free period: 20 to 60 days

Component Description

Whitore and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Helmville and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam

Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Tropal and similar soils: 10 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Helmville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Tropal
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

546V—Whitore-Tropal-Helmville families, complex, steep mountain slopes

Setting

Elevation: 6,990 to 9,660
Mean annual precipitation: 16 to 45 inches
Frost-free period: 20 to 40 days

Component Description

Whitore and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir

- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Tropal and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- whitebark pine-subalpine fir
- whitebark pine

Surface layer texture: Stony loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.5 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 4 inches; stony loam
Bk1—4 to 13 inches; very gravelly loam
Bk2—13 to 18 inches; very gravelly loam
R—18 to 60 inches; bedrock

Helmville and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches

Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Additional Components

Rock outcrop: 5 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tropal
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Helmville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

546Vr—Whitore-Tropal families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 7,040 to 10,000
Mean annual precipitation: 16 to 47 inches
Frost-free period: 20 to 40 days

Component Description

Whitore and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir

- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Tropal and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- whitebark pine-subalpine fir
- whitebark pine

Surface layer texture: Stony loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.5 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 4 inches; stony loam
Bk1—4 to 13 inches; very gravelly loam
Bk2—13 to 18 inches; very gravelly loam
R—18 to 60 inches; bedrock

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Helmville and similar soils: 10 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tropal
- Steep slopes
- Erodible surface

- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Helmville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

546X—Whitore-Tibson-Tiban families, complex, steep mountain slopes

Setting

Elevation: 6,230 to 8,910
Mean annual precipitation: 13 to 35 inches
Frost-free period: 30 to 70 days

Component Description

Whitore and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/white spirea
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 10 inches; stony loam
Bk—10 to 60 inches; very cobbly loam

Tibson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent

Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Tiban and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 7 inches; gravelly loam
Bw—7 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Additional Components

Hanson and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

546Xr—Hanson-Whitore families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 5,550 to 10,200
Mean annual precipitation: 13 to 55 inches
Frost-free period: 30 to 70 days

Component Description

Hanson and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry
- Douglas-fir/elk sedge
- Douglas-fir/white spirea

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Whitore and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland

Plant associations:
- Douglas-fir/dwarf huckleberry
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/snowberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Skaggs and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry
- Douglas-fir/elk sedge
- Douglas-fir/white spirea

Surface layer texture: Very cobbly loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Colluvium over limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
A—0 to 10 inches; very cobbly loam
Bk1—10 to 21 inches; very gravelly loam
Bk2—21 to 32 inches; very stony loam
R—32 to 60 inches; bedrock

Management Considerations

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Skaggs
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

547C—Gateview-Wander-Kamack families, complex, steep mountain slopes

Setting

Elevation: 7,710 to 10,300
Mean annual precipitation: 21 to 39 inches
Frost-free period: 20 to 60 days

Component Description

Gateview and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 39 inches; very gravelly loam
2C—39 to 60 inches; very cobbly sand

Wander and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Argicryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A—0 to 7 inches; stony loam
Bt—7 to 29 inches; very stony sandy clay loam
BC—29 to 60 inches; very cobbly sandy loam

Kamack and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; stony loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Garlet and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Gateview
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wander
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Kamack
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

547E—Sebud-Libeg-Bearmouth families, complex, steep mountain slopes

Setting

Elevation: 6,110 to 9,670
Mean annual precipitation: 15 to 36 inches
Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; stony loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Libeg and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
A—0 to 10 inches; very cobbly sandy loam
Bt1—10 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery sandy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Bearmouth and similar soils
Composition: 15 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Additional Components

Rock outcrop: 10 percent

Management Considerations

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

547P—Elve-Gambler-Sebud families, complex, steep mountain slopes

Setting

Elevation: 5,760 to 8,960
Mean annual precipitation: 17 to 33 inches
Frost-free period: 30 to 60 days

Component Description

Elve and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/heartleaf arnica
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/mountain snowberry

Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; very gravelly loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Gambler and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent

Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 14 inches; loam
E/Bt1—14 to 22 inches; gravelly clay loam
E/Bt2—22 to 60 inches; very cobbly clay loam

Sebud and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A1—1 to 4 inches; stony loam
A2—4 to 11 inches; very stony sandy loam
Bw1—11 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Libeg and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Gambler
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

547Pr—Elve-Gambler families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 6,010 to 9,540
Mean annual precipitation: 17 to 38 inches
Frost-free period: 30 to 60 days

Component Description

Elve and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; very gravelly loam

E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Gambler and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 14 inches; loam
E/Bt1—14 to 22 inches; gravelly clay loam
E/Bt2—22 to 60 inches; very cobbly clay loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Libeg and similar soils: 10 percent
Sebud and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gambler
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

547S—Garlet-Como-Worock families, complex, steep mountain slopes

Setting

Elevation: 5,970 to 9,380
Mean annual precipitation: 16 to 43 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent

Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Worock and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

547Sa—Garlet-Holloway families, complex, steep mountain slopes

Setting

Elevation: 6,950 to 9,630
Mean annual precipitation: 21 to 45 inches
Frost-free period: 30 to 60 days

Component Description

Garlet and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 40 to 60 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Holloway and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Steep mountain slopes
Slope: 40 to 60 percent

Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.5 inches
Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 13 inches; gravelly ashy silt loam
2E—13 to 20 inches; extremely gravelly loam
2E and Bt—20 to 55 inches; extremely gravelly loam
2C—55 to 60 inches; extremely gravelly loam

Additional Components

Como and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Holloway
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

547Sr—Garlet-Como families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 6,150 to 9,680
Mean annual precipitation: 16 to 41 inches
Frost-free period: 30 to 60 days

Component Description

Garlet and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 30 to 70 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 30 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam

BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Worock and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

547V—Leighcan-Como-Moran families, complex, steep mountain slopes

Setting

Elevation: 7,040 to 9,520
Mean annual precipitation: 20 to 47 inches
Frost-free period: 20 to 40 days

Component Description

Leighcan and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Moran and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Humic Dystrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.8 inches
Typical profile:
A—0 to 7 inches; very stony sandy loam
Bw—7 to 16 inches; very stony sandy loam
C—16 to 60 inches; very stony sandy loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Moran
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

547Vr—Leighcan family-Rock outcrop-Como family, complex, steep mountain slopes

Setting

Elevation: 6,320 to 9,960
Mean annual precipitation: 20 to 45 inches
Frost-free period: 20 to 40 days

Component Description

Leighcan and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Steep mountain slopes
Slope: 30 to 70 percent
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Rock outcrop
Composition: 25 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 30 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/mountain gooseberry
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Additional Components

Moran and similar soils: 10 percent

Management Considerations

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Moran
- Steep slopes
- Erodible surface
- High windthrow hazard

547X—Bearmouth-Elve families, complex, steep mountain slopes

Setting

Elevation: 5,890 to 8,880
Mean annual precipitation: 17 to 36 inches
Frost-free period: 30 to 70 days

Component Description

Bearmouth and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Elve and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches

Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly sandy loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Additional Components

Howardsville and similar soils: 10 percent
Libeg and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Howardsville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

547Xr—Bearmouth-Elve families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 5,970 to 9,510
Mean annual precipitation: 15 to 37 inches
Frost-free period: 30 to 70 days

Component Description

Bearmouth and similar soils
Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Elve and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly sandy loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Libeg and similar soils: 10 percent

Management Considerations

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

548E—Ellena-Tepecreek families, complex, steep mountain slopes

Setting

Elevation: 5,990 to 7,800
Mean annual precipitation: 17 to 27 inches
Frost-free period: 30 to 70 days

Component Description

Ellena and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.9 inches
Typical profile:
E1—0 to 10 inches; very cobbly sandy loam
E2—10 to 22 inches; very cobbly coarse sandy loam
E/Bw—22 to 27 inches; very cobbly coarse sandy loam
Cr—27 to 60 inches; bedrock

Tepecreek and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very gravelly sandy clay loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches
- Lithic bedrock: 30 to 60 inches

Drainage class: Well drained
Parent material: Colluvium over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.8 inches
Typical profile:
E—0 to 10 inches; very gravelly sandy clay loam
Bt—10 to 20 inches; very gravelly sandy clay loam
BC—20 to 37 inches; very gravelly coarse sandy loam
Cr—37 to 54 inches; bedrock
R—54 to 60 inches; bedrock

Additional Components

Bearmouth and similar soils: 10 percent
Rock outcrop: 10 percent
Branham and similar soils: 5 percent

Management Considerations

Ellena
- Steep slopes
- Erodible surface
- High windthrow hazard

Tepecreek
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Branham
- Steep slopes
- Erodible surface
- High windthrow hazard

548P—Tepecreek-Ellena-Libeg families, complex, steep mountain slopes

Setting

Elevation: 5,950 to 8,760
Mean annual precipitation: 17 to 31 inches
Frost-free period: 30 to 60 days

Component Description

Tepecreek and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very gravelly sandy clay loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches
- Lithic bedrock: 30 to 60 inches

Drainage class: Well drained
Parent material: Colluvium over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 10 inches; very gravelly sandy clay loam
Bt—10 to 20 inches; very gravelly sandy clay loam
BC—20 to 37 inches; very gravelly coarse sandy loam
Cr—37 to 54 inches; bedrock
R—54 to 60 inches; bedrock

Ellena and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent

Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.8 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 10 inches; very cobbly sandy loam
E2—10 to 22 inches; very cobbly coarse sandy loam
E/Bw—22 to 27 inches; very cobbly coarse sandy loam
Cr—27 to 60 inches; bedrock

Libeg and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 11 inches; gravelly sandy loam
Bt1—11 to 16 inches; very flaggy loam
Bt2—16 to 30 inches; very flaggy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Additional Components

Comad and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Tepecreek
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Ellena
- Steep slopes
- Erodible surface
- High windthrow hazard

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

548Pr—Tepecreek-Libeg families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 5,820 to 8,750
Mean annual precipitation: 17 to 31 inches
Frost-free period: 30 to 60 days

Component Description

Tepecreek and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Very gravelly sandy clay loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches
- Lithic bedrock: 30 to 60 inches

Drainage class: Well drained
Parent material: Colluvium over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 10 inches; very gravelly sandy clay loam

Bt—10 to 20 inches; very gravelly sandy clay loam
BC—20 to 37 inches; very gravelly coarse sandy loam
Cr—37 to 54 inches; bedrock
R—54 to 60 inches; bedrock

Libeg and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 11 inches; gravelly sandy loam
Bt1—11 to 16 inches; very flaggy loam
Bt2—16 to 30 inches; very flaggy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Comad and similar soils: 5 percent
Ellena and similar soils: 5 percent

Management Considerations

Tepecreek
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Ellena
- Steep slopes
- Erodible surface
- High windthrow hazard

548S—Comad-Como-Targhee families, complex, steep mountain slopes

Setting

Elevation: 5,980 to 9,550
Mean annual precipitation: 20 to 37 inches
Frost-free period: 20 to 60 days

Component Description

Comad and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; very stony sandy loam
E2—6 to 18 inches; very stony sandy loam
E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Como and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Targhee and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches

Drainage class: Somewhat excessively drained
Parent material: Colluvium over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 9 inches; very cobbly sandy loam
E2—9 to 21 inches; very cobbly coarse sandy loam
E/Bw—21 to 26 inches; very cobbly coarse sandy loam
Cr—26 to 60 inches; bedrock

Additional Components

Garlet and similar soils: 10 percent
Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Targhee
- Steep slopes
- Erodible surface
- High windthrow hazard

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

548Sr—Comad-Targhee families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 6,530 to 8,940
Mean annual precipitation: 23 to 37 inches
Frost-free period: 20 to 60 days

Component Description

Comad and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; very stony sandy loam
E2—6 to 18 inches; very stony sandy loam

E and Bt1—18 to 31 inches; very stony loamy sand
E and Bt2—31 to 60 inches; very stony loamy sand

Targhee and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches

Drainage class: Somewhat excessively drained
Parent material: Colluvium over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 9 inches; very cobbly sandy loam
E2—9 to 21 inches; very cobbly coarse sandy loam
E/Bw—21 to 26 inches; very cobbly coarse sandy loam
Cr—26 to 60 inches; bedrock

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Garlet and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Targhee
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

548Sra—Como-Petty families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 6,420 to 9,510
Mean annual precipitation: 25 to 43 inches
Frost-free period: 30 to 60 days

Component Description

Como and similar soils
Composition: 45 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 20 to 45 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Petty and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Steep mountain slopes
Slope: 20 to 45 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over granite colluvium
Flooding: None

Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 5 inches; ashy silt loam
Bw1—5 to 10 inches; ashy silt loam
Bw2—10 to 14 inches; ashy silt loam
2Bw3—14 to 22 inches; very stony loam
2BC—22 to 31 inches; very cobbly loam
2C—31 to 60 inches; very cobbly sandy loam

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform:
- Backslope on valley sides
- Shoulder on valley sides

Additional Components

Garlet and similar soils: 10 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Petty
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

548V—Leighcan-Como-Cowood families, complex, steep mountain slopes

Setting

Elevation: 7,590 to 9,630
Mean annual precipitation: 27 to 39 inches
Frost-free period: 20 to 40 days

Component Description

Leighcan and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam
Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Cowood and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent

Plant associations:
- whitebark pine-subalpine fir
- whitebark pine

Surface layer texture: Very cobbly coarse sandy loam
Depth to restrictive feature:
- Paralithic bedrock: 10 to 19 inches
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.0 inches
Typical profile:

Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 5 inches; very cobbly coarse sandy loam
Bw—5 to 17 inches; very gravelly sandy loam
Cr—17 to 19 inches; bedrock
R—19 to 60 inches; bedrock

Additional Components

Matcher and similar soils: 5 percent
Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Cowood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Matcher
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

548Vr—Como-Leighcan families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 7,870 to 10,900
Mean annual precipitation: 27 to 41 inches
Frost-free period: 20 to 40 days

Component Description

Como and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Leighcan and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 7 inches; gravelly sandy loam
E2—7 to 12 inches; very gravelly sandy loam

Bw1—12 to 30 inches; very gravelly sandy loam
Bw2—30 to 60 inches; very gravelly sandy loam

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Cowood and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Leighcan
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

Cowood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rubble land
- Nonsoil material

548X—Libeg-Tepecreek families-Rock outcrop complex, steep mountain slopes

Setting

Elevation: 5,800 to 8,970
Mean annual precipitation: 17 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A—0 to 10 inches; gravelly sandy loam
Bt1—10 to 16 inches; very flaggy loam
Bt2—16 to 30 inches; very flaggy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Tepecreek and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs
Landform: Steep mountain slopes
Slope: 45 to 70 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Very gravelly sandy clay loam
Depth to restrictive feature:
- Paralithic bedrock: 20 to 40 inches
- Lithic bedrock: 30 to 60 inches

Drainage class: Well drained
Parent material: Colluvium over granite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.6 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 10 inches; very gravelly sandy clay loam
Bt—10 to 20 inches; very gravelly sandy clay loam
BC—20 to 37 inches; very gravelly coarse sandy loam
Cr—37 to 54 inches; bedrock
R—54 to 60 inches; bedrock

Rock outcrop
Composition: 15 percent
Definition: Exposures of bare bedrock
Landform: Mountain slopes

Additional Components

Bearmouth and similar soils: 10 percent
Branham and similar soils: 5 percent
Comad and similar soils: 5 percent

Management Considerations

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tepecreek
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Bearmouth
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Branham
- Steep slopes
- Erodible surface
- High windthrow hazard

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

554E—Redchief-Macabre-Libeg complex, 15 to 35 percent slopes

Setting

Elevation: 5,900 to 6,390
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 90 days

Component Description

Macabre and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Vitrandic Argiustolls
Landform:
- Nose slope on hills
- Mountaintops
- Ridges

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted

Surface layer texture: Gravelly ashy loam
Depth to restrictive feature:
- Lithic bedrock: 20 to 60 inches

Drainage class: Well drained
Parent material:
- Gravelly colluvium
- Rhyolite residuum
- Tuff, welded

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.7 inches
Typical profile:
A—0 to 7 inches; gravelly ashy loam
Bt—7 to 17 inches; very gravelly ashy sandy clay loam
BC—17 to 27 inches; very gravelly ashy sandy clay loam
Cr—27 to 41 inches; weathered bedrock
R—41 to 60 inches; unweathered bedrock

Redchief and similar soils
Composition: 30 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform:
- Footslope on hills
- Backslope on hills
- Mountainbases

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey igneous colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A—0 to 6 inches; cobbly loam
Bt—6 to 10 inches; very gravelly clay
C—10 to 60 inches; very gravelly clay

Libeg and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Alluvial fans
- Side slope on hills
- Riser on terraces

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches

Typical profile:
A—0 to 14 inches; cobbly loam
Bt—14 to 60 inches; very channery clay loam

Additional Components

Mollet and similar soils: 8 percent
Monad and similar soils: 7 percent

Management Considerations

Macabre
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mollet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monad
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

580E—Comad-Elkner complex, 15 to 35 percent slopes

Setting

Elevation: 6,300 to 8,620
Mean annual precipitation: 20 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Comad and similar soils
Composition: 70 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Mountain slopes
Slope: 15 to 35 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Sandy and gravelly granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 5 inches; very stony sandy loam
E2—5 to 18 inches; very stony sandy loam
E and Bt—18 to 43 inches; extremely stony loamy sand
C—43 to 60 inches; extremely stony loamy sand

Elkner and similar soils
Composition: 20 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Mountain slopes
Slope: 15 to 35 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/twinflower
- subalpine fir/blue huckleberry

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Coarse-loamy granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; stony sandy loam
E and Bt1—8 to 17 inches; stony coarse sandy loam
E and Bt2—17 to 37 inches; gravelly coarse sandy loam
BC—37 to 60 inches; stony loamy coarse sand

Additional Components

Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Comad
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Elkner
- High windthrow hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

580F—Comad-Elkner complex, 35 to 60 percent slopes

Setting

Elevation: 6,300 to 8,620
Mean annual precipitation: 20 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Comad and similar soils
Composition: 70 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Mountain slopes
Slope: 35 to 60 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/ninebark-pinegrass phase
- Douglas-fir/twinflower
- subalpine fir/blue huckleberry

Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Sandy and gravelly granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 6 inches; very stony sandy loam
E2—6 to 18 inches; very stony sandy loam
E and Bt—18 to 31 inches; extremely stony loamy sand
C—31 to 60 inches; extremely stony loamy sand

Elkner and similar soils
Composition: 20 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts
Landform: Mountain slopes
Slope: 35 to 60 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/twinflower
- subalpine fir/blue huckleberry

Surface layer texture: Stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Coarse-loamy granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; stony sandy loam
E and Bt1—8 to 17 inches; stony coarse sandy loam
E and Bt2—17 to 37 inches; gravelly coarse sandy loam
BC—37 to 60 inches; stony loamy coarse sand

Additional Components

Comad, greater slopes and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Comad
- Steep slopes
- Erodible surface

- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Comad, greater slope
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop
- Nonsoil material

597F—Evaro gravelly ashy loam, cold, 35 to 60 percent slopes

Setting

Elevation: 7,700 to 8,660
Mean annual precipitation: 20 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Evaro and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocryepts
Landform: Mountain slopes
Slope: 35 to 60 percent
Native plant cover type: Forestland
Plant associations: subalpine fir/grouse whortleberry
Surface layer texture: Gravelly ashy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Sandy and silty volcanic ash over gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 8 inches; gravelly ashy loam
2E and Bt1—8 to 42 inches; very gravelly loam
2E and Bt2—42 to 60 inches; extremely gravelly sandy loam

Additional Components

Elve and similar soils: 5 percent
Phillcher and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Evaro
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Phillcher
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

611E—Adel-Libeg-Woodhurst families, complex, alluvial-colluvial deposits

Setting

Elevation: 6,440 to 8,410
Mean annual precipitation: 17 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Adel and similar soils
Composition: 40 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 32 inches; loam
Bw—32 to 60 inches; gravelly loam

Libeg and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
A—0 to 10 inches; very cobbly sandy loam
Bt1—10 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery sandy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Woodhurst and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 16 inches; gravelly loam
Bt1—16 to 30 inches; very cobbly clay loam
Bt2—30 to 60 inches; extremely cobbly clay loam

Additional Components

Bearmouth and similar soils: 10 percent
Beeftrail and similar soils: 10 percent

Management Considerations

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- High windthrow hazard
- Low bearing strength

Beeftrail
- High windthrow hazard

612G—Wetopa-Finn-Wichup families, complex, alluvial-colluvial deposits

Setting

Elevation: 6,640 to 9,090
Mean annual precipitation: 21 to 65 inches
Frost-free period: 30 to 60 days

Component Description

Wetopa and similar soils
Composition: 60 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Tuff
- Andesite alluvium
- Rhyolite

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches
Typical profile:
A—0 to 10 inches; clay loam
Bt—10 to 34 inches; clay
BC—34 to 60 inches; clay loam

Finn and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls
Landform:
- Drainageways
- Fans

Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- tufted hairgrass h.t.
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material:
- Andesite alluvium
- Tuff
- Rhyolite

Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 2 inches; peat
A—2 to 10 inches; loam
Bw1—10 to 16 inches; very gravelly loam
Bw2—16 to 22 inches; very gravelly sandy loam
C—22 to 60 inches; very cobbly sandy clay loam

Wichup and similar soils
Composition: 20 percent
Taxonomic class: Coarse-loamy, mixed, superactive Histic Cryaquolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material:
- Andesite alluvium
- Tuff
- Rhyolite

Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
Oe—0 to 12 inches; peat
A—12 to 24 inches; sandy loam
Bg—24 to 60 inches; gravelly sandy loam

Management Considerations

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wichup
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

613E—Bridger-Adel-Wetopa families, complex, alluvial-colluvial deposits

Setting

Elevation: 6,080 to 7,820
Mean annual precipitation: 13 to 31 inches
Frost-free period: 30 to 70 days

Component Description

Bridger and similar soils
Composition: 30 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Conglomerate alluvium
- Sandstone and shale

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
A—0 to 9 inches; clay loam
Bt—9 to 24 inches; clay
Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; gravelly loam

Adel and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls

Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Conglomerate alluvium
- Sandstone and shale

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 32 inches; loam
Bw—32 to 60 inches; gravelly loam

Wetopa and similar soils
Composition: 20 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Sandstone and shale
- Conglomerate alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches
Typical profile:
A—0 to 10 inches; clay loam
Bt—10 to 34 inches; clay
BC—34 to 60 inches; clay loam

Additional Components

Lowder and similar soils: 10 percent
Dunkleber and similar soils: 5 percent
Mooseflat and similar soils: 5 percent
Philipsburg and similar soils: 5 percent

Management Considerations

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dunkleber
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

613G—Adel-Dunkleber-Wetopa families, complex, alluvial-colluvial deposits

Setting

Elevation: 6,210 to 7,960
Mean annual precipitation: 17 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Adel and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material:
- Conglomerate alluvium
- Sandstone and shale

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 32 inches; loam
Bw—32 to 60 inches; gravelly loam

Dunkleber and similar soils
Composition: 25 percent
Taxonomic class: Euic Typic Cryofibrists
Landform:
- Drainageways
- Fans

Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Organic over conglomerate sandstone and shale alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi1—0 to 12 inches; mucky peat
Oi2—12 to 52 inches; mucky peat
2C—52 to 60 inches; loam

Wetopa and similar soils
Composition: 25 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Conglomerate alluvium
- Sandstone and shale

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches

Typical profile:
A—0 to 10 inches; clay loam
Bt—10 to 34 inches; clay
BC—34 to 60 inches; clay loam

Additional Components

Lowder and similar soils: 10 percent
Mooseflat and similar soils: 5 percent
Philipsburg and similar soils: 5 percent
Woodhurst and similar soils: 5 percent

Management Considerations

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dunkleber
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

613P—Maciver-Philipsburg-Dunkleber families, complex, alluvial-colluvial deposits

Setting

Elevation: 6,370 to 8,430
Mean annual precipitation: 13 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Maciver and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Conglomerate alluvium
- Sandstone and shale

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; loam
Bt—8 to 12 inches; very gravelly clay loam
Bk—12 to 60 inches; very gravelly loam

Philipsburg and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Sandstone and shale
- Conglomerate alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 8.2 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; loam
Bt—8 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Dunkleber and similar soils
Composition: 15 percent
Taxonomic class: Euic Typic Cryofibrists
Landform:
- Drainageways
- Fans

Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Organic over conglomerate sandstone and shale alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi1—0 to 12 inches; mucky peat
Oi2—12 to 52 inches; mucky peat
2C—52 to 60 inches; loam

Additional Components

Rooset and similar soils: 10 percent

Management Considerations

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dunkleber
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rooset
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

613Ua—Bata-Rubycreek-Lowder families, complex, alluvial-colluvial deposits basins

Setting

Elevation: 6,380 to 7,540
Mean annual precipitation: 25 to 33 inches
Frost-free period: 20 to 60 days

Component Description

Bata and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs
Landform: Fans
Slope: 0 to 20 percent
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 12 inches; gravelly ashy silt loam
2E/Bt—12 to 23 inches; very gravelly sandy loam
2Bt—23 to 60 inches; very gravelly sandy clay loam

Rubycreek and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Dystrocryepts
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 3 inches; ashy silt loam
Bw—3 to 12 inches; ashy silt loam
2Bw—12 to 20 inches; very stony loam

2BC—20 to 29 inches; very cobbly loam
2C—29 to 60 inches; very cobbly sandy loam

Lowder and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Shale alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Relyea and similar soils: 10 percent
Worock and similar soils: 10 percent
Swifton and similar soils: 5 percent

Management Considerations

Bata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubycreek
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Relyea
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Swifton
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

614G—Trout Creek-Foolhen-Benteen families, complex, alluvial-colluvial deposits

Setting

Elevation: 5,960 to 9,380
Mean annual precipitation: 17 to 51 inches
Frost-free period: 30 to 60 days

Component Description

Trout Creek and similar soils
Composition: 45 percent
Taxonomic class: Fine, smectitic Typic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
A—0 to 9 inches; clay loam
Bt—9 to 24 inches; clay
Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; gravelly loam

Foolhen and similar soils
Composition: 35 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls
Landform:
- Drainageways
- Fans

Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Limestone alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 9.6 inches
Typical profile:
Oi—0 to 1 inch; peat
A—1 to 8 inches; loam
Bg—8 to 18 inches; loam
Cg1—18 to 25 inches; loam
Cg2—25 to 60 inches; gravelly loam

Benteen and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.2 inches
Typical profile:
A—0 to 4 inches; loam
Bt—4 to 22 inches; gravelly clay loam
C—22 to 60 inches; gravelly loam

Management Considerations

Trout Creek
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Benteen
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

616S—Helmville-Whitore-Foolhen families, complex, alluvial-colluvial deposits

Setting

Elevation: 6,620 to 9,500
Mean annual precipitation: 16 to 47 inches
Frost-free period: 20 to 60 days

Component Description

Helmville and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Whitore and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam

Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Foolhen and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls
Landform:
- Drainageways
- Fans

Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Limestone alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 9.6 inches
Typical profile:
Oi—0 to 1 inch; peat
A—1 to 8 inches; loam
Bg—8 to 18 inches; loam
Cg1—18 to 25 inches; loam
Cg2—25 to 60 inches; gravelly loam

Additional Components

Yellowmule and similar soils: 10 percent

Management Considerations

Helmville
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Yellowmule
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

617E—Libeg-Bridger-Sebud families, complex, alluvial-colluvial deposits

Setting

Elevation: 6,540 to 7,990
Mean annual precipitation: 19 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.4 inches
Typical profile:
A—0 to 10 inches; very cobbly loam
Bt1—10 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery clay loam
BC—30 to 60 inches; very cobbly sandy loam

Bridger and similar soils
Composition: 25 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
A—0 to 9 inches; clay loam
Bt—9 to 24 inches; gravelly clay loam
Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; very gravelly loam

Sebud and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; cobbly loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Bearmouth and similar soils: 10 percent
Gateview and similar soils: 5 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- High windthrow hazard
- Low bearing strength

Gateview
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

617G—Libeg-Finn-Sebud families, complex, alluvial-colluvial deposits

Setting

Elevation: 6,010 to 9,070
Mean annual precipitation: 15 to 39 inches
Frost-free period: 30 to 60 days

Component Description

Libeg and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.4 inches
Typical profile:
A—0 to 10 inches; very cobbly loam
Bt1—10 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery sandy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Finn and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls
Landform:
- Drainageways
- Fans

Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Quartzite alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 4.1 inches
Typical profile:
Oi—0 to 2 inches; peat
A—2 to 10 inches; gravelly loam

Bw1—10 to 16 inches; very gravelly sandy loam
Bw2—16 to 22 inches; very gravelly sandy loam
C—22 to 60 inches; very cobbly sandy loam

Sebud and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A1—0 to 4 inches; cobbly loam
A2—4 to 10 inches; very stony sandy loam
Bw1—10 to 22 inches; very stony sandy loam
Bw2—22 to 60 inches; very stony sandy loam

Additional Components

Foolhen and similar soils: 10 percent
Bearmouth and similar soils: 5 percent
Bridger and similar soils: 5 percent
Lilylake and similar soils: 5 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- High windthrow hazard
- Low bearing strength

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lilylake
- Flooding
- High water table
- High windthrow hazard

617S—Garlet-Worock-Lowder families, complex, alluvial-colluvial deposits

Setting

Elevation: 6,170 to 7,750
Mean annual precipitation: 20 to 29 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Fans
Slope: 0 to 20 percent
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Quartzite colluvium
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Worock and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Lowder and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Quartzite alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Stecum and similar soils: 10 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Stecum
- High windthrow hazard

618C—Alta-Bearmouth-Libeg families, complex, alluvial-colluvial deposits

Setting

Elevation: 6,170 to 8,640
Mean annual precipitation: 17 to 35 inches
Frost-free period: 20 to 60 days

Component Description

Alta and similar soils
Composition: 45 percent
Taxonomic class: Sandy-skeletal, mixed Pachic Haplocryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Very bouldery coarse sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
A—0 to 17 inches; very bouldery coarse sandy loam
C—17 to 60 inches; very stony loamy coarse sand

Bearmouth and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Libeg and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.4 inches
Typical profile:
A—0 to 10 inches; very cobbly sandy loam
Bt—10 to 22 inches; very channery loam
BC—22 to 60 inches; very cobbly sandy loam

Additional Components

Beeftrail and similar soils: 10 percent

Management Considerations

Alta
- High windthrow hazard
- Surface boulders

Bearmouth
- High windthrow hazard
- Low bearing strength

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Beeftrail
- High windthrow hazard

618G—Dunkleber-Mooseflat-Wichup families, complex, alluvial-colluvial deposits

Setting

Elevation: 6,060 to 8,760
Mean annual precipitation: 16 to 43 inches
Frost-free period: 30 to 70 days

Component Description

Dunkleber and similar soils
Composition: 30 percent
Taxonomic class: Euic Typic Cryofibrists
Landform:
- Drainageways
- Fans

Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.
- Nebraska sedge c.t.
- beaked sedge h.t.

Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Organic over granite alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi1—0 to 12 inches; mucky peat
Oi2—12 to 52 inches; mucky peat
2C—52 to 60 inches; loam

Mooseflat and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 2 inches; peat
A—2 to 10 inches; loam
Bg—10 to 22 inches; loam
2Cg—22 to 60 inches; very cobbly sand

Wichup and similar soils
Composition: 25 percent
Taxonomic class: Coarse-loamy, mixed, superactive Histic Cryaquolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- water sedge h.t.-tufted hairgrass phase
- Nebraska sedge c.t.

- tufted hairgrass h.t.
- beaked sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material: Granite alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
Oe—0 to 12 inches; peat
A—12 to 24 inches; sandy loam
Bg—24 to 60 inches; gravelly sandy loam

Additional Components

Foolhen and similar soils: 10 percent
Lowder and similar soils: 10 percent

Management Considerations

Dunkleber
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wichup
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

618U—Como-Elvick-Lowder families, complex, alluvial-colluvial deposits

Setting

Elevation: 6,170 to 8,400
Mean annual precipitation: 19 to 35 inches
Frost-free period: 20 to 60 days

Component Description

Como and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Elvick and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocryepts
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- spruce/common horsetail
- spruce/sweetscented bedstraw
- subalpine fir/queencup beadlily
- subalpine fir/sweetscented bedstraw
- subalpine fir/bluejoint

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Granite alluvium
Flooding: None
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 4 inches; slightly decomposed plant material
E1—4 to 11 inches; very cobbly loam

E2—11 to 22 inches; very cobbly loam
E/Bw—22 to 42 inches; very cobbly coarse sandy loam
BC—42 to 60 inches; extremely cobbly coarse sandy loam

Lowder and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Lilylake and similar soils: 10 percent

Management Considerations

Como
- High windthrow hazard
- Low bearing strength

Elvick
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lilylake
- Flooding
- High water table
- High windthrow hazard

618Ua—Littlesalmon-Como-Lowder families, complex, alluvial-colluvial deposits

Setting

Elevation: 6,210 to 8,190
Mean annual precipitation: 21 to 43 inches
Frost-free period: 20 to 60 days

Component Description

Littlesalmon and similar soils
Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Andic Haplocryepts
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Very bouldery ashy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over granite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; very bouldery ashy loam
Bw1—4 to 12 inches; very bouldery ashy loam
2Bw2—12 to 22 inches; very gravelly sandy loam
2BC—22 to 60 inches; very gravelly loamy coarse sand

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam

BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Lowder and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Quartzite alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Bata and similar soils: 10 percent
Elvick and similar soils: 10 percent
Lilylake and similar soils: 5 percent

Management Considerations

Littlesalmon
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Como
- High windthrow hazard
- Low bearing strength

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bata
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lilylake
- Flooding
- High water table
- High windthrow hazard

624D—Maciver-Tibson-Raynesford families, complex, pediment slopes

Setting

Elevation: 5,880 to 7,470
Mean annual precipitation: 15 to 21 inches
Frost-free period: 30 to 70 days

Component Description

Maciver and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Pediments
Slope: 5 to 30 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Tibson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Pediments
Slope: 5 to 30 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches

Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Raynesford and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, carbonatic Calcic Haplocryolls
Landform: Pediments
Slope: 5 to 30 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale pedisediment
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.1 inches
Typical profile:
A—0 to 16 inches; gravelly loam
Bk1—16 to 28 inches; gravelly loam
Bk2—28 to 60 inches; very gravelly loam

Management Considerations

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Raynesford
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

624E—Maciver-Tibson-Adel families, complex pediment slopes

Setting

Elevation: 6,030 to 8,620
Mean annual precipitation: 17 to 31 inches
Frost-free period: 30 to 70 days

Component Description

Maciver and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Pediments
Slope: 5 to 30 percent

Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Tibson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Pediments
Slope: 5 to 30 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Adel and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Pediments
Slope: 5 to 30 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches

Typical profile:
A1—0 to 9 inches; loam
A2—9 to 32 inches; loam
Bw—32 to 60 inches; gravelly loam

Additional Components

Philipsburg and similar soils: 10 percent
Raynesford and similar soils: 10 percent

Management Considerations

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Raynesford
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

641S—Como-Garlet-Mooseflat families, complex, valley bottoms

Setting

Elevation: 6,050 to 8,590
Mean annual precipitation: 17 to 45 inches
Frost-free period: 20 to 60 days

Component Description

Como and similar soils
Composition: 45 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gneiss alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Garlet and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Drainageways
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Mooseflat and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Gneiss alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 4.8 inches

Typical profile:
Oi—0 to 2 inches; peat
A—2 to 10 inches; loam
Bg—10 to 22 inches; loam
2Cg—22 to 60 inches; very cobbly sand

Management Considerations

Como
- High windthrow hazard
- Low bearing strength

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

642G—Wetopa-Finn-Wichup families, complex, valley bottoms

Setting

Elevation: 6,220 to 8,450
Mean annual precipitation: 15 to 27 inches
Frost-free period: 30 to 60 days

Component Description

Wetopa and similar soils
Composition: 50 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Rhyolite
- Andesite alluvium
- Tuff

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches
Typical profile:
A—0 to 10 inches; clay loam
Bt—10 to 34 inches; clay
BC—34 to 60 inches; clay loam

Finn and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material:
- Andesite
- Tuff alluvium
- Rhyolite

Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
Oi—0 to 2 inches; peat
A—2 to 10 inches; loam
Bw1—10 to 16 inches; very gravelly loam
Bw2—16 to 22 inches; very gravelly loam
C—22 to 60 inches; very cobbly sandy clay loam

Wichup and similar soils
Composition: 20 percent
Taxonomic class: Coarse-loamy, mixed, superactive Histic Cryaquolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material:
- Andesite alluvium
- Tuff
- Rhyolite

Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
Oe—0 to 12 inches; peat
A—12 to 24 inches; sandy loam
Bg—24 to 60 inches; gravelly sandy loam

Management Considerations

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wichup
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

643G—Dunkleber-Wetopa-Foolhen families, complex, valley bottoms

Setting

Elevation: 6,080 to 8,480
Mean annual precipitation: 15 to 35 inches
Frost-free period: 30 to 70 days

Component Description

Dunkleber and similar soils
Composition: 30 percent
Taxonomic class: Euic Typic Cryofibrists
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Organic over conglomerate sandstone and shale alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi1—0 to 12 inches; mucky peat
Oi2—12 to 52 inches; mucky peat
2C—52 to 60 inches; loam

Wetopa and similar soils
Composition: 25 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Sandstone and shale
- Conglomerate alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches
Typical profile:
A—0 to 10 inches; clay loam
Bt—10 to 34 inches; clay
BC—34 to 60 inches; clay loam

Foolhen and similar soils
Composition: 15 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material:
- Conglomerate alluvium
- Sandstone and shale

Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 9.6 inches
Typical profile:
Oi—0 to 1 inch; peat
A—1 to 8 inches; loam
Bg—8 to 18 inches; loam
Cg1—18 to 25 inches; loam
Cg2—25 to 60 inches; gravelly loam

Additional Components

Lowder and similar soils: 10 percent
Mooseflat and similar soils: 10 percent
Woodhurst and similar soils: 10 percent

Management Considerations

Dunkleber
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

644G—Foolhen-Bearmouth-Finn families, complex, valley bottoms

Setting

Elevation: 5,840 to 8,430
Mean annual precipitation: 15 to 37 inches
Frost-free period: 30 to 60 days

Component Description

Foolhen and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- tufted hairgrass h.t.
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 9.6 inches
Typical profile:
Oi—0 to 1 inch; peat
A—1 to 8 inches; loam
Bg—8 to 18 inches; loam
Cg1—18 to 25 inches; loam
Cg2—25 to 60 inches; gravelly loam

Bearmouth and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Ustic Haplocryolls
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very cobbly sandy loam
C—14 to 60 inches; very cobbly loamy sand

Finn and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- tufted hairgrass h.t.
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.5 inches

Typical profile:
Oi—0 to 2 inches; peat
A—2 to 10 inches; loam
Bw1—10 to 16 inches; very gravelly loam
Bw2—16 to 22 inches; very gravelly loam
C—22 to 60 inches; very cobbly sandy clay loam

Additional Components

Bridger and similar soils: 10 percent
Libeg and similar soils: 5 percent
Philipsburg and similar soils: 5 percent

Management Considerations

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth
- High windthrow hazard
- Low bearing strength

Finn
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

644U—Helmville-Lowder-Whitore families, complex, valley bottoms

Setting

Elevation: 5,980 to 8,490
Mean annual precipitation: 17 to 39 inches
Frost-free period: 20 to 60 days

Component Description

Helmville and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Lowder and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Whitore and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Additional Components

Elvick and similar soils: 10 percent

Management Considerations

Helmville
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elvick
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

646G—Levengood-Benteen-Wetopa families, complex, valley bottoms

Setting

Elevation: 5,890 to 8,280
Mean annual precipitation: 13 to 25 inches
Frost-free period: 30 to 60 days

Component Description

Levengood and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Pachic Haplocryolls
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Rangeland

Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.9 inches
Typical profile:
A1—0 to 6 inches; gravelly loam
A2—6 to 16 inches; very gravelly loam
Bk1—16 to 20 inches; very gravelly loam
Bk2—20 to 30 inches; very gravelly loam
Bk3—30 to 60 inches; very cobbly loam

Benteen and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Argicryolls
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.2 inches
Typical profile:
A—0 to 4 inches; loam
Bt—4 to 22 inches; gravelly clay loam
C—22 to 60 inches; gravelly loam

Wetopa and similar soils
Composition: 20 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches

Typical profile:
A—0 to 10 inches; clay loam
Bt—10 to 34 inches; clay
BC—34 to 60 inches; clay loam

Additional Components

Dunkleber and similar soils: 10 percent
Tibson and similar soils: 10 percent
Bridger and similar soils: 5 percent

Management Considerations

Levengood
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Benteen
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dunkleber
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

646S—Helmville-Tibson-Whitore families, complex, valley bottoms

Setting

Elevation: 6,120 to 8,400
Mean annual precipitation: 15 to 41 inches
Frost-free period: 20 to 60 days

Component Description

Helmville and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Drainageways
Slope: 0 to 20 percent

Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam
Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Tibson and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Whitore and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Management Considerations

Helmville
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

647G—Finn-Wander-Foolhen families, complex, valley bottoms

Setting

Elevation: 5,800 to 8,660
Mean annual precipitation: 17 to 47 inches
Frost-free period: 30 to 60 days

Component Description

Finn and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Quartzite alluvium
Flooding: Frequent
Water table: Present

Available water capacity to 60 inch depth: Approximately 4.1 inches
Typical profile:
Oi—0 to 2 inches; peat
A—2 to 10 inches; gravelly loam
Bw1—10 to 16 inches; very gravelly sandy loam
Bw2—16 to 22 inches; very gravelly sandy loam
C—22 to 60 inches; very cobbly sandy loam

Wander and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Argicryolls
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.4 inches
Typical profile:
A—0 to 6 inches; very cobbly loam
Bt1—6 to 16 inches; very channery loam
Bt2—16 to 30 inches; very channery sandy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Foolhen and similar soils
Composition: 15 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Quartzite alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 9.6 inches
Typical profile:
Oi—0 to 1 inch; peat
A—1 to 8 inches; loam
Bg—8 to 18 inches; loam
Cg1—18 to 25 inches; loam
Cg2—25 to 60 inches; gravelly loam

Additional Components

Kamack and similar soils: 10 percent
Ledgefork and similar soils: 10 percent
Wichup and similar soils: 5 percent

Management Considerations

Finn
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wander
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Kamack
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ledgefork
- High windthrow hazard
- Low bearing strength

Wichup
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

647U—Garlet-Como-Lilylake families, complex, valley bottoms

Setting

Elevation: 5,880 to 7,850
Mean annual precipitation: 15 to 37 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Drainageways
Slope: 0 to 20 percent
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Lilylake and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Histic Cryaquepts
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Muck
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Quartzite alluvium
Flooding: Occasional
Water table: Present
Ponding duration: Brief
Available water capacity to 60 inch depth: Approximately 1.5 inches

Typical profile:
Oa—0 to 12 inches; muck
C1—12 to 15 inches; gravelly coarse sand
C2—15 to 60 inches; extremely gravelly coarse sand

Additional Components

Elvick and similar soils: 10 percent
Lowder and similar soils: 10 percent

Management Considerations

Garlet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Como
- High windthrow hazard
- Low bearing strength

Lilylake
- Flooding
- High water table
- High windthrow hazard

Elvick
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

648G—Wichup-Mooseflat-Lowder families, complex, valley bottoms

Setting

Elevation: 5,490 to 7,920
Mean annual precipitation: 15 to 41 inches
Frost-free period: 30 to 70 days

Component Description

Wichup and similar soils
Composition: 40 percent
Taxonomic class: Coarse-loamy, mixed, superactive Histic Cryaquolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.

- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material: Granite alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
Oe—0 to 12 inches; peat
A—12 to 24 inches; sandy loam
Bg—24 to 60 inches; gravelly sandy loam

Mooseflat and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Rangeland
Plant associations:
- beaked sedge h.t.
- Nebraska sedge c.t.
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 2 inches; peat
A—2 to 10 inches; loam
Bg—10 to 22 inches; loam
2Cg—22 to 60 inches; very cobbly sand

Lowder and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform: Drainageways
Slope: 0 to 10 percent
Plant associations:
- water sedge h.t.-tufted hairgrass phase
- tufted hairgrass h.t.
- beaked sedge h.t.
- Nebraska sedge c.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite alluvium
Flooding: Frequent

Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Lilylake and similar soils: 10 percent

Management Considerations

Wichup
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lilylake
- Flooding
- High water table
- High windthrow hazard

648U—Lowder-Lilylake-Como families, complex, valley bottoms

Setting

Elevation: 5,900 to 7,530
Mean annual precipitation: 15 to 35 inches
Frost-free period: 20 to 60 days

Component Description

Lowder and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- water sedge h.t.
- beaked sedge h.t.
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Lilylake and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Histic Cryaquepts
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Muck
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite alluvium
Flooding: Occasional
Water table: Present
Ponding duration: Brief
Available water capacity to 60 inch depth: Approximately 1.5 inches
Typical profile:
Oa—0 to 12 inches; muck
C1—12 to 15 inches; gravelly coarse sand
C2—15 to 60 inches; extremely gravelly coarse sand

Como and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/menziesia
- subalpine fir/twinflower
- spruce/twinflower

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam

BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Additional Components

Elvick and similar soils: 10 percent

Management Considerations

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lilylake
- Flooding
- High water table
- High windthrow hazard

Como
- High windthrow hazard
- Low bearing strength

Elvick
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

648Ua—Upsata-Como-Lowder families, complex, valley bottoms

Setting

Elevation: 6,200 to 7,850
Mean annual precipitation: 19 to 43 inches
Frost-free period: 20 to 60 days

Component Description

Upsata and similar soils
Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Andic Eutrocryepts
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Volcanic ash over granite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.3 inches

Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 13 inches; gravelly ashy silt loam
2E—13 to 20 inches; gravelly fine sandy loam
2E/Bw—20 to 60 inches; extremely gravelly loamy sand

Como and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Drainageways
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Lowder and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform: Drainageways
Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Quartzite alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Bata and similar soils: 10 percent
Elvick and similar soils: 10 percent
Waldbillig and similar soils: 5 percent

Management Considerations

Upsata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Como
- High windthrow hazard
- Low bearing strength

Lowder
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bata
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Waldbillig
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

676B—Finn loam, 0 to 4 percent slopes

Setting

Elevation: 5,790 to 6,600
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Finn and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Flood plains
Slope: 0 to 4 percent

Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Gravelly alluvium
Flooding: Rare
Water table: Present
Ponding duration: Brief
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 12 inches; loam
Bw1—12 to 18 inches; very gravelly loam
2Bw2—18 to 24 inches; very gravelly sandy clay loam
2C—24 to 60 inches; very gravelly sandy clay loam

Additional Components

Dunkleber and similar soils: 4 percent
Foolhen and similar soils: 4 percent
Mooseflat and similar soils: 4 percent
Kilgore and similar soils: 3 percent

Management Considerations

Finn
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dunkleber
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Kilgore
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

680G—Rock outcrop-Comad complex, 45 to 80 percent slopes

Setting

Elevation: 8,400 to 9,240
Mean annual precipitation: 20 to 35 inches
Frost-free period: 30 to 70 days

Component Description

Rock outcrop
Composition: 60 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Comad and similar soils
Composition: 25 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Mountain slopes
Slope: 45 to 80 percent
Native plant cover type: Forestland
Plant associations: Douglas-fir/ninebark-pinegrass phase
Surface layer texture: Very stony sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Sandy and gravelly granite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E1—1 to 5 inches; very stony sandy loam
E2—5 to 18 inches; very stony sandy loam
E and Bt—18 to 43 inches; extremely stony loamy sand
C—43 to 60 inches; extremely stony loamy sand

Additional Components

Comad, less slopes and similar soils: 10 percent
Evaro and similar soils: 5 percent

Management Considerations

Rock outcrop
- Nonsoil material

Comad
- Steep slopes
- Erodible surface
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Comad, lesser slope
- High windthrow hazard
- Cutslope slumping
- Cutslope erosion

Evaro
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

682E—Elve bouldery sandy loam, 4 to 25 percent slopes

Setting

Elevation: 6,000 to 7,570
Mean annual precipitation: 20 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Elve and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Mountain slopes
Slope: 4 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry

Surface layer texture: Bouldery sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
Oe—0 to 2 inches; moderately decomposed plant material
E—2 to 17 inches; bouldery sandy loam
Bw—17 to 29 inches; extremely cobbly loam
BC—29 to 60 inches; extremely gravelly loam

Additional Components

Evaro and similar soils: 4 percent
Loberg and similar soils: 4 percent
Rubble land: 4 percent
Elve, greater slopes and similar soils: 3 percent

Management Considerations

Elve
- High windthrow hazard
- Low bearing strength

Evaro
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Loberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

Elve, greater slope
- High windthrow hazard
- Low bearing strength

683C—Philipsburg-Maciver-Prudy families, complex, alluvial fans

Setting

Elevation: 6,250 to 8,550
Mean annual precipitation: 13 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Philipsburg and similar soils
Composition: 50 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.9 inches
Typical profile:
A—0 to 7 inches; cobbly loam
Bt—7 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Maciver and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Prudy and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Haplocryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.6 inches
Typical profile:
A—0 to 10 inches; loam
Bk—10 to 60 inches; gravelly loam

Additional Components

Tiban and similar soils: 10 percent

Management Considerations

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Prudy
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

683E—Philipsburg-Prudy-Maciver families, complex, alluvial fans

Setting

Elevation: 5,840 to 8,320
Mean annual precipitation: 13 to 27 inches
Frost-free period: 30 to 70 days

Component Description

Philipsburg and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.9 inches
Typical profile:
A—0 to 7 inches; cobbly loam
Bt—7 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Prudy and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Haplocryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.6 inches
Typical profile:
A—0 to 10 inches; loam
Bk—10 to 60 inches; gravelly loam

Maciver and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Alluvial fans
Slope: 0 to 20 percent

Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Additional Components

Tiban and similar soils: 10 percent
Wetopa and similar soils: 10 percent
Woodhurst and similar soils: 5 percent

Management Considerations

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Prudy
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

683P—Maciver-Philipsburg-Tiban families, complex, alluvial fans

Setting

Elevation: 6,140 to 8,530
Mean annual precipitation: 17 to 31 inches
Frost-free period: 30 to 70 days

Component Description

Maciver and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; loam
Bt—8 to 12 inches; very gravelly clay loam
Bk—12 to 60 inches; very gravelly loam

Philipsburg and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; cobbly loam

Bt—8 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Tiban and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; gravelly loam
Bw—8 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Additional Components

Bridger and similar soils: 10 percent
Elve and similar soils: 10 percent
Gambler and similar soils: 5 percent

Management Considerations

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gambler
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

683Sa—Bata-Petty-Worock families, complex, alluvial fans

Setting

Elevation: 6,170 to 7,990
Mean annual precipitation: 20 to 35 inches
Frost-free period: 20 to 60 days

Component Description

Bata and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs
Landform: Alluvial fans
Slope: 5 to 40 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 12 inches; gravelly ashy silt loam
2E/Bt—12 to 23 inches; very gravelly sandy loam
2Bt—23 to 60 inches; very gravelly sandy clay loam

Petty and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Alluvial fans
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over shale alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 5 inches; ashy silt loam
Bw1—5 to 10 inches; ashy silt loam
Bw2—10 to 14 inches; ashy silt loam
2Bw3—14 to 22 inches; very stony loam
2BC—22 to 31 inches; very cobbly loam
2C—31 to 60 inches; very cobbly sandy loam

Worock and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Alluvial fans
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Additional Components

Relyea and similar soils: 10 percent
Swifton and similar soils: 10 percent

Management Considerations

Bata
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Petty
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Relyea
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Swifton
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

685E—Maciver-Tibson families, complex, alluvial fans

Setting

Elevation: 6,050 to 7,710
Mean annual precipitation: 12 to 21 inches
Frost-free period: 30 to 70 days

Component Description

Maciver and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Tibson and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland

Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Additional Components

Elve and similar soils: 10 percent
Levengood and similar soils: 10 percent
Philipsburg and similar soils: 5 percent

Management Considerations

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Levengood
- High windthrow hazard
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

686E—Hanson-Levengood-Elve families, complex, alluvial fans

Setting

Elevation: 6,290 to 7,320
Mean annual precipitation: 13 to 23 inches
Frost-free period: 30 to 70 days

Component Description

Hanson and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Levengood and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Pachic Haplocryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.9 inches
Typical profile:
A1—0 to 6 inches; gravelly loam
A2—6 to 16 inches; very gravelly loam
Bk1—16 to 20 inches; very gravelly loam
Bk2—20 to 30 inches; very gravelly loam
Bk3—30 to 60 inches; very cobbly loam

Elve and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Alluvial fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted

Drainage class: Well drained
Parent material: Limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.2 inches
Typical profile:
E—0 to 6 inches; gravelly loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Additional Components

Bridger and similar soils: 5 percent
Rooset and similar soils: 5 percent

Management Considerations

Hanson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Levengood
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rooset
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

696E—Worock gravelly loam, dry, 15 to 35 percent slopes

Setting

Elevation: 5,900 to 7,350
Mean annual precipitation: 19 to 30 inches
Frost-free period: 30 to 50 days

Component Description

Worock and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Mountain slopes
Slope: 15 to 35 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass-pinegrass phase
- subalpine fir/twinflower

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
E—1 to 6 inches; gravelly loam
E/Bt—6 to 19 inches; gravelly clay loam
Bt—19 to 39 inches; very gravelly clay loam
BC—39 to 60 inches; very gravelly sandy clay loam

Additional Components

Evaro and similar soils: 4 percent
Loberg and similar soils: 4 percent
Rock outcrop: 4 percent
Danaher and similar soils: 3 percent

Management Considerations

Worock
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Evaro
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Loberg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Danaher
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

696F—Worock gravelly loam, dry, 35 to 60 percent slopes

Setting

Elevation: 5,740 to 7,080
Mean annual precipitation: 20 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Worock and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Mountain slopes

Slope: 35 to 60 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- subalpine fir/twinflower

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.5 inches
Typical profile:

Oe—0 to 1 inch; moderately decomposed plant material
E—1 to 6 inches; gravelly loam
E/Bt—6 to 19 inches; gravelly clay loam
Bt—19 to 39 inches; very gravelly clay loam
BC—39 to 60 inches; very gravelly sandy clay loam

Additional Components

Evaro and similar soils: 4 percent
Loberg and similar soils: 4 percent
Rock outcrop: 4 percent
Danaher and similar soils: 3 percent

Management Considerations

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Evaro
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Loberg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Danaher
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

702E—Daras-Libeg-Torpy families, complex, landslide deposits

Setting

Elevation: 6,110 to 8,510
Mean annual precipitation: 21 to 37 inches
Frost-free period: 30 to 70 days

Component Description

Daras and similar soils
Composition: 30 percent
Taxonomic class: Ashy, glassy Vitrandic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly ashy sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over tuff rhyolite and andesite; complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 6 inches; gravelly ashy sandy loam
E—6 to 10 inches; ashy loamy coarse sand
BC1—10 to 38 inches; gravelly ashy sandy loam
BC2—38 to 60 inches; gravelly ashy coarse sandy loam

Libeg and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Tuff
- Rhyolite
- Complex landslide deposits

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
A—0 to 10 inches; gravelly loam
Bt1—10 to 16 inches; very flaggy loam
Bt2—16 to 30 inches; very flaggy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Torpy and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Ashy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over complex landslide deposits of tuff, andesite, and rhyolite
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.6 inches
Typical profile:
A—0 to 4 inches; ashy loam
E—4 to 7 inches; cobbly ashy loam
Bw—7 to 37 inches; very cobbly loam
BC—37 to 60 inches; very cobbly loam

Additional Components

Adel and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Daras
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Cutslope slumping

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Torpy
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Cutslope slumping

Adel
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength

- Surface compaction hazard
- Cutslope slumping

Rock outcrop
- Nonsoil material

702Es—Maurice, very stony-Maurice-Sigbird, very stony complex, 12 to 35 percent slopes

Setting

Elevation: 6,120 to 7,790
Mean annual precipitation: 18 to 21 inches
Frost-free period: 30 to 50 days

Component Description

Maurice, very stony and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Nose slope backslope on mountains
Slope: 15 to 35 percent, east to northwest aspects
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, argillite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A1—0 to 5 inches; gravelly loam
A2—5 to 12 inches; very channery loam
Bw—12 to 21 inches; very channery loam
BC—21 to 33 inches; very channery loam
C—33 to 60 inches; very channery loam

Maurice and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Nose slope backslope on mountains
Slope: 12 to 25 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A1—0 to 5 inches; loam
A2—5 to 12 inches; very channery loam

Bw—12 to 21 inches; very channery loam
BC—21 to 33 inches; very channery loam
C—33 to 60 inches; very channery loam

Sigbird, very stony and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform: Nose slope backslope on mountains
Slope: 12 to 35 percent, east to northwest aspects
Plant associations: Douglas-fir/Idaho fescue
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, argillite
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained
Parent material: Argillite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
A—0 to 5 inches; very channery loam
Bw—5 to 12 inches; very channery loam
C—12 to 14 inches; extremely channery sandy loam
R—14 to 60 inches; bedrock

Additional Components

Zonite, extremely stony and similar soils: 7 percent
Rock outcrop: 3 percent

Management Considerations

Maurice, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maurice
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sigbird, very stony
- High windthrow hazard
- Shallow soil
- Low bearing strength

Zonite, extremely stony
- High windthrow hazard
- Shallow soil
- Cutslope erosion

Rock outcrop
- Nonsoil material

702P—Daras-Gambler-Torpy families, complex, landslide deposits

Setting

Elevation: 5,830 to 7,780
Mean annual precipitation: 21 to 27 inches
Frost-free period: 30 to 60 days

Component Description

Daras and similar soils
Composition: 30 percent
Taxonomic class: Ashy, glassy Vitrandic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Gravelly ashy sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over tuff over rhyolite and andesite; complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 6 inches; gravelly ashy sandy loam
E—6 to 10 inches; ashy loamy coarse sand
BC1—10 to 38 inches; gravelly ashy sandy loam
BC2—38 to 60 inches; gravelly ashy coarse sandy loam

Gambler and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material:
- Tuff
- Rhyolite
- Complex landslide deposits

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 14 inches; loam
E/Bt1—14 to 22 inches; gravelly clay loam
E/Bt2—22 to 60 inches; very cobbly clay loam

Torpy and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Ashy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over complex landslide deposits of andesite, rhyolite, and tuff
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 6 inches; ashy loam
E—6 to 11 inches; cobbly ashy loam
Bw—11 to 37 inches; very cobbly loam
BC—37 to 60 inches; very cobbly loam

Additional Components

Loberg and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Daras
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Cutslope slumping

Gambler
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential

- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Torpy
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Cutslope slumping

Loberg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Rock outcrop
- Nonsoil material

702S—Relyea-Torpy-Worock families, complex, landslide deposits

Setting

Elevation: 6,480 to 9,310
Mean annual precipitation: 23 to 39 inches
Frost-free period: 20 to 60 days

Component Description

Relyea and similar soils
Composition: 30 percent
Taxonomic class: Clayey-skeletal, mixed, superactive Eutric Glossocryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Tuff
- Rhyolite
- Complex landslide deposits

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.5 inches

Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 6 inches; gravelly loam
Bt/E—6 to 9 inches; very gravelly clay loam
Bt—9 to 18 inches; very gravelly clay loam
Btk—18 to 31 inches; very gravelly clay loam
Bk—31 to 60 inches; very cobbly clay loam

Torpy and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Ashy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over complex landslide deposits of andesite, rhyolite, and tuff
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 6 inches; ashy loam
E—6 to 11 inches; cobbly ashy loam
Bw—11 to 37 inches; very cobbly loam
BC—37 to 60 inches; very cobbly loam

Worock and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Tuff
- Rhyolite
- Complex landslide deposits

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches

Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Additional Components

Rock outcrop: 10 percent
Stecum and similar soils: 10 percent
Daras and similar soils: 5 percent

Management Considerations

Relyea
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Torpy
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Cutslope slumping

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Rock outcrop
- Nonsoil material

Stecum
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Cutslope slumping
- Cutslope erosion

Daras
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Cutslope slumping

702T—Daras-Relyea-Torpy families, complex, landslides deposits

Setting

Elevation: 6,640 to 9,430
Mean annual precipitation: 23 to 45 inches
Frost-free period: 20 to 60 days

Component Description

Daras and similar soils
Composition: 30 percent
Taxonomic class: Ashy, glassy Vitrandic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over complex landslide deposits of andesite, rhyolite, and tuff
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 6 inches; gravelly ashy sandy loam
E—6 to 10 inches; ashy loamy coarse sand
BC1—10 to 38 inches; gravelly ashy sandy loam
BC2—38 to 60 inches; gravelly ashy coarse sandy loam

Relyea and similar soils
Composition: 30 percent
Taxonomic class: Clayey-skeletal, mixed, superactive Eutric Glossocryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Complex landslide deposits of andesite, rhyolite, and tuff
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
E—0 to 5 inches; gravelly loam
Bt/E—5 to 9 inches; very gravelly clay loam
Bt—9 to 18 inches; very gravelly clay loam

Btk—18 to 31 inches; very gravelly clay loam
Bk—31 to 60 inches; very cobbly clay loam

Torpy and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Ashy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over complex landslide deposits of andesite, rhyolite, and tuff
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 6 inches; ashy loam
E—6 to 11 inches; cobbly ashy loam
Bw—11 to 37 inches; very cobbly loam
BC—37 to 60 inches; very cobbly loam

Additional Components

Rock outcrop: 10 percent
Wetopa and similar soils: 10 percent

Management Considerations

Daras
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Cutslope slumping

Relyea
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Torpy
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Cutslope slumping

Rock outcrop
- Nonsoil material

Wetopa
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

702X—Daras-Torpy-Libeg families, complex, landslide deposits

Setting

Elevation: 6,030 to 7,800
Mean annual precipitation: 15 to 27 inches
Frost-free period: 30 to 70 days

Component Description

Daras and similar soils
Composition: 30 percent
Taxonomic class: Ashy, glassy Vitrandic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Gravelly ashy sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over complex landslide deposits of andesite, rhyolite, and tuff
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 6 inches; gravelly ashy sandy loam
E—6 to 10 inches; ashy loamy coarse sand
BC1—10 to 38 inches; gravelly ashy sandy loam
BC2—38 to 60 inches; gravelly ashy coarse sandy loam

Torpy and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts
Landform: Landslides

Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry

Surface layer texture: Ashy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over complex landslide deposits of andesite, rhyolite, and tuff
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 6 inches; ashy loam
E—6 to 11 inches; cobbly ashy loam
Bw—11 to 37 inches; very cobbly loam
BC—37 to 60 inches; very cobbly loam

Libeg and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.-*geranium viscosissimum* phase
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over complex landslide deposits of andesite, rhyolite, and tuff
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
A—0 to 10 inches; gravelly loam
Bt1—10 to 16 inches; very flaggy loam
Bt2—16 to 30 inches; very flaggy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Additional Components

Loberg and similar soils: 10 percent
Rock outcrop: 10 percent
Adel and similar soils: 5 percent

Management Considerations

Daras
- Steep slopes
- Erodible surface

- High windthrow hazard
- Mass movement potential
- Cutslope slumping

Torpy
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Cutslope slumping

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Loberg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Rock outcrop
- Nonsoil material

Adel
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

703G—Surdal, very stony-Rubble land complex, 30 to 70 percent slopes

Setting

Elevation: 5,280 to 7,140
Mean annual precipitation: 17 to 21 inches
Frost-free period: 50 to 70 days

Component Description

Surdal, very stony and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on mountains
Slope: 30 to 70 percent, east to northwest aspects
Plant associations: None noted

Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 5.0 percent stones, 3 to 40 feet apart, argillite
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Colluvium over argillite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.9 inches
Typical profile:
A—0 to 7 inches; very channery loam
Bw—7 to 16 inches; very channery sandy loam
BC—16 to 28 inches; extremely channery sandy loam
R—28 to 60 inches; bedrock

Rubble land
Composition: 30 percent
Landform: None assigned

Additional Components

Sigbird and similar soils: 10 percent
Rock outcrop: 5 percent
Tiban, very stony and similar soils: 5 percent

Management Considerations

Surdal, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Rubble land
- Nonsoil material

Sigbird
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

Tiban, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

704C—Adel-Wesdy-Woodhurst families, complex, landslide deposits

Setting

Elevation: 6,910 to 10,000
Mean annual precipitation: 20 to 47 inches
Frost-free period: 20 to 60 days

Component Description

Adel and similar soils
Composition: 40 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Complex landslide deposits over limestone, sandstone, and shale residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 32 inches; loam
Bw—32 to 60 inches; gravelly loam

Wesdy and similar soils
Composition: 20 percent
Taxonomic class: Clayey-skeletal, smectitic Typic Argicryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
A—0 to 7 inches; gravelly loam
AB—7 to 11 inches; gravelly clay loam
Bt—11 to 24 inches; very gravelly clay loam
Bk1—24 to 30 inches; very gravelly clay loam
Bk2—30 to 60 inches; very gravelly clay loam

Woodhurst and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Argicryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 16 inches; gravelly loam
Bt1—16 to 30 inches; very cobbly clay loam
Bt2—30 to 60 inches; extremely cobbly clay loam

Additional Components

Marcetta and similar soils: 10 percent
Wetopa and similar soils: 10 percent

Management Considerations

Adel
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Wesdy
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Woodhurst
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Marcetta
- Steep slopes
- Erodible surface
- High windthrow hazard

- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Wetopa
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

704E—Bridger-Benteen-Philipsburg families, complex, landslide deposits

Setting

Elevation: 6,000 to 9,320
Mean annual precipitation: 15 to 33 inches
Frost-free period: 30 to 70 days

Component Description

Bridger and similar soils
Composition: 35 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Complex landslide deposits over limestone, sandstone, and shale colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
A—0 to 9 inches; clay loam
Bt—9 to 24 inches; clay
Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; gravelly loam

Benteen and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Argicryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland

Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.2 inches
Typical profile:
A—0 to 4 inches; loam
Bt—4 to 22 inches; gravelly clay loam
C—22 to 60 inches; gravelly loam

Philipsburg and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.3 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Additional Components

Levengood and similar soils: 10 percent
Woodhurst and similar soils: 5 percent

Management Considerations

Bridger
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Benteen
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength

- Surface compaction hazard
- Cutslope slumping

Philipsburg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Levengood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Surface compaction hazard
- Cutslope slumping

Woodhurst
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

704P—Loberg-Bridger-Rooset families, complex, landslide deposits

Setting

Elevation: 6,210 to 8,900
Mean annual precipitation: 17 to 35 inches
Frost-free period: 30 to 60 days

Component Description

Loberg and similar soils
Composition: 40 percent
Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/elk sedge
- Douglas-fir/pinegrass
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/mountain snowberry

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None

Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E/Bt—3 to 15 inches; stony loam
Bt1—15 to 30 inches; very channery clay loam
Bt2—30 to 49 inches; very channery clay loam
Bt3—49 to 66 inches; very channery clay loam
BC—66 to 72 inches; very cobbly clay loam

Bridger and similar soils
Composition: 30 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/mountain snowberry
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Complex landslide deposits over limestone, sandstone, and shale colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 9 inches; clay loam
Bt—9 to 24 inches; clay
Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; gravelly loam

Rooset and similar soils
Composition: 20 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/white spirea
- Douglas-fir/pinegrass
- Douglas-fir/elk sedge
- Douglas-fir/mountain snowberry
- Douglas-fir/heartleaf arnica

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches

Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; gravelly loam
AB—8 to 11 inches; gravelly clay loam
Bt—11 to 22 inches; very gravelly clay loam
Bk1—22 to 30 inches; very gravelly clay loam
Bk2—30 to 60 inches; very gravelly clay loam

Additional Components

Maciver and similar soils: 10 percent

Management Considerations

Loberg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Bridger
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Rooset
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Maciver
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

704S—Yellowmule-Garlet-Swifton families, complex, landslide deposits

Setting

Elevation: 6,180 to 9,520
Mean annual precipitation: 17 to 43 inches
Frost-free period: 30 to 60 days

Component Description

Yellowmule and similar soils
Composition: 30 percent
Taxonomic class: Fine, mixed, superactive Eutric Haplocryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Silty clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; silty clay loam
Bt1—11 to 19 inches; clay
Bt2—19 to 48 inches; cobbly clay loam
BC—48 to 72 inches; very cobbly clay loam

Garlet and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Plant associations:
- subalpine fir/elk sedge
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Swifton and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Palecryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 10 inches; loam
B/E—10 to 43 inches; gravelly sandy clay loam
Bt—43 to 72 inches; very gravelly sandy clay loam

Tenrag and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Additional Components

Relyea and similar soils: 10 percent

Management Considerations

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Swifton
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Relyea
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

704T—Adel-Garlet-Yellowmule families, complex, landslide deposits

Setting

Elevation: 6,560 to 9,710
Mean annual precipitation: 18 to 45 inches
Frost-free period: 30 to 60 days

Component Description

Adel and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Debris flow deposits over limestone, sandstone, and shale residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 32 inches; loam
Bw—32 to 60 inches; gravelly loam

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Yellowmule and similar soils
Composition: 25 percent
Taxonomic class: Fine, mixed, superactive Eutric Haplocryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Silty clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.2 inches

Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; silty clay loam
Bt1—11 to 19 inches; clay
Bt2—19 to 48 inches; cobbly clay loam
BC—48 to 72 inches; very cobbly clay loam

Additional Components

Wesdy and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Adel
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Wesdy
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Rock outcrop
- Nonsoil material

704V—Garlet-Yellowmule-Tenrag families, complex, landslide deposits

Setting

Elevation: 7,770 to 9,820
Mean annual precipitation: 31 to 57 inches
Frost-free period: 20 to 40 days

Component Description

Garlet and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Plant associations:
- whitebark pine
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
Bk—49 to 60 inches; very flaggy sandy loam

Yellowmule and similar soils
Composition: 30 percent
Taxonomic class: Fine, mixed, superactive Eutric Haplocryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Silty clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
A—0 to 8 inches; silty clay loam
Bt1—8 to 19 inches; clay
Bt2—19 to 48 inches; cobbly clay loam
BC—48 to 72 inches; very cobbly clay loam

Tenrag and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Palecryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- whitebark pine
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E1—3 to 9 inches; gravelly loam
E2—9 to 24 inches; gravelly loam
E/Bt—24 to 41 inches; cobbly clay loam
Bt—41 to 56 inches; very cobbly clay loam
C—56 to 60 inches; very cobbly loam

Additional Components

Relyea and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Tenrag
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Relyea
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Rock outcrop
- Nonsoil material

704X—Yellowmule-Elve-Adel families, complex, landslide deposits

Setting

Elevation: 5,930 to 10,000
Mean annual precipitation: 13 to 34 inches
Frost-free period: 30 to 70 days

Component Description

Yellowmule and similar soils
Composition: 30 percent
Taxonomic class: Fine, mixed, superactive Eutric Haplocryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/heartleaf arnica
- subalpine fir/pinegrass
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Silty clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; silty clay loam
Bt1—11 to 19 inches; clay
Bt2—19 to 48 inches; cobbly clay loam
BC—48 to 72 inches; very cobbly clay loam

Elve and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland

Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 6 inches; gravelly sandy loam
E/B—6 to 21 inches; very flaggy sandy loam
B/E—21 to 48 inches; very flaggy sandy loam
BC—48 to 60 inches; very flaggy sandy loam

Adel and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
- *Artemisia tridentata/Festuca idahoensis* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Complex landslide deposits
- Alluvium over limestone, sandstone, and shale residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 32 inches; loam
Bw—32 to 60 inches; gravelly loam

Additional Components

Loberg and similar soils: 10 percent
Philipsburg and similar soils: 10 percent
Tiban and similar soils: 5 percent

Management Considerations

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Adel
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Loberg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Philipsburg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

706C—Levengood-Rooset-Whitore families, complex, landslide deposits

Setting

Elevation: 6,070 to 9,820
Mean annual precipitation: 15 to 35 inches
Frost-free period: 20 to 60 days

Component Description

Levengood and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Pachic Haplocryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.9 inches
Typical profile:
A1—0 to 6 inches; gravelly loam
A2—6 to 16 inches; very gravelly loam
Bk1—16 to 20 inches; very gravelly loam
Bk2—20 to 30 inches; very gravelly loam
Bk3—30 to 60 inches; very cobbly loam

Rooset and similar soils
Composition: 20 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.9 inches
Typical profile:
A—0 to 7 inches; gravelly loam
AB—7 to 11 inches; gravelly clay loam
Bt—11 to 21 inches; very gravelly clay loam
Bk1—21 to 30 inches; very gravelly clay loam
Bk2—30 to 60 inches; very gravelly clay loam

Whitore and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- whitebark pine
- subalpine fir-whitebark pine/grouse whortleberry

- whitebark pine-subalpine fir
- subalpine fir/mountain gooseberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Additional Components

Hanson and similar soils: 10 percent
Bridger and similar soils: 5 percent

Management Considerations

Levengood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Rooset
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Bridger
- Steep slopes
- Erodible surface

- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

706E—Rubick-Libeg complex, 8 to 35 percent slopes

Setting

Elevation: 6,000 to 7,860
Mean annual precipitation: 15 to 20 inches
Frost-free period: 30 to 50 days

Component Description

Rubick and similar soils
Composition: 65 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Backslope on mountains
Slope: 12 to 35 percent
Plant associations: whitebark pine-subalpine fir
Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; very cobbly loam
E2—7 to 12 inches; very cobbly sandy loam
Bw—12 to 22 inches; very cobbly sandy loam
BC—22 to 60 inches; very channery sandy loam

Libeg and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Backslope on mountains
Slope: 8 to 30 percent
Plant associations: None noted
Surface layer texture: Channery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.5 inches
Typical profile:
A—0 to 12 inches; channery loam
Bt—12 to 24 inches; very channery loam
BC—24 to 60 inches; very channery loam

Additional Components

Bullrey and similar soils: 10 percent
Moosejaw and similar soils: 3 percent
Rock outcrop: 2 percent

Management Considerations

Rubick
- High windthrow hazard
- Low bearing strength

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bullrey
- High windthrow hazard
- Low bearing strength

Moosejaw
- High water table
- High windthrow hazard

Rock outcrop
- Nonsoil material

706S—Helmville-Whitore families, complex, landslide deposits

Setting

Elevation: 6,040 to 9,630
Mean annual precipitation: 16 to 37 inches
Frost-free period: 20 to 60 days

Component Description

Helmville and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; cobbly loam
Bt1—11 to 15 inches; very cobbly clay loam

Bt2—15 to 26 inches; very cobbly clay loam
Bk—26 to 60 inches; very gravelly clay loam

Whitore and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Additional Components

Hanson and similar soils: 10 percent
Rubble land: 10 percent
Levengood and similar soils: 5 percent

Management Considerations

Helmville
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength

- Surface compaction hazard
- Cutslope slumping

Rubble land
- Nonsoil material

Levengood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Surface compaction hazard
- Cutslope slumping

706T—Trout Creek-Levengood-Whitore families, complex, landslide deposits

Setting

Elevation: 6,210 to 9,600
Mean annual precipitation: 18 to 35 inches
Frost-free period: 30 to 60 days

Component Description

Trout Creek and similar soils
Composition: 30 percent
Taxonomic class: Fine, smectitic Typic Argicryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
A—0 to 9 inches; clay loam
Bt—9 to 24 inches; clay
Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; gravelly loam

Levengood and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Pachic Haplocryolls
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.9 inches
Typical profile:
A1—0 to 6 inches; gravelly loam
A2—6 to 16 inches; very gravelly loam
Bk1—16 to 20 inches; very gravelly loam
Bk2—20 to 30 inches; very gravelly loam
Bk3—30 to 60 inches; very cobbly loam

Whitore and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 9 inches; cobbly loam
Bw—9 to 19 inches; cobbly loam
Bk—19 to 60 inches; very cobbly loam

Additional Components

Rubble land: 10 percent
Maciver and similar soils: 5 percent
Wesdy and similar soils: 5 percent

Management Considerations

Trout Creek
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Levengood
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential

- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Rubble land
- Nonsoil material

Maciver
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Wesdy
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

707S—Garlet-Worock-Lowder families, complex, landslide deposits

Setting

Elevation: 7,380 to 8,990
Mean annual precipitation: 20 to 35 inches
Frost-free period: 20 to 60 days

Component Description

Garlet and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts
Landform: Landslides
Slope: 0 to 20 percent
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material: Quartzite complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 7 inches; gravelly loam
E/Bw—7 to 22 inches; very flaggy loam
Bw/E—22 to 49 inches; very flaggy sandy loam
BC—49 to 60 inches; very flaggy sandy loam

Worock and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Landslides
Slope: 0 to 20 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Lowder and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform:
- Drainageways
- Landslides

Slope: 0 to 10 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Quartzite alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches

Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Como and similar soils: 10 percent

Management Considerations

Garlet
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Worock
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Lowder
- Flooding
- High water table
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Como
- High windthrow hazard
- Low bearing strength

708S—Como-Lowder-Worock families, complex, landslide deposits

Setting

Elevation: 6,220 to 8,850
Mean annual precipitation: 16 to 37 inches
Frost-free period: 20 to 60 days

Component Description

Como and similar soils
Composition: 50 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica

- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Granite complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
BC—8 to 15 inches; very gravelly sandy loam
C—15 to 60 inches; very gravelly loamy sand

Lowder and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform:
- Drainageways
- Landslides

Slope: 2 to 15 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Worock and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Granite complex landslide deposits

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Lowder
- Flooding
- High water table
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Rock outcrop
- Nonsoil material

708Ua—Bata-Littlesalmon-Lowder families, complex, landslide deposits

Setting

Elevation: 6,190 to 8,740
Mean annual precipitation: 21 to 37 inches
Frost-free period: 20 to 60 days

Component Description

Bata and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs
Landform: Landslides

Slope: 5 to 40 percent
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Gravelly ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over granite complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; gravelly ashy silt loam
Bw—4 to 12 inches; gravelly ashy silt loam
2E/Bt—12 to 23 inches; very gravelly sandy loam
2Bt—23 to 60 inches; very gravelly sandy clay loam

Littlesalmon and similar soils
Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Andic Haplocryepts
Landform: Landslides
Slope: 5 to 40 percent
Native plant cover type: Forestland
Plant associations:
- spruce/twinflower
- subalpine fir/twinflower
- subalpine fir/menziesia

Surface layer texture: Very bouldery ashy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, granite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over granite complex landslide deposits
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 4 inches; very bouldery ashy loam
Bw1—4 to 12 inches; very bouldery ashy loam
2Bw2—12 to 22 inches; very gravelly sandy loam
2BC—22 to 60 inches; very gravelly loamy coarse sand

Lowder and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts
Landform:
- Drainageways
- Landslides

Slope: 0 to 15 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/bluejoint reedgrass h.t.-bluejoint reedgrass phase
- beaked sedge h.t.
- water sedge h.t.

Surface layer texture: Peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Granite alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 4 inches; peat
A—4 to 11 inches; very cobbly loam
Bg—11 to 37 inches; very gravelly sandy clay loam
BCg—37 to 60 inches; very gravelly sandy loam

Additional Components

Como and similar soils: 10 percent
Garlet and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Bata
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Littlesalmon
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Lowder
- Flooding
- High water table
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Como
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Rock outcrop
- Nonsoil material

712F—Rubick-Maurice complex, 20 to 50 percent slopes, very stony

Setting

Elevation: 5,990 to 7,810
Mean annual precipitation: 17 to 20 inches
Frost-free period: 50 to 70 days

Component Description

Rubick, very stony and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Mountain slopes
Slope: 20 to 50 percent, east to northwest aspects
Plant associations: Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, argillite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; very channery loam
E2—7 to 12 inches; very cobbly sandy loam
Bw—12 to 22 inches; very cobbly sandy loam
BC—22 to 60 inches; very channery sandy loam

Maurice, very stony and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Meadows on mountain slopes
Slope: 20 to 50 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, argillite
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A1—0 to 5 inches; channery loam
A2—5 to 12 inches; very channery loam
Bw—12 to 21 inches; very channery loam
BC—21 to 33 inches; very channery loam
C—33 to 60 inches; very channery loam

Additional Components

Mawspring, very stony and similar soils: 14 percent
Sigbird, very stony and similar soils: 10 percent
Rock outcrop: 1 percent

Management Considerations

Rubick, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Maurice, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mawspring, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sigbird, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

716G—Tiban-Sigbird-Maurice complex, 35 to 75 percent slopes

Setting

Elevation: 5,630 to 7,360
Mean annual precipitation: 17 to 19 inches
Frost-free period: 50 to 70 days

Component Description

Tiban and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Mountain slopes
Slope: 35 to 75 percent, east to northwest aspects
Plant associations: Douglas-fir/bluebunch wheatgrass
Surface layer texture: Very channery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.2 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 11 inches; very channery loam
Bw—11 to 22 inches; very channery loam
Bk—22 to 34 inches; very channery loam
BC—34 to 60 inches; very channery loam

Sigbird and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform: Thinly timbered areas on mountain slopes
Slope: 35 to 75 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very channery loam
Depth to restrictive feature:
• Lithic bedrock: 10 to 20 inches
Drainage class: Somewhat excessively drained
Parent material: Argillite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
A—0 to 5 inches; very channery loam
Bw—5 to 12 inches; very channery loam
C—12 to 14 inches; extremely channery sandy loam
R—14 to 60 inches; bedrock

Maurice and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Meadows on mountain slopes
Slope: 35 to 75 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very channery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches

Typical profile:
A1—0 to 5 inches; very channery loam
A2—5 to 12 inches; very channery loam
Bw—12 to 21 inches; very channery loam
BC—21 to 33 inches; very channery loam
C—33 to 60 inches; very channery loam

Additional Components

Rock outcrop: 5 percent

Management Considerations

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sigbird
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Maurice
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

719G—Tiban, very stony-Sigbird, very stony-Rubble land complex, 35 to 75 percent slopes

Setting

Elevation: 5,720 to 7,320
Mean annual precipitation: 15 to 17 inches
Frost-free period: 50 to 70 days

Component Description

Tiban, very stony and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Mountain slopes
Slope: 35 to 75 percent, west to east aspects
Plant associations: Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, argillite
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.2 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 11 inches; very channery loam
Bw—11 to 22 inches; very channery loam
Bk—22 to 34 inches; very channery loam
BC—34 to 60 inches; very channery loam

Sigbird, very stony and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform: Thinly timbered areas on mountain slopes
Slope: 35 to 65 percent, west to east aspects
Plant associations: Douglas-fir/Idaho fescue
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent boulders, 7 to 40 feet apart, argillite
Depth to restrictive feature:
• Lithic bedrock: 10 to 20 inches
Drainage class: Somewhat excessively drained
Parent material: Argillite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
A—0 to 5 inches; very channery loam
Bw—5 to 12 inches; very channery loam
C—12 to 14 inches; extremely channery sandy loam
R—14 to 60 inches; bedrock

Rubble land
Composition: 15 percent
Landform: None assigned

Additional Components

Rock outcrop: 4 percent
Kilgore and similar soils: 1 percent

Management Considerations

Tiban, very stony
• Steep slopes
• Erodible surface
• High windthrow hazard
• Low bearing strength
• Surface compaction hazard
Sigbird, very stony
• Steep slopes
• Erodible surface
• High windthrow hazard
• Shallow soil
• Low bearing strength

Rubble land
- Nonsoil material

Rock outcrop
- Nonsoil material

Kilgore
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

721E—Ratiopeak-Sigbird complex, 15 to 40 percent slopes, very stony

Setting

Elevation: 5,690 to 7,180
Mean annual precipitation: 14 to 19 inches
Frost-free period: 50 to 70 days

Component Description

Ratiopeak, very stony and similar soils
Composition: 70 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Backslope on mountains
Slope: 15 to 40 percent
Plant associations: None noted
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, argillite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.2 inches
Typical profile:
A—0 to 10 inches; very gravelly loam
Bt—10 to 28 inches; very channery clay loam
Bk—28 to 60 inches; very channery sandy loam

Sigbird, very stony and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform: Backslope on mountains
Slope: 15 to 40 percent
Plant associations: None noted
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, argillite
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained
Parent material: Argillite residuum
Flooding: None

Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
A—0 to 5 inches; very channery loam
Bw—5 to 12 inches; very channery loam
C—12 to 14 inches; extremely channery sandy loam
R—14 to 60 inches; bedrock

Additional Components

Bullrey, very stony and similar soils: 8 percent
Brownsgulch and similar soils: 5 percent
Rock outcrop: 2 percent

Management Considerations

Ratiopeak, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sigbird, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Bullrey, very stony
- High windthrow hazard
- Low bearing strength

Brownsgulch
- High windthrow hazard
- Low bearing strength

Rock outcrop
- Nonsoil material

728F—Sebud, very bouldery-Sebud, extremely bouldery complex, 20 to 50 percent slopes

Setting

Elevation: 5,940 to 7,460
Mean annual precipitation: 19 to 21 inches
Frost-free period: 30 to 50 days

Component Description

Sebud, very bouldery and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on south-tending mountains
Slope: 20 to 50 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent boulders, 20 to 70 feet apart, mixed

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Mixed colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
A1—0 to 6 inches; very cobbly loam
A2—6 to 12 inches; very cobbly loam
Bw—12 to 20 inches; very cobbly sandy loam
BC—20 to 30 inches; very cobbly sandy loam
C—30 to 60 inches; very gravelly sandy loam

Sebud, extremely bouldery and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Shoulder on south-tending mountains
- Backslope on south-tending mountains

Slope: 20 to 50 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very stony loam
Rock fragments on the soil surface: 3 to 15 percent boulders, 7 to 20 feet apart, mixed
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Mixed colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.9 inches
Typical profile:
A1—0 to 6 inches; very stony loam
A2—6 to 12 inches; very cobbly loam
Bw—12 to 20 inches; very cobbly sandy loam
BC—20 to 30 inches; very cobbly sandy loam
C—30 to 60 inches; very gravelly sandy loam

Additional Components

Rubick, extremely bouldery and similar soils: 6 percent
Rubble land: 4 percent

Management Considerations

Sebud, very bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud, extremely bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubick, extremely bouldery
- High windthrow hazard

Rubble land
- Nonsoil material

730E—Maurice, bouldery-Sigbird, very bouldery complex, 8 to 30 percent slopes

Setting

Elevation: 5,560 to 7,690
Mean annual precipitation: 14 to 17 inches
Frost-free period: 30 to 50 days

Component Description

Maurice, bouldery and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on mountains
Slope: 8 to 30 percent, west to east aspects
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent boulders, 20 to 70 feet apart, mixed
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A1—0 to 5 inches; gravelly loam
A2—5 to 12 inches; very channery loam
Bw—12 to 21 inches; very channery loam
BC—21 to 33 inches; very channery loam
C—33 to 60 inches; very channery loam

Sigbird, very bouldery and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform:
- Backslope on mountains
- Shoulder on mountains

Slope: 8 to 30 percent, west to east aspects
Plant associations: None noted
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent boulders, 20 to 70 feet apart, mixed
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained
Parent material: Residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches

Typical profile:
A—0 to 5 inches; very channery loam
Bw—5 to 12 inches; very channery loam
C—12 to 14 inches; extremely channery sandy loam
R—14 to 60 inches; bedrock

Additional Components

Maurice, bouldery and similar soils: 10 percent
Ratiopeak, stony and similar soils: 9 percent
Rock outcrop: 1 percent

Management Considerations

Maurice, bouldery
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sigbird, very bouldery
- High windthrow hazard
- Shallow soil
- Low bearing strength

Maurice, bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ratiopeak, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

731F—Rubick, stony-Worock complex, 20 to 50 percent slopes

Setting

Elevation: 5,710 to 7,740
Mean annual precipitation: 13 to 15 inches
Frost-free period: 30 to 50 days

Component Description

Rubick, stony and similar soils
Composition: 75 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Backslope on north-tending mountains
Slope: 20 to 50 percent, northwest to east aspects
Plant associations: Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, argillite
Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained
Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; very gravelly loam
E2—7 to 12 inches; very cobbly sandy loam
Bw—12 to 22 inches; very cobbly sandy loam
BC—22 to 60 inches; very channery sandy loam

Worock and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform:
- Backslope on north-tending mountains
- Footslope on north-tending mountains

Slope: 20 to 40 percent, northwest to east aspects
Plant associations: Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 13 inches; gravelly loam
E/Bt—13 to 19 inches; very gravelly loam
Bt—19 to 33 inches; very gravelly clay loam
BC—33 to 60 inches; very channery clay loam

Additional Components

Rubick, very stony, greater slopes and similar soils: 5 percent
Sigbird, very stony and similar soils: 4 percent
Rock outcrop: 1 percent

Management Considerations

Rubick, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubick, very stony, greater slopes
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Sigbird, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

737D—Libeg-Bridger complex, 6 to 20 percent slopes

Setting

Elevation: 6,320 to 7,150
Mean annual precipitation: 17 to 19 inches
Frost-free period: 50 to 70 days

Component Description

Libeg and similar soils
Composition: 70 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Mountain slopes
Slope: 8 to 20 percent
Plant associations: None noted
Surface layer texture: Channery loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.5 inches
Typical profile:
A—0 to 12 inches; channery loam
Bt—12 to 24 inches; very channery loam
BC—24 to 60 inches; very channery loam

Bridger and similar soils
Composition: 15 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform:
- Mountain slopes
- Swales

Slope: 6 to 12 percent
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.0 inches
Typical profile:
A1—0 to 3 inches; loam
A2—3 to 9 inches; loam
Bt—9 to 17 inches; clay

Bk—17 to 34 inches; loam
C—34 to 60 inches; sandy loam

Additional Components

Redchief and similar soils: 7 percent
Sigbird and similar soils: 6 percent
Rock outcrop: 2 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sigbird
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

738E—Rubick-Surdal complex, 15 to 35 percent slopes

Setting

Elevation: 5,820 to 8,140
Mean annual precipitation: 15 to 17 inches
Frost-free period: 50 to 70 days

Component Description

Rubick, very stony and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Mountain slopes
Slope: 15 to 35 percent, northwest to east aspects
Plant associations: Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, argillite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; very channery loam

E2—7 to 12 inches; very cobbly sandy loam
Bw—12 to 22 inches; very cobbly sandy loam
BC—22 to 60 inches; very channery sandy loam

Surdal, very stony and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Mountain slopes
Slope: 15 to 30 percent, northwest to east aspects
Plant associations: Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, argillite
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Colluvium over argillite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 7 inches; very channery loam
Bw—7 to 16 inches; very channery sandy loam
BC—16 to 28 inches; extremely channery sandy loam
R—28 to 60 inches; bedrock

Additional Components

Ratiopeak, very stony and similar soils: 10 percent
Sigbird, very stony and similar soils: 7 percent
Rock outcrop: 3 percent

Management Considerations

Rubick, very stony
- High windthrow hazard
- Low bearing strength

Surdal, very stony
- High windthrow hazard
- Low bearing strength

Ratiopeak, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sigbird, very stony
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

739E—Maurice-Surdal-Mawspring complex, 12 to 35 percent slopes, stony

Setting

Elevation: 5,810 to 7,770
Mean annual precipitation: 13 to 19 inches
Frost-free period: 50 to 70 days

Component Description

Maurice, stony and similar soils
Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Nose slope backslope on mountains
Slope: 15 to 35 percent
Plant associations: None noted
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, argillite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A1—0 to 5 inches; very channery loam
A2—5 to 12 inches; very channery loam
Bw—12 to 21 inches; very channery loam
BC—21 to 33 inches; very channery loam
C—33 to 60 inches; very channery loam

Surdal, stony and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on mountains
Slope: 15 to 35 percent
Plant associations: None noted
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.05 to 0.10 percent stones, 40 to 50 feet apart, argillite
Depth to restrictive feature:
• Lithic bedrock: 20 to 40 inches
Drainage class: Well drained
Parent material: Colluvium over argillite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.9 inches
Typical profile:
A—0 to 7 inches; very channery loam
Bw—7 to 16 inches; very channery sandy loam
BC—16 to 28 inches; extremely channery sandy loam
R—28 to 60 inches; bedrock

Mawspring, stony and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryepts
Landform:
- Mountain slopes
- Swales

Slope: 12 to 25 percent
Plant associations: None noted
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, argillite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
A—0 to 6 inches; very channery loam
Bw—6 to 18 inches; very channery loam
BC—18 to 33 inches; extremely channery sandy loam
C—33 to 60 inches; extremely channery sandy loam

Additional Components

Sigbird, very stony and similar soils: 14 percent
Rock outcrop: 6 percent

Management Considerations

Maurice, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Surdal, stony
- High windthrow hazard
- Low bearing strength

Mawspring, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sigbird, very stony
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

741F—Maurice-Sigbird-Surdal complex, 20 to 50 percent slopes, stony

Setting

Elevation: 5,280 to 8,370
Mean annual precipitation: 13 to 20 inches
Frost-free period: 50 to 70 days

Component Description

Maurice, stony and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: North-tending mountain slopes
Slope: 30 to 50 percent, west to southeast aspects
Plant associations: None noted
Surface layer texture: Channery loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, argillite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Argillite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A1—0 to 5 inches; channery loam
A2—5 to 12 inches; very channery loam
Bw—12 to 21 inches; very channery loam
BC—21 to 33 inches; very channery loam
C—33 to 60 inches; very channery loam

Sigbird, stony and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts
Landform:
- North-tending mountains
- Ridges

Slope: 20 to 45 percent, west to southeast aspects
Plant associations: None noted
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.01 to 0.50 percent stones, 27 to 100 feet apart, argillite
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained
Parent material: Argillite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
A—0 to 5 inches; very channery loam
Bw—5 to 12 inches; very channery loam
C—12 to 14 inches; extremely channery sandy loam
R—14 to 60 inches; bedrock

Surdal, stony and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: North-tending mountain slopes
Slope: 20 to 50 percent, west to southeast aspects
Plant associations: None noted
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.05 to 0.10 percent stones, 40 to 50 feet apart, argillite

Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Colluvium over argillite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.9 inches
Typical profile:
A—0 to 7 inches; very channery loam
Bw—7 to 16 inches; very channery sandy loam
BC—16 to 28 inches; extremely channery sandy loam
R—28 to 60 inches; bedrock

Additional Components

Tiban, very stony and similar soils: 6 percent
Rock outcrop: 4 percent

Management Considerations

Maurice, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sigbird, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Surdal, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Tiban, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

747F—Rubick-Surdal complex, 30 to 70 percent slopes, very stony

Setting

Elevation: 5,280 to 7,630
Mean annual precipitation: 12 to 15 inches
Frost-free period: 50 to 70 days

Component Description

Rubick, very stony and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Backslope on north-tending mountains
Slope: 30 to 70 percent, west to southeast aspects
Plant associations: Douglas-fir/pinegrass
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 40 to 100 feet apart, argillite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.4 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; very channery loam
E2—7 to 12 inches; very cobbly sandy loam
Bw—12 to 22 inches; very cobbly sandy loam
BC—22 to 60 inches; very channery sandy loam

Surdal, very stony and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on north-tending mountains
Slope: 30 to 70 percent, west to southeast aspects
Plant associations: None noted
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 5.0 percent stones, 27 to 83 feet apart, argillite
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Colluvium over argillite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.9 inches
Typical profile:
A—0 to 7 inches; very channery loam
Bw—7 to 16 inches; very channery sandy loam
BC—16 to 28 inches; extremely channery sandy loam
R—28 to 60 inches; bedrock

Additional Components

Mawspring, very stony and similar soils: 6 percent
Rock outcrop: 6 percent
Rubble land: 4 percent
Sigbird, very stony and similar soils: 4 percent

Management Considerations

Rubick, very stony
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength

Surdal, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Mawspring, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

Sigbird, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

761E—Quincreek, very stony-Whitlash, very stony-Rock outcrop complex, 12 to 35 percent slopes

Setting

Elevation: 5,280 to 6,630
Mean annual precipitation: 12 to 16 inches
Frost-free period: 70 to 90 days

Component Description

Quincreek, very stony and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Aridic Argiustolls
Landform: Backslope on southeast-tending hills
Slope: 15 to 30 percent, east to northwest aspects
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, limestone
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Gravelly limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.9 inches
Typical profile:
A—0 to 3 inches; gravelly loam
Bt—3 to 9 inches; channery clay loam
Bk1—9 to 19 inches; very channery loam

Bk2—19 to 27 inches; very channery loam
R—27 to 60 inches; unweathered bedrock

Whitlash, very stony and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Aridic Lithic Haplustolls
Landform: Backslope on southeast-tending hills
Slope: 15 to 35 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very gravelly sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, sandstone
Depth to restrictive feature:
• Lithic bedrock: 10 to 20 inches
Drainage class: Well drained
Parent material: Sandstone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
A—0 to 4 inches; very gravelly sandy loam
Bw—4 to 12 inches; very gravelly sandy loam
BC—12 to 15 inches; very gravelly sandy loam
R—15 to 60 inches; bedrock

Rock outcrop
Composition: 20 percent
Landform: None assigned

Bronec, very stony and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Aridic Calciustepts
Landform: Southeast-tending swales on hills
Slope: 12 to 20 percent, east to northwest aspects
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandy and gravelly limestone alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.9 inches
Typical profile:
A—0 to 9 inches; very gravelly loam
Bk—9 to 48 inches; very gravelly loam
BC—48 to 60 inches; very gravelly loamy sand

Additional Components

Reedpoint, very stony and similar soils: 10 percent

Management Considerations

Quincreek, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitlash, very stony
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Bronec, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Reedpoint, very stony
- High windthrow hazard
- Shallow soil
- Low bearing strength

776B—Finn-Water complex, 0 to 4 percent slopes

Setting

Elevation: 6,000 to 6,520
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Finn and similar soils
Composition: 70 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Flood plains
Slope: 0 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Gravelly alluvium
Flooding: Rare
Water table: Present
Ponding duration: Brief
Available water capacity to 60 inch depth: Approximately 6.0 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 12 inches; loam
Bw1—12 to 18 inches; very gravelly loam
2Bw2—18 to 24 inches; very gravelly sandy clay loam
2C—24 to 60 inches; very gravelly sandy clay loam

Water
Composition: 15 percent
Definition: Streams, lakes, and ponds. These areas are covered with water in most years, at least during the period that is warm enough for plants to grow. Many areas are covered throughout the year.
Landform: None assigned

Additional Components

Mooseflat and similar soils: 6 percent
Foolhen and similar soils: 5 percent
Dunkleber and similar soils: 4 percent

Management Considerations

Finn
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dunkleber
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

804E—Tibson-Cheadle-Maciver families, complex, structural lands

Setting

Elevation: 5,650 to 8,180
Mean annual precipitation: 13 to 32 inches
Frost-free period: 30 to 70 days

Component Description

Tibson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform:
- Escarpments
- Structural benches

Slope: 10 to 50 percent

Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
A—0 to 4 inches; very cobbly loam
Bw—4 to 8 inches; very cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Cheadle and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform:
- Escarpments
- Structural benches

Slope: 10 to 50 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Cobbly loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Limestone, sandstone, and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.3 inches
Typical profile:
A—0 to 7 inches; cobbly loam
Bk—7 to 12 inches; very stony sandy loam
R—12 to 60 inches; bedrock

Maciver and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform:
- Escarpments
- Structural benches

Slope: 10 to 50 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches

Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Additional Components

Prudy and similar soils: 10 percent
Rock outcrop: 10 percent
Libeg and similar soils: 5 percent

Management Considerations

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cheadle
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Maciver
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Prudy
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

804O—Tibson-Gambler-Cheadle families, complex, structural lands

Setting

Elevation: 5,620 to 7,930
Mean annual precipitation: 13 to 21 inches
Frost-free period: 40 to 70 days

Component Description

Tibson and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform:
- Escarpments
- Structural benches

Slope: 10 to 50 percent
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 4 inches; gravelly loam
Bw—4 to 8 inches; very cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Gambler and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs
Landform: Mountain slopes
Slope: 10 to 50 percent
Native plant cover type: Rangeland
Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 14 inches; loam
E/Bt1—14 to 22 inches; gravelly clay loam
E/Bt2—22 to 60 inches; very cobbly clay loam

Cheadle and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform:
- Escarpments
- Structural benches

Slope: 10 to 50 percent

Plant associations:
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Cobbly loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Limestone, sandstone, and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.3 inches
Typical profile:

A—0 to 7 inches; cobbly loam
Bk—7 to 12 inches; very stony sandy loam
R—12 to 60 inches; bedrock

Additional Components

Elve and similar soils: 10 percent
Rock outcrop: 10 percent

Management Considerations

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gambler
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cheadle
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

804X—Sebud-Gambler families, complex, structural lands

Setting

Elevation: 5,550 to 7,970
Mean annual precipitation: 13 to 23 inches
Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Escarpments
- Structural benches

Slope: 10 to 50 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.2 inches
Typical profile:
A1—0 to 3 inches; cobbly loam
A2—3 to 13 inches; gravelly loam
Bw1—13 to 24 inches; very channery sandy loam
Bw2—24 to 60 inches; very channery sandy loam

Gambler and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs
Landform: Mountain slopes
Slope: 10 to 50 percent
Native plant cover type: Forestland
Plant associations:
- Douglas-fir/dwarf huckleberry
- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge
- Douglas-fir/white spirea
- Douglas-fir/heartleaf arnica
- Douglas-fir/snowberry

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Conglomerate colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E—2 to 14 inches; loam

E/Bt1—14 to 22 inches; gravelly clay loam
E/Bt2—22 to 60 inches; very cobbly clay loam

Additional Components

Cheadle and similar soils: 10 percent
Rock outcrop: 10 percent
Tibson and similar soils: 5 percent

Management Considerations

Sebud
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Gambler
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cheadle
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Tibson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

806Er—Hanson-Starley families-Rock outcrop complex, structural lands

Setting

Elevation: 5,670 to 8,770
Mean annual precipitation: 13 to 23 inches
Frost-free period: 30 to 70 days

Component Description

Hanson and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform:
- Escarpments
- Structural benches

Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Starley and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform:
- Escarpments
- Structural benches

Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations: Artemisia tridentata/Festuca idahoensis h.t.
Surface layer texture: Gravelly loam
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Limestone, sandstone, and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.7 inches
Typical profile:
A—0 to 9 inches; gravelly loam
Bk1—9 to 12 inches; very cobbly loam
Bk2—12 to 15 inches; very cobbly loam
R—15 to 60 inches; bedrock

Rock outcrop
Composition: 20 percent
Definition: Exposures of bare bedrock
Landform:
- Escarpments
- Structural benches

Additional Components

Skaggs and similar soils: 10 percent

Management Considerations

Hanson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Starley
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Skaggs
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

810F—Whitore, very stony-Skaggs-very stony-Rock outcrop complex, 20 to 50 percent slopes

Setting

Elevation: 5,280 to 6,890
Mean annual precipitation: 15 to 18 inches
Frost-free period: 50 to 70 days

Component Description

Whitore, very stony and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Backslope on south-tending hills
Slope: 20 to 50 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 5 inches; very gravelly loam
E—5 to 8 inches; gravelly loam
Bw—8 to 14 inches; very gravelly loam
Bk1—14 to 21 inches; very gravelly loam
Bk2—21 to 60 inches; very gravelly loam

Skaggs, very stony and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Backslope on south-tending hills
Slope: 20 to 50 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, limestone

Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Colluvium over limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
A—0 to 8 inches; very gravelly loam
Bk1—8 to 18 inches; gravelly loam
Bk2—18 to 29 inches; very gravelly loam
R—29 to 60 inches; bedrock

Rock outcrop
Composition: 15 percent
Landform: None assigned

Additional Components

Starley, very stony and similar soils: 10 percent
Whitore, stony, lesser slopes and similar soils: 10 percent

Management Considerations

Whitore, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Skaggs, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Starley, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Whitore, stony, lesser slopes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

811G—Whitore-Skaggs complex, 40 to 70 percent slopes, very stony

Setting

Elevation: 5,640 to 7,250
Mean annual precipitation: 10 to 13 inches
Frost-free period: 50 to 70 days

Component Description

Whitore, very stony and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Backslope on north-tending mountains
Slope: 40 to 70 percent, west to southeast aspects
Plant associations: Douglas-fir/common juniper
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent boulders, 7 to 40 feet apart, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 5 inches; very cobbly loam
E—5 to 8 inches; gravelly loam
Bw—8 to 14 inches; very gravelly loam
Bk1—14 to 21 inches; very gravelly loam
Bk2—21 to 60 inches; very gravelly loam

Skaggs, very stony and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Backslope on north-tending mountains
Slope: 40 to 70 percent, west to southeast aspects
Plant associations: None noted
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent boulders, 7 to 40 feet apart, limestone
Depth to restrictive feature:
• Lithic bedrock: 20 to 40 inches
Drainage class: Well drained
Parent material: Colluvium over limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
A—0 to 8 inches; very gravelly loam
Bk1—8 to 18 inches; gravelly loam
Bk2—18 to 29 inches; very gravelly loam
R—29 to 60 inches; bedrock

Additional Components

Rock outcrop: 10 percent
Whitore, rubbly and similar soils: 10 percent

Management Considerations

Whitore, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Skaggs, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Whitore, rubbly
- Steep slopes
- Erodible surface
- High windthrow hazard
- Surface rock fragments
- Low bearing strength
- Surface compaction hazard

812F—Whitore, moist-Skaggs complex, 20 to 50 percent slopes, very stony

Setting

Elevation: 5,460 to 7,330
Mean annual precipitation: 15 to 18 inches
Frost-free period: 50 to 70 days

Component Description

Whitore, very stony, moist and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Backslope on south-tending hills
Slope: 20 to 50 percent, east to northwest aspects
Plant associations: Douglas-fir/common juniper
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches

Typical profile:
A—0 to 5 inches; very gravelly loam
E—5 to 8 inches; gravelly loam
Bw—8 to 14 inches; very gravelly loam
Bk1—14 to 21 inches; very gravelly loam
Bk2—21 to 60 inches; very gravelly loam

Skaggs, very stony and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Backslope on south-tending hills
Slope: 20 to 50 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, limestone
Depth to restrictive feature:
• Lithic bedrock: 20 to 40 inches
Drainage class: Well drained
Parent material: Colluvium over limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.7 inches
Typical profile:
A—0 to 8 inches; very gravelly loam
Bk1—8 to 18 inches; gravelly loam
Bk2—18 to 29 inches; very gravelly loam
R—29 to 60 inches; bedrock

Additional Components

Whitore, stony, lesser slopes and similar soils: 10 percent
Rock outcrop: 5 percent
Starley, very stony and similar soils: 5 percent

Management Considerations

Whitore, very stony, moist
• Steep slopes
• Erodible surface
• High windthrow hazard
• Low bearing strength
• Surface compaction hazard
Skaggs, very stony
• Steep slopes
• Erodible surface
• High windthrow hazard
• Shallow soil
• Low bearing strength
• Surface compaction hazard
Whitore, stony, lesser slopes
• High windthrow hazard
• Low bearing strength
• Surface compaction hazard
Rock outcrop
• Nonsoil material

Starley, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

813F—Whitore, stony-Whitore complex, 20 to 60 percent slopes

Setting

Elevation: 5,490 to 7,140
Mean annual precipitation: 13 to 15 inches
Frost-free period: 50 to 70 days

Component Description

Whitore, stony and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Backslope on north-tending mountains
Slope: 30 to 60 percent, west to southeast aspects
Plant associations: Douglas-fir/common juniper
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 5 inches; very gravelly loam
E—5 to 8 inches; gravelly loam
Bw—8 to 14 inches; very gravelly loam
Bk1—14 to 21 inches; very gravelly loam
Bk2—21 to 60 inches; very gravelly loam

Whitore and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Head slope on north-tending mountains
Slope: 20 to 50 percent, west to southeast aspects
Plant associations: Douglas-fir/common juniper
Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches

Typical profile:
A—0 to 5 inches; very gravelly loam
E—5 to 8 inches; gravelly loam
Bw—8 to 14 inches; very gravelly loam
Bk1—14 to 21 inches; very gravelly loam
Bk2—21 to 60 inches; very gravelly loam

Additional Components

Whitore, lesser slopes and similar soils: 10 percent
Skaggs, very stony, open woodland and similar soils: 6 percent
Rock outcrop: 4 percent

Management Considerations

Whitore, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore, lesser slopes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Skaggs, very stony, open woodland
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

814E—Whitore complex, 12 to 45 percent slopes, stony

Setting

Elevation: 5,560 to 7,250
Mean annual precipitation: 13 to 17 inches
Frost-free period: 40 to 70 days

Component Description

Whitore, stony and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Backslope on north-tending mountains
Slope: 15 to 45 percent, west to southeast aspects
Plant associations: Douglas-fir/snowberry

Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 5 inches; very gravelly loam
E—5 to 8 inches; gravelly loam
Bw—8 to 14 inches; very gravelly loam
Bk1—14 to 21 inches; very gravelly loam
Bk2—21 to 60 inches; very gravelly loam

Whitore, stony, gravelly loam and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Head slope footslope on north-tending mountains
Slope: 12 to 30 percent, west to southeast aspects
Plant associations: Douglas-fir/snowberry
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 5 inches; gravelly loam
E—5 to 8 inches; gravelly loam
Bw—8 to 14 inches; very gravelly loam
Bk1—14 to 21 inches; very gravelly loam
Bk2—21 to 60 inches; very gravelly loam

Additional Components

Tropal, very stony and similar soils: 8 percent
Tropal, very stony, greater slopes and similar soils: 2 percent

Management Considerations

Whitore, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Whitore, stony, gravelly loam
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tropal, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Tropal, very stony, greater slopes
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

816G—Whitore, very stony-Tropal, very stony-Rock outcrop complex, 45 to 80 percent slopes

Setting

Elevation: 5,490 to 7,220
Mean annual precipitation: 12 to 16 inches
Frost-free period: 50 to 70 days

Component Description

Whitore, very stony and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Backslope on north-tending mountains
Slope: 45 to 65 percent, west to southeast aspects
Plant associations: subalpine fir/twinflower
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 5 inches; very gravelly loam
E—5 to 8 inches; gravelly loam
Bw—8 to 14 inches; very gravelly loam
Bk1—14 to 21 inches; very gravelly loam
Bk2—21 to 60 inches; very gravelly loam

Tropal, very stony and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocryepts
Landform:
- Nose slope shoulder on north-tending mountains
- Nose slope summit on north-tending mountains

Slope: 50 to 80 percent, west to southeast aspects
Plant associations: Douglas-fir/snowberry
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, limestone
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
A—0 to 4 inches; very gravelly loam
Bk—4 to 12 inches; very gravelly loam
R—12 to 60 inches; bedrock

Rock outcrop
Composition: 15 percent
Landform: None assigned

Additional Components

Whitore, stony and similar soils: 10 percent
Skaggs, very stony, open woodland and similar soils: 5 percent

Management Considerations

Whitore, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tropal, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Whitore, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Skaggs, very stony, open woodland
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

817E—Whitore, very stony-Raynesford complex, 15 to 40 percent slopes

Setting

Elevation: 5,630 to 7,270
Mean annual precipitation: 14 to 16 inches
Frost-free period: 50 to 70 days

Component Description

Whitore, very stony and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Backslope on mountains
Slope: 15 to 40 percent
Plant associations: None noted
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 5 inches; very gravelly loam
E—5 to 8 inches; gravelly loam
Bw—8 to 14 inches; very gravelly loam
Bk1—14 to 21 inches; very gravelly loam
Bk2—21 to 60 inches; very gravelly loam

Raynesford and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, carbonatic Calcic Haplocryolls
Landform:
- Backslope on mountains
- Footslope on mountains

Slope: 15 to 30 percent
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches
Typical profile:
A1—0 to 5 inches; gravelly loam
A2—5 to 10 inches; gravelly loam
Bk1—10 to 23 inches; gravelly loam
Bk2—23 to 60 inches; gravelly silt loam

Additional Components

Tropal, very stony and similar soils: 13 percent
Rock outcrop: 2 percent

Management Considerations

Whitore, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Raynesford
- High windthrow hazard
- Low bearing strength

Tropal, very stony
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

820E—Whitore, stony-Tropal, very stony-Raynesford, stony complex, 12 to 45 percent slopes

Setting

Elevation: 5,630 to 7,270
Mean annual precipitation: 14 to 16 inches
Frost-free period: 50 to 70 days

Component Description

Whitore, stony and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Backslope on mountains
Slope: 15 to 40 percent, west to southeast aspects
Plant associations: Douglas-fir/Idaho fescue
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 5 inches; very gravelly loam
E—5 to 8 inches; gravelly loam
Bw—8 to 14 inches; very gravelly loam
Bk1—14 to 21 inches; very gravelly loam
Bk2—21 to 60 inches; very gravelly loam

Tropal, very stony and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocryepts

Landform:
- Nose slope shoulder on mountains
- Nose slope summit on mountains

Slope: 12 to 45 percent, west to southeast aspects
Plant associations: None noted
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, limestone
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Limestone residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
A—0 to 4 inches; very gravelly loam
Bk—4 to 12 inches; very gravelly loam
R—12 to 60 inches; bedrock

Raynesford, stony and similar soils
Composition: 18 percent
Taxonomic class: Fine-loamy, carbonatic Calcic Haplocryolls
Landform:
- Backslope on mountains
- Footslope on mountains

Slope: 15 to 35 percent, west to southeast aspects
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, limestone
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Loamy alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches
Typical profile:
A1—0 to 5 inches; gravelly loam
A2—5 to 10 inches; gravelly loam
Bk1—10 to 23 inches; gravelly loam
Bk2—23 to 60 inches; gravelly silt loam

Additional Components

Rock outcrop: 2 percent

Management Considerations

Whitore, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tropal, very stony
- Steep slopes
- Erodible surface

- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Raynesford, stony
- High windthrow hazard
- Low bearing strength

Rock outcrop
- Nonsoil material

901E—Sebud-Poin-Tiban complex, 15 to 45 percent slopes, extremely stony

Setting

Elevation: 5,380 to 7,860
Mean annual precipitation: 14 to 18 inches
Frost-free period: 50 to 70 days

Component Description

Sebud, extremely stony and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Backslope on mountains
- Footslope on mountains

Slope: 15 to 40 percent
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 3 to 15 percent stones, 3 to 10 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A1—0 to 4 inches; very cobbly loam
A2—4 to 10 inches; very cobbly loam
Bw—10 to 38 inches; very cobbly sandy loam
BC—38 to 60 inches; very cobbly sandy loam

Poin, extremely stony and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform:
- Nose slope backslope on mountains
- Nose slope shoulder on mountains

Slope: 30 to 45 percent
Plant associations: None noted
Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, 2 to 8 feet apart, quartzite

Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.0 inches
Typical profile:
A—0 to 5 inches; very cobbly sandy loam
Bw—5 to 12 inches; very cobbly loam
C—12 to 15 inches; extremely cobbly sandy loam
R—15 to 60 inches; bedrock

Tiban, extremely stony and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on mountains
Slope: 30 to 45 percent
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 3 to 15 percent stones, 2 to 8 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
A—0 to 8 inches; very cobbly loam
Bw—8 to 16 inches; very cobbly loam
Bk—16 to 60 inches; very gravelly loam

Additional Components

Libeg, extremely stony and similar soils: 4 percent
Rock outcrop: 1 percent

Management Considerations

Sebud, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Tiban, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg, extremely stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

904C—Wetopa-Maciver families, complex, eroded mountain tops

Setting

Elevation: 7,100 to 9,620
Mean annual precipitation: 25 to 47 inches
Frost-free period: 20 to 60 days

Component Description

Wetopa and similar soils
Composition: 60 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform: Broad meadow ridges
Slope: 0 to 30 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches
Typical profile:
A—0 to 10 inches; clay loam
Bt—10 to 34 inches; clay
BC—34 to 60 inches; clay loam

Maciver and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Argicryolls
Landform: Broad meadow ridges
Slope: 0 to 30 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone, sandstone, and shale colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches

Typical profile:
A—0 to 7 inches; loam
Bt—7 to 11 inches; very gravelly clay loam
Bk—11 to 60 inches; very gravelly loam

Additional Components

Wesdy and similar soils: 10 percent
Benteen and similar soils: 5 percent
Midfork and similar soils: 5 percent

Management Considerations

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maciver
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wesdy
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Benteen
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Midfork
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

905E—Tigeron, stony-Rubick, very stony complex, 15 to 45 percent slopes

Setting

Elevation: 5,720 to 7,860
Mean annual precipitation: 14 to 20 inches
Frost-free period: 50 to 70 days

Component Description

Tigeron, stony and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Backslope on mountains
Slope: 15 to 35 percent
Plant associations: Douglas-fir/pinegrass
Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface: 0.01 to 0.10 percent boulders, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; very cobbly sandy loam
E2—7 to 13 inches; very cobbly sandy loam
E and Bt—13 to 18 inches; very cobbly sandy loam
Bt—18 to 34 inches; very cobbly sandy clay loam
BC—34 to 60 inches; very gravelly sandy loam

Rubick, very stony and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Backslope on mountains
Slope: 15 to 45 percent
Plant associations: Douglas-fir/pinegrass
Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent boulders, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 3 inches; very cobbly sandy loam
E1—3 to 8 inches; very cobbly sandy loam
E2—8 to 13 inches; very cobbly sandy loam
Bw—13 to 27 inches; very cobbly sandy loam
BC—27 to 60 inches; extremely stony loamy sand

Additional Components

Tiban, very stony and similar soils: 10 percent
Silas and similar soils: 5 percent

Management Considerations

Tigeron, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubick, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Tiban, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Silas
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

906C—Hanson-Bridger-Levengood families, complex, eroded mountain tops

Setting

Elevation: 6,900 to 9,430
Mean annual precipitation: 17 to 35 inches
Frost-free period: 20 to 60 days

Component Description

Hanson and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls
Landform: Broad meadow ridges
Slope: 0 to 30 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 14 inches; very gravelly loam
Bk—14 to 60 inches; very cobbly loam

Bridger and similar soils
Composition: 25 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform: Broad meadow ridges
Slope: 0 to 30 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.6 inches
Typical profile:
A—0 to 9 inches; clay loam
Bt—9 to 24 inches; gravelly clay loam

Bk1—24 to 36 inches; gravelly clay loam
Bk2—36 to 60 inches; very gravelly loam

Levengood and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Pachic Haplocryolls
Landform: Broad meadow ridges
Slope: 0 to 30 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Deschampsia caespitosa* h.t.
- *Festuca idahoensis/Agropyron caninum* h.t.

Surface layer texture: Very gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Limestone colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.0 inches
Typical profile:
A—0 to 36 inches; very gravelly loam
Bk—36 to 60 inches; very cobbly sandy loam

Additional Components

Rock outcrop: 10 percent
Foolhen and similar soils: 5 percent
Rooset and similar soils: 5 percent
Skaggs and similar soils: 5 percent

Management Considerations

Hanson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Levengood
- High windthrow hazard
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rooset
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Skaggs
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

906E—Rubick, very stony-Tigeron, stony complex, 15 to 45 percent slopes

Setting

Elevation: 5,950 to 7,410
Mean annual precipitation: 14 to 17 inches
Frost-free period: 30 to 50 days

Component Description

Rubick, very stony and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Backslope on mountains
Slope: 15 to 45 percent, west to southeast aspects
Plant associations: Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Very gravelly sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 3 inches; very gravelly sandy loam
E1—3 to 8 inches; very cobbly sandy loam
E2—8 to 13 inches; very cobbly sandy loam
Bw—13 to 27 inches; very cobbly sandy loam
BC—27 to 60 inches; extremely stony loamy sand

Tigeron, stony and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Backslope on mountains
Slope: 15 to 35 percent, west to southeast aspects
Plant associations: Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches

Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; gravelly loam
E2—7 to 13 inches; very cobbly sandy loam
E and Bt—13 to 18 inches; very cobbly sandy loam
Bt—18 to 34 inches; very cobbly sandy clay loam
BC—34 to 60 inches; very gravelly sandy loam

Additional Components

Rock outcrop: 5 percent
Silas, stony and similar soils: 5 percent

Management Considerations

Rubick, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Tigeron, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Silas, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

907F—Sebud, extremely stony-Rubick, very stony complex, 25 to 60 percent slopes

Setting

Elevation: 5,580 to 7,760
Mean annual precipitation: 16 to 19 inches
Frost-free period: 50 to 70 days

Component Description

Sebud, extremely stony and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on mountains
Slope: 25 to 55 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 3 to 15 percent stones, 2 to 7 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches

Typical profile:
A1—0 to 4 inches; very cobbly loam
A2—4 to 10 inches; very cobbly loam
Bw—10 to 38 inches; very cobbly sandy loam
BC—38 to 60 inches; very cobbly sandy loam

Rubick, very stony and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Backslope on south-tending forested mountains
Slope: 25 to 60 percent, east to west aspects
Plant associations: Douglas-fir/pinegrass
Surface layer texture: Very gravelly sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 3 inches; very gravelly sandy loam
E1—3 to 8 inches; very cobbly sandy loam
E2—8 to 13 inches; very cobbly sandy loam
Bw—13 to 27 inches; very cobbly sandy loam
BC—27 to 60 inches; extremely stony loamy sand

Additional Components

Poin, extremely stony and similar soils: 10 percent
Rock outcrop: 5 percent
Rubble land: 5 percent

Management Considerations

Sebud, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubick
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Poin, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

908E—Sebud-Tiban-Ratiopeak complex, 12 to 30 percent slopes, stony

Setting

Elevation: 5,560 to 7,580
Mean annual precipitation: 15 to 18 inches
Frost-free period: 50 to 70 days

Component Description

Sebud, stony and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on south-tending mountains
Slope: 15 to 30 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A1—0 to 4 inches; very cobbly loam
A2—4 to 10 inches; very cobbly loam
Bw—10 to 38 inches; very cobbly sandy loam
BC—38 to 60 inches; very cobbly sandy loam

Tiban, stony and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on south-tending mountains
Slope: 15 to 30 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
A—0 to 8 inches; very cobbly loam
Bw—8 to 16 inches; very cobbly loam
Bk—16 to 60 inches; very gravelly loam

Ratiopeak, stony and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:
- Backslope on south-tending mountains
- Footslope on south-tending mountains

Slope: 12 to 25 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Quartzite colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A1—0 to 4 inches; very cobbly loam
A2—4 to 10 inches; very cobbly loam
Bt1—10 to 14 inches; very cobbly loam
Bt2—14 to 26 inches; very cobbly sandy clay loam
Bk—26 to 60 inches; very cobbly sandy loam

Additional Components

Sebud, very stony, greater slopes and similar soils: 9 percent
Poin, very stony and similar soils: 5 percent
Rock outcrop: 1 percent

Management Considerations

Sebud, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ratiopeak, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud, very stony, greater slopes
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard

- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

909G—Rubick, rubbly-Rubble land complex, 40 to 75 percent slopes

Setting

Elevation: 5,300 to 8,300
Mean annual precipitation: 13 to 19 inches
Frost-free period: 50 to 70 days

Component Description

Rubick, rubbly and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Backslope on mountains
Slope: 40 to 75 percent
Plant associations:
- Douglas-fir/pinegrass
- Douglas-fir/snowberry

Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface: 15 to 50 percent stones, 2 to 3 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 3 inches; very cobbly sandy loam
E1—3 to 8 inches; very cobbly sandy loam
E2—8 to 13 inches; very cobbly sandy loam
Bw—13 to 27 inches; very cobbly sandy loam
BC—27 to 60 inches; extremely stony loamy sand

Rubble land
Composition: 25 percent
Landform: None assigned

Additional Components

Poin, rubbly and similar soils: 10 percent
Sebud, extremely stony and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Rubick, rubbly
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength

Rubble land
- Nonsoil material

Poin, rubbly
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Sebud, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

910F—Sebud-Ratiopeak complex, 20 to 50 percent slopes, very stony

Setting

Elevation: 5,310 to 7,810
Mean annual precipitation: 17 to 19 inches
Frost-free period: 50 to 70 days

Component Description

Sebud, very stony and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on south-tending mountains
Slope: 30 to 50 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A1—0 to 4 inches; very cobbly loam
A2—4 to 10 inches; very cobbly loam
Bw—10 to 38 inches; very cobbly sandy loam
BC—38 to 60 inches; very cobbly sandy loam

Ratiopeak, very stony and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:
- Backslope on south-tending mountains
- Footslope on south-tending mountains

Slope: 20 to 40 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Quartzite colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A1—0 to 4 inches; very cobbly loam
A2—4 to 10 inches; very cobbly loam
Bt1—10 to 14 inches; very cobbly loam
Bt2—14 to 26 inches; very cobbly sandy clay loam
Bk—26 to 60 inches; very cobbly sandy loam

Additional Components

Poin, extremely stony and similar soils: 9 percent
Tiban, very stony and similar soils: 5 percent
Rock outcrop: 1 percent

Management Considerations

Sebud, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ratiopeak, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Tiban, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

911E—Sebud, stony-Adel complex, 12 to 30 percent slopes

Setting

Elevation: 5,820 to 7,510
Mean annual precipitation: 16 to 20 inches
Frost-free period: 30 to 50 days

Component Description

Sebud, stony and similar soils
Composition: 65 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on south-tending mountains
Slope: 15 to 30 percent
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.9 inches
Typical profile:
A1—0 to 4 inches; very cobbly loam
A2—4 to 10 inches; very cobbly loam
Bw—10 to 38 inches; very cobbly sandy loam
BC—38 to 60 inches; very cobbly sandy loam

Adel and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform:
- Backslope on south-tending mountains
- Swales

Slope: 12 to 25 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.7 inches
Typical profile:
A1—0 to 8 inches; gravelly loam
A2—8 to 24 inches; silt loam
A3—24 to 33 inches; silt loam
Bw1—33 to 45 inches; silty clay loam
Bw2—45 to 60 inches; clay loam

Additional Components

Sebud, very stony and similar soils: 10 percent
Ratiopeak, stony and similar soils: 5 percent

Management Considerations

Sebud, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ratiopeak, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

912D—Ratiopeak-Redchief complex, 4 to 15 percent slopes, stony

Setting

Elevation: 6,280 to 7,320
Mean annual precipitation: 19 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Ratiopeak, stony and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Gentle mountain slopes
Slope: 4 to 15 percent
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A1—0 to 4 inches; very cobbly loam
A2—4 to 10 inches; very cobbly loam
Bt1—10 to 14 inches; very cobbly loam

Bt2—14 to 26 inches; very cobbly sandy clay loam
Bk—26 to 60 inches; very cobbly sandy loam

Redchief, stony and similar soils
Composition: 25 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform: Gentle mountain slopes
Slope: 4 to 12 percent
Plant associations: None noted
Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.2 inches
Typical profile:
A1—0 to 5 inches; cobbly loam
A2—5 to 12 inches; very gravelly loam
Bt1—12 to 21 inches; very cobbly clay loam
Bt2—21 to 60 inches; very gravelly clay loam

Additional Components

Monaberg, stony and similar soils: 10 percent
Sebud, very stony and similar soils: 5 percent

Management Considerations

Ratiopeak, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monaberg, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

914A—Kilgore-Mooseflat complex, 0 to 2 percent slopes

Setting

Elevation: 5,900 to 6,650
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Kilgore and similar soils
Composition: 45 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Cumulic Cryaquolls
Landform: Flood plains
Slope: 0 to 2 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Fine-loamy alluvium over sandy and gravelly alluvium
Flooding: Occasional
Water table: Present
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
Oe—0 to 2 inches; moderately decomposed plant material
A—2 to 12 inches; loam
C1—12 to 17 inches; loam
2C2—17 to 60 inches; very gravelly sand

Mooseflat and similar soils
Composition: 40 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Flood plains
Slope: 0 to 2 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Loamy alluvium over sandy and gravelly alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 4.8 inches
Typical profile:
Oe—0 to 1 inch; moderately decomposed plant material
A—1 to 11 inches; loam
Bw—11 to 23 inches; loam
2C—23 to 60 inches; very cobbly sand

Additional Components

Foolhen and similar soils: 10 percent
Finn and similar soils: 5 percent

Management Considerations

Kilgore
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

920G—Poin, rubbly-Rubble land-Rock outcrop complex, 40 to 80 percent slopes

Setting

Elevation: 5,270 to 7,270
Mean annual precipitation: 14 to 16 inches
Frost-free period: 50 to 80 days

Component Description

Poin, rubbly and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform:
- Backslope on mountains
- Shoulder on mountains

Slope: 40 to 80 percent
Plant associations: None noted
Surface layer texture: Extremely cobbly sandy loam
Rock fragments on the soil surface: 15 to 75 percent stones, 0 to 3 feet apart, mixed
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.0 inches
Typical profile:
A—0 to 5 inches; extremely cobbly sandy loam
Bw—5 to 12 inches; very cobbly loam
C—12 to 15 inches; extremely cobbly sandy loam
R—15 to 60 inches; bedrock

Rubble land
Composition: 30 percent
Landform: None assigned

Rock outcrop
Composition: 20 percent
Landform: None assigned

Additional Components

Poin, rubbly, very shallow and similar soils: 15 percent
Sebud, extremely stony and similar soils: 5 percent

Management Considerations

Poin, rubbly
- Steep slopes
- Erodible surface
- High windthrow hazard
- Surface rock fragments
- Shallow soil
- Low bearing strength

Rubble land
- Nonsoil material

Rock outcrop
- Nonsoil material

Poin, rubbly, very shallow
- Steep slopes
- Erodible surface
- High windthrow hazard
- Surface rock fragments
- Shallow soil
- Low bearing strength

Sebud, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

923F—Whitore, rubbly-Poin, rubbly-Rock outcrop complex, 25 to 60 percent slopes

Setting

Elevation: 5,380 to 7,820
Mean annual precipitation: 15 to 18 inches
Frost-free period: 50 to 70 days

Component Description

Whitore, rubbly and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts
Landform: Backslope on north-tending mountains
Slope: 25 to 60 percent, west to southeast aspects
Plant associations: Douglas-fir/pinegrass
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 15 to 30 percent stones, 3 to 10 feet apart, quartzite

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A—0 to 5 inches; very cobbly loam
E—5 to 8 inches; gravelly loam
Bw—8 to 14 inches; very gravelly loam
Bk1—14 to 21 inches; very gravelly loam
Bk2—21 to 60 inches; very gravelly loam

Poin, rubbly and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform: Nose slope shoulder on north-tending mountains
Slope: 30 to 60 percent, west to southeast aspects
Plant associations: Douglas-fir/Idaho fescue
Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface: 15 to 30 percent stones, 3 to 10 feet apart, quartzite
Depth to restrictive feature:
• Lithic bedrock: 10 to 20 inches
Drainage class: Well drained
Parent material: Quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.0 inches
Typical profile:
A—0 to 5 inches; very cobbly sandy loam
Bw—5 to 12 inches; very cobbly loam
C—12 to 15 inches; extremely cobbly sandy loam
R—15 to 60 inches; bedrock

Rock outcrop
Composition: 15 percent
Landform: None assigned

Additional Components

Skaggs, rubbly and similar soils: 10 percent
Tiban, extremely stony and similar soils: 10 percent
Rubble land: 5 percent

Management Considerations

Whitore, rubbly
• Steep slopes
• Erodible surface
• High windthrow hazard
• Low bearing strength
• Surface compaction hazard
Poin, rubbly
• Steep slopes
• Erodible surface
• High windthrow hazard

- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

Skaggs, rubbly
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Tiban, extremely stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

924F—Whitlash, extremely stony-Gnojek, extremely stony-Rock outcrop complex, 20 to 60 percent slopes

Setting

Elevation: 5,300 to 6,970
Mean annual precipitation: 14 to 16 inches
Frost-free period: 70 to 90 days

Component Description

Whitlash, extremely stony and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Aridic Lithic Haplustolls
Landform:
- Shoulder on south-tending mountains
- Backslope on south-tending mountains

Slope: 30 to 60 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very gravelly sandy loam
Rock fragments on the soil surface: 3 to 15 percent stones, 2 to 10 feet apart, quartzite
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Colluvium over quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
A—0 to 4 inches; very gravelly sandy loam
Bw—4 to 12 inches; very gravelly sandy loam
BC—12 to 15 inches; very gravelly sandy loam
R—15 to 60 inches; bedrock

Gnojek, extremely stony and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Argiustolls

Landform: Backslope on south-tending mountains
Slope: 20 to 50 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very gravelly sandy loam
Rock fragments on the soil surface: 3 to 15 percent stones, 2 to 10 feet apart, quartzite
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.2 inches
Typical profile:
A—0 to 3 inches; very gravelly sandy loam
Bt—3 to 10 inches; very channery sandy clay loam
Bk—10 to 15 inches; very channery sandy loam
R—15 to 60 inches; bedrock

Rock outcrop
Composition: 20 percent
Landform: None assigned

Reedpoint, extremely stony and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Aridic Lithic Haplustolls
Landform:
- Shoulder on south-tending mountains
- Summit on south-tending mountains

Slope: 30 to 60 percent, east to northwest aspects
Plant associations: None noted
Surface layer texture: Very gravelly sandy loam
Rock fragments on the soil surface: 3 to 15 percent stones, 2 to 10 feet apart, quartzite
Depth to restrictive feature:
- Lithic bedrock: 3 to 10 inches

Drainage class: Well drained
Parent material: Colluvium over quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 0.3 inches
Typical profile:
A—0 to 4 inches; very gravelly sandy loam
BC—4 to 5 inches; very gravelly sandy loam
R—5 to 60 inches; bedrock

Management Considerations

Whitlash, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Gnojek, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Reedpoint, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

926F—Rubick-Tigeron complex, 30 to 60 percent slopes, very stony

Setting

Elevation: 5,300 to 7,870
Mean annual precipitation: 14 to 18 inches
Frost-free period: 30 to 50 days

Component Description

Rubick, very stony and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Backslope on north-tending mountains
Slope: 30 to 60 percent, west to southeast aspects
Plant associations: Douglas-fir/pinegrass
Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 3 inches; very cobbly sandy loam
E1—3 to 8 inches; very cobbly sandy loam
E2—8 to 13 inches; very cobbly sandy loam
Bw—13 to 27 inches; very cobbly sandy loam
BC—27 to 60 inches; extremely stony loamy sand

Tigeron, very stony and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Head slope backslope on north-tending mountains
Slope: 30 to 50 percent, west to southeast aspects
Plant associations: Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Cobbly sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Quartzite colluvium
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; cobbly sandy loam
E2—7 to 13 inches; very cobbly sandy loam
E and Bt—13 to 18 inches; very cobbly sandy loam
Bt—18 to 34 inches; very cobbly sandy clay loam
BC—34 to 60 inches; very gravelly sandy loam

Additional Components

Poin, extremely stony and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Rubick, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Tigeron, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

927E—Tigeron, very stony-Rubick, very stony-Tigeron, stony complex, 15 to 45 percent slopes

Setting

Elevation: 6,130 to 7,590
Mean annual precipitation: 16 to 18 inches
Frost-free period: 50 to 70 days

Component Description

Tigeron, very stony and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Backslope on south-tending mountains
Slope: 15 to 45 percent, east to northwest aspects
Plant associations: Douglas-fir/Idaho fescue
Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; very cobbly sandy loam
E2—7 to 13 inches; very cobbly sandy loam
E and Bt—13 to 18 inches; very cobbly sandy loam
Bt—18 to 34 inches; very cobbly sandy clay loam
BC—34 to 60 inches; very gravelly sandy loam

Rubick, very stony and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Backslope on south-tending mountains
Slope: 15 to 45 percent, east to northwest aspects
Plant associations: Douglas-fir/Idaho fescue
Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 3 inches; very cobbly sandy loam
E1—3 to 8 inches; very cobbly sandy loam
E2—8 to 13 inches; very cobbly sandy loam
Bw—13 to 27 inches; very cobbly sandy loam
BC—27 to 60 inches; extremely stony loamy sand

Tigeron, stony and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Head slope backslope on south-tending mountains
Slope: 15 to 35 percent, east to northwest aspects
Plant associations: Douglas-fir/pinegrass
Surface layer texture: Cobbly sandy loam
Rock fragments on the soil surface: 0.01 to 0.10 percent boulders, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained

Parent material:
- Quartzite colluvium
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; cobbly sandy loam
E2—7 to 13 inches; very cobbly sandy loam
E and Bt—13 to 18 inches; very cobbly sandy loam
Bt—18 to 34 inches; very cobbly sandy clay loam
BC—34 to 60 inches; very gravelly sandy loam

Additional Components

Poin, extremely stony and similar soils: 10 percent
Rock outcrop: 5 percent
Sebud, very stony and similar soils: 5 percent

Management Considerations

Tigeron, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubick, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Tigeron, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

Sebud, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

928E—Mawspring-Maurice complex, 15 to 45 percent slopes, very stony

Setting

Elevation: 6,050 to 7,550
Mean annual precipitation: 14 to 16 inches
Frost-free period: 50 to 70 days

Component Description

Mawspring, very stony and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryepts
Landform: Backslope on north-tending mountains
Slope: 20 to 45 percent, west to southeast aspects
Plant associations: Douglas-fir/pinegrass
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, argillite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.2 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 6 inches; very channery loam
Bw—6 to 18 inches; very channery loam
BC—18 to 33 inches; extremely channery sandy loam
C—33 to 60 inches; extremely channery sandy loam

Maurice, very stony and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on north-tending mountains
Slope: 15 to 35 percent, west to southeast aspects
Plant associations: None noted
Surface layer texture: Channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.6 inches
Typical profile:
A1—0 to 5 inches; channery loam
A2—5 to 12 inches; very channery loam
Bw—12 to 21 inches; very channery loam
BC—21 to 33 inches; very channery loam
C—33 to 60 inches; very channery loam

Additional Components

Sebud, very stony and similar soils: 12 percent
Sigbird, very stony and similar soils: 8 percent

Management Considerations

Mawspring, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Maurice, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sigbird, very stony
- High windthrow hazard
- Shallow soil
- Low bearing strength

929F—Rubick-Poin complex, 25 to 60 percent slopes, very stony

Setting

Elevation: 5,820 to 7,550
Mean annual precipitation: 14 to 18 inches
Frost-free period: 50 to 70 days

Component Description

Rubick, very stony and similar soils
Composition: 65 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Backslope on north-tending mountains
Slope: 25 to 60 percent, west to southeast aspects
Plant associations: Douglas-fir/pinegrass
Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 3 inches; very cobbly sandy loam
E1—3 to 8 inches; very cobbly sandy loam
E2—8 to 13 inches; very cobbly sandy loam

Bw—13 to 27 inches; very cobbly sandy loam
BC—27 to 60 inches; extremely stony loamy sand

Poin, extremely bouldery and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform:
- Nose slope shoulder on north-tending mountains
- Nose slope summit on north-tending mountains

Slope: 30 to 60 percent, west to southeast aspects
Plant associations: None noted
Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface: 3 to 15 percent boulders, 3 to 10 feet apart, quartzite
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Quartzite residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.0 inches
Typical profile:
A—0 to 5 inches; very cobbly sandy loam
Bw—5 to 12 inches; very cobbly loam
C—12 to 15 inches; extremely cobbly sandy loam
R—15 to 60 inches; bedrock

Additional Components

Tigeron, very stony and similar soils: 13 percent
Rock outcrop: 2 percent

Management Considerations

Rubick, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Poin, extremely bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Tigeron, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

930F—Ratiopeak-Tiban complex, 25 to 60 percent slopes, very stony

Setting

Elevation: 5,250 to 7,450
Mean annual precipitation: 12 to 18 inches
Frost-free period: 50 to 70 days

Component Description

Ratiopeak, very stony and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Backslope on mountains
Slope: 25 to 60 percent
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Quartzite colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A1—0 to 4 inches; very cobbly loam
A2—4 to 10 inches; very cobbly loam
Bt1—10 to 14 inches; very cobbly loam
Bt2—14 to 26 inches; very cobbly sandy clay loam
Bk—26 to 60 inches; very cobbly sandy loam

Tiban, very stony and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on mountains
Slope: 30 to 60 percent
Plant associations: Douglas-fir/Idaho fescue
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
A—0 to 8 inches; very cobbly loam
Bw—8 to 16 inches; very cobbly loam
Bk—16 to 60 inches; very gravelly loam

Additional Components

Sebud, very stony and similar soils: 12 percent
Poin, extremely stony and similar soils: 10 percent
Rock outcrop: 8 percent

Management Considerations

Ratiopeak, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin, extremely stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

931E—Ratiopeak-Monaberg complex, 8 to 30 percent slopes, very stony

Setting

Elevation: 5,710 to 7,430
Mean annual precipitation: 13 to 17 inches
Frost-free period: 50 to 70 days

Component Description

Ratiopeak, very stony and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Backslope on hills
Slope: 15 to 30 percent
Plant associations: Douglas-fir/Idaho fescue
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted

Drainage class: Well drained
Parent material:
- Quartzite colluvium
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A1—0 to 4 inches; very cobbly loam
A2—4 to 10 inches; very cobbly loam
Bt1—10 to 14 inches; very cobbly loam
Bt2—14 to 26 inches; very cobbly sandy clay loam
Bk—26 to 60 inches; very cobbly sandy loam

Monaberg, very stony and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls
Landform: Backslope on open meadows on hills
Slope: 8 to 25 percent
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.4 inches
Typical profile:
A—0 to 10 inches; gravelly loam
Bt—10 to 28 inches; gravelly sandy clay loam
C—28 to 60 inches; gravelly sandy clay loam

Additional Components

Mawspring, very stony and similar soils: 10 percent
Monaberg, stony, wet and similar soils: 5 percent
Poin, very stony and similar soils: 5 percent

Management Considerations

Ratiopeak, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Monaberg, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mawspring, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

- Surface compaction hazard

Monaberg, stony, wet
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin, very stony
- High windthrow hazard
- Shallow soil
- Low bearing strength

932D—Tigeron-Rubick complex, 2 to 15 percent slopes, very stony

Setting

Elevation: 5,950 to 6,630
Mean annual precipitation: 17 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Tigeron, very stony and similar soils
Composition: 65 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Footslope on mountains
Slope: 2 to 8 percent
Plant associations: lodgepole pine/pinegrass
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; gravelly loam
E2—7 to 13 inches; very cobbly sandy loam
E and Bt—13 to 18 inches; very cobbly sandy loam
Bt—18 to 34 inches; very cobbly sandy clay loam
BC—34 to 60 inches; very gravelly sandy loam

Rubick, very stony and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Footslope on mountains
Slope: 8 to 15 percent
Plant associations: lodgepole pine/pinegrass
Surface layer texture: Very gravelly sandy loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained

Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.7 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 3 inches; very gravelly sandy loam
E1—3 to 8 inches; very cobbly sandy loam
E2—8 to 13 inches; very cobbly sandy loam
Bw—13 to 27 inches; very cobbly sandy loam
BC—27 to 60 inches; extremely stony loamy sand

Additional Components

Silas, stony, wet meadows and similar soils: 5 percent

Management Considerations

Tigeron, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubick, very stony
- High windthrow hazard
- Low bearing strength

Silas, stony, wet meadows
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

936B—Foxgulch, rarely flooded-Kilgore, occasionally flooded complex, 0 to 4 percent slopes, very stony

Setting

Elevation: 5,720 to 6,300
Mean annual precipitation: 16 to 18 inches
Frost-free period: 30 to 50 days

Component Description

Foxgulch, very stony and similar soils
Composition: 40 percent
Taxonomic class: Fine-loamy, mixed, superactive Fluvaquentic Haplocryolls
Landform: Flood plains
Slope: 2 to 4 percent
Plant associations: None noted
Surface layer texture: Cobbly silt loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material

A—1 to 12 inches; cobbly silt loam
Bw—12 to 30 inches; loam
BC—30 to 46 inches; sandy clay loam
2C—46 to 60 inches; very gravelly coarse sand

Kilgore, very stony and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Cumulic Cryaquolls
Landform: Flood plains
Slope: 0 to 4 percent
Plant associations: None noted
Surface layer texture: Cobbly silt loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material: Alluvium
Flooding: Occasional
Water table: Present
Available water capacity to 60 inch depth: Approximately 6.4 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 19 inches; cobbly silt loam
Ag—19 to 29 inches; loam
2Cg—29 to 38 inches; gravelly sandy loam
2C—38 to 60 inches; very gravelly coarse sand

Additional Components

Bearmouth, very stony and similar soils: 10 percent
Riverwash: 8 percent
Water: 7 percent
Mooseflat, very stony and similar soils: 5 percent

Management Considerations

Foxgulch, very stony
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Kilgore, very stony
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bearmouth, very stony
- High windthrow hazard
- Low bearing strength

Riverwash
- Nonsoil material

Water
- Nonsoil material

Mooseflat, very stony

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

939F—Evaro, stony-Tigeron complex, 20 to 50 percent slopes

Setting

Elevation: 5,950 to 7,640
Mean annual precipitation: 15 to 17 inches
Frost-free period: 30 to 50 days

Component Description

Evaro, stony and similar soils
Composition: 65 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocryepts
Landform: Backslope on north-tending mountain slopes
Slope: 20 to 50 percent, west to east aspects
Plant associations: Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Gravelly ashy sandy loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
Oe—1 to 3 inches; moderately decomposed plant material
A—3 to 8 inches; gravelly ashy sandy loam
E—8 to 21 inches; very gravelly sandy loam
E and Bt—21 to 60 inches; very gravelly sandy clay loam

Tigeron and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Head slope backslope on north-tending mountains
Slope: 20 to 50 percent, west to east aspects
Plant associations: Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Quartzite colluvium
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.3 inches

Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; gravelly sandy loam
E2—7 to 13 inches; very cobbly sandy loam
E and Bt—13 to 18 inches; very cobbly sandy loam
Bt—18 to 34 inches; very cobbly sandy clay loam
BC—34 to 60 inches; very gravelly sandy loam

Additional Components

Poin, very stony and similar soils: 4 percent
Rock outcrop: 1 percent

Management Considerations

Evaro, stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Tigeron
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin, very stony
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop
- Nonsoil material

940E—Ratiopeak, stony-Tiban, very stony complex, 8 to 25 percent slopes

Setting

Elevation: 5,280 to 7,500
Mean annual precipitation: 14 to 18 inches
Frost-free period: 50 to 70 days

Component Description

Ratiopeak, stony and similar soils
Composition: 75 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Backslope on mountains
Slope: 8 to 25 percent
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted

Drainage class: Well drained
Parent material:
- Quartzite colluvium
- Alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.8 inches
Typical profile:
A1—0 to 4 inches; gravelly loam
A2—4 to 10 inches; very cobbly loam
Bt1—10 to 14 inches; very cobbly loam
Bt2—14 to 26 inches; very cobbly sandy clay loam
Bk—26 to 60 inches; very cobbly sandy loam

Tiban, very stony and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Backslope on mountains
Slope: 8 to 25 percent
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones, 7 to 40 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Quartzite colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
A—0 to 8 inches; very cobbly loam
Bw—8 to 16 inches; very cobbly loam
Bk—16 to 60 inches; very gravelly loam

Additional Components

Libeg and similar soils: 10 percent

Management Considerations

Ratiopeak, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban, very stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

941E—Bridger gravelly loam, 12 to 30 percent slopes, stony

Setting

Elevation: 5,810 to 6,820
Mean annual precipitation: 16 to 18 inches
Frost-free period: 50 to 70 days

Component Description

Bridger, stony and similar soils
Composition: 85 percent
Taxonomic class: Fine, mixed, superactive Ustic Argicryolls
Landform: Backslope on south-tending hills
Slope: 12 to 30 percent, east to northwest aspects
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Quartzite colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 7.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bt—4 to 17 inches; clay
Btk—17 to 21 inches; gravelly clay loam
Bk1—21 to 29 inches; very gravelly sandy clay loam
Bk2—29 to 60 inches; very gravelly sandy clay loam

Additional Components

Adel and similar soils: 10 percent
Redchief, stony and similar soils: 5 percent

Management Considerations

Bridger, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Redchief, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

997E—Waldbillig stony ashy very fine sandy loam, 8 to 25 percent slopes

Setting

Elevation: 7,600 to 9,240
Mean annual precipitation: 30 to 40 inches
Frost-free period: 30 to 70 days

Component Description

Waldbillig and similar soils
Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts
Landform: Moraines
Slope: 8 to 25 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/grouse whortleberry
- subalpine fir/twinflower

Surface layer texture: Stony ashy very fine sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash over gravelly till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oe—0 to 2 inches; moderately decomposed plant material
Bw—2 to 8 inches; stony ashy very fine sandy loam
2E and Bt1—8 to 42 inches; very gravelly sandy loam
2E and Bt2—42 to 60 inches; very gravelly sandy loam

Additional Components

Waldbillig, gravelly and similar soils: 10 percent
Mooseflat and similar soils: 3 percent
Rubble land: 2 percent

Management Considerations

Waldbillig
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Waldbillig, gravelly
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Mooseflat
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land
- Nonsoil material

998E—Libeg-Nieman, stony complex, 8 to 25 percent slopes

Setting

Elevation: 5,500 to 7,500
Mean annual precipitation: 15 to 19 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Mountain slopes
Slope: 8 to 25 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly alluvium
- Gravelly colluvium
- Gravelly slope alluvium
- Gravelly till

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
A—0 to 15 inches; gravelly loam
Bt1—15 to 24 inches; very cobbly loam
Bt2—24 to 34 inches; very cobbly sandy clay loam
BC—34 to 60 inches; extremely gravelly sandy loam

Nieman and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Argicryolls
Landform:
- Mountaintops
- Ridges

Slope: 8 to 25 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Cobbly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent boulders
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material:
- Gravelly basalt residuum
- Gravelly sandstone residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 1.2 inches
Typical profile:
A—0 to 5 inches; cobbly loam
Bt—5 to 11 inches; very gravelly sandy clay loam
C—11 to 15 inches; extremely gravelly loamy sand
R—15 to 60 inches; unweathered bedrock

Additional Components

Rock outcrop: 5 percent
Sebud and similar soils: 4 percent
Poin and similar soils: 3 percent
Surdal and similar soils: 3 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Nieman
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Surdal
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

1003E—Tiban, bouldery-Cheadle, very bouldery complex, 15 to 35 percent slopes

Setting

Elevation: 5,490 to 7,000
Mean annual precipitation: 15 to 24 inches
Frost-free period: 30 to 70 days

Component Description

Tiban and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:
- Alluvial fans
- Mountainbases

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent boulders
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly basalt colluvium
- Gravelly metavolcanics colluvium
- Gravelly basalt slope alluvium
- Gravelly metavolcanics slope alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
A—0 to 6 inches; gravelly loam
Bw1—6 to 12 inches; very gravelly sandy clay loam
Bw2—12 to 20 inches; very gravelly sandy clay loam
Bk—20 to 60 inches; extremely gravelly loam

Cheadle and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform:
- Mountain slopes
- Ridges

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent boulders
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material:
- Gravelly basalt residuum
- Gravelly sandstone residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 1.6 inches
Typical profile:
A—0 to 5 inches; very gravelly loam
Bk—5 to 12 inches; very gravelly sandy loam
C—12 to 19 inches; very gravelly coarse sandy loam
R—19 to 60 inches; unweathered bedrock

Additional Components

Nieman and similar soils: 4 percent
Ratiopeak and similar soils: 4 percent
Kimpton and similar soils: 3 percent
Sebud and similar soils: 3 percent

Surdal and similar soils: 3 percent
Tibkey and similar soils: 3 percent

Management Considerations

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cheadle
- High windthrow hazard
- Shallow soil
- Low bearing strength

Nieman
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Ratiopeak
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Kimpton
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Surdal
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibkey
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

1315—ABLA/OSCH, PAMY Edgway-ABLA/VAGL, PAMY Koffgo-ARTRV-SYOR2/FEID Povey association, 15 to 50 percent slopes

Setting

Elevation: 5,000 to 9,600
Mean annual precipitation: 16 to 32 inches
Frost-free period: 10 to 70 days

Component Description

Edgway, ABLA/OSCH, PAMY and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Argicryolls
Landform:
- Hillslopes
- Mountain slopes
- Ridges

Slope: 15 to 40 percent
Plant associations: Abies lasiocarpa/Osmorhiza berteroi; *Paxistima myrsinites*
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 8.0 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 12 inches; silt loam
AB—12 to 20 inches; silt loam
Bt—20 to 60 inches; very cobbly silt loam

Koffgo, ABLA/VAGL, PAMY and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts
Landform:
- Hillslopes
- Mountain slopes

Slope: 30 to 50 percent
Plant associations: Abies lasiocarpa/Vaccinium membranaceum; *Paxistima myrsinites*
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Loess
- Alluvium over igneous colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; silt loam
Bw—8 to 17 inches; very gravelly silt loam
BC—17 to 56 inches; extremely cobbly sandy loam
C—56 to 60 inches; fragmental material

Povey, ARTRV-SYOR2/FEID and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform:
- Hillslopes
- Mountain slopes

Slope: 30 to 50 percent

Plant associations: Artemisia tridentata Nutt. ssp. *vaseyana-Symphoricarpos oreophilus/Festuca idahoensis*
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Alluvium
- Colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
A—0 to 27 inches; gravelly loam
Bw—27 to 39 inches; very gravelly sandy loam
C—39 to 60 inches; extremely gravelly sandy loam

Additional Components

Cryaquolls, Salix/Graminoid and similar soils: 4 percent
Huckridge, ABLA/VAGL, PAMY and similar soils: 4 percent
Lagall, PSME/SYAL and similar soils: 4 percent
Nearl, ABLA/THOC and similar soils: 4 percent
Povey, ARTRV/FEID and similar soils: 4 percent

Management Considerations

Edgway, ABLA/OSCH, PAMY
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Koffgo, ABLA/VAGL, PAMY
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Povey, ARTRV-SYOR2/FEID
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength

Cryaquolls, Salix/Graminoid
- On-site required

Huckridge, ABLA/VAGL, PAMY
- On-site required

Lagall, PSME/SYAL
- On-site required

Nearl, ABLA/THOC
- On-site required

Povey, ARTRV/FEID
- On-site required

1316—ABLA/VAGL, PAMY Koffgo-ABLA/THOC Koffgo-Rock outcrop complex, 40 to 70 percent slopes

Setting

Elevation: 5,300 to 8,400
Mean annual precipitation: 22 to 32 inches
Frost-free period: 10 to 70 days

Component Description

Koffgo, ABLA/VAGL, PAMY and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts
Landform: Mountain slopes
Slope: 40 to 70 percent
Plant associations: Abies lasiocarpa/Vaccinium membranaceum; *Paxistima myrsinites*
Surface layer texture: Gravelly silt loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Loess
- Alluvium over igneous colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 6.4 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 8 inches; gravelly silt loam
Bw—8 to 17 inches; very gravelly silt loam
BC—17 to 56 inches; extremely cobbly sandy loam
C—56 to 60 inches; fragmental material

Koffgo, ABLA/THOC and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts
Landform: Mountain slopes
Slope: 40 to 70 percent
Plant associations: Abies lasiocarpa/Thalictrum occidentale
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Loess
- Alluvium over igneous colluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.0 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 3 inches; gravelly loam
Bw—3 to 25 inches; very gravelly loam
BC—25 to 46 inches; extremely cobbly sandy loam
C—46 to 60 inches; fragmental material

Rock outcrop
Composition: 15 percent
Landform: None assigned

Additional Components

Kyway, tall forb and similar soils: 5 percent
Rhylow, ABLA/ACGL and similar soils: 5 percent
Rubble land: 5 percent
Yodal, ABLA/RIMO5, PIAL and similar soils: 5 percent

Management Considerations

Koffgo, ABLA/VAGL, PAMY
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Koffgo, ABLA/THOC
- Steep slopes
- Erodible surface
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Kyway, Tall Forb
- On-site required

Rhylow, ABLA/ACGL
- On-site required

Rubble land
- Nonsoil material

Yodal, ABLA/RIMO5, PIAL
- On-site required

1690F—Cheadle, very stony-Rock outcrop-Tiban, bouldery complex, 15 to 45 percent slopes

Setting

Elevation: 5,500 to 7,000
Mean annual precipitation: 15 to 19 inches
Frost-free period: 30 to 70 days

Component Description

Cheadle and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform:
- Mountain slopes
- Ridges

Slope: 15 to 45 percent

Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material:
- Gravelly basalt residuum
- Gravelly sandstone residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 1.6 inches
Typical profile:
A—0 to 5 inches; very gravelly loam
Bk—5 to 12 inches; very gravelly sandy loam
C—12 to 19 inches; very gravelly coarse sandy loam
R—19 to 60 inches; unweathered bedrock

Rock outcrop, sandstone
Composition: 25 percent
Definition: Mainly exposed areas of hard, sedimentary and metamorphic bedrock. Angular boulders, stones, and cobbles litter the area and accumulate at the base of hills and escarpments.
Landform: None assigned

Tiban and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Hillsides
Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent boulders
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly basalt colluvium
- Gravelly metavolcanics colluvium
- Gravelly basalt slope alluvium
- Gravelly metavolcanics slope alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.7 inches
Typical profile:
A—0 to 6 inches; gravelly loam
Bw1—6 to 12 inches; very gravelly sandy clay loam
Bw2—12 to 20 inches; very gravelly sandy clay loam
Bk—20 to 60 inches; extremely gravelly loam

Additional Components

Kimpton and similar soils: 6 percent
Philipsburg and similar soils: 5 percent
Ratiopeak and similar soils: 4 percent

Management Considerations

Cheadle
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Rock outcrop, sandstone
- Nonsoil material

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Kimpton
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ratiopeak
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

2125F—Rubble land-Elve, very stony-Rock outcrop complex, 25 to 60 percent slopes

Setting

Elevation: 5,500 to 7,620
Mean annual precipitation: 15 to 24 inches
Frost-free period: 50 to 70 days

Component Description

Rubble land, volcanic
Composition: 60 percent
Definition: Extensive areas of hard, fine-grained, angular volcanic boulders, stones, and cobbles.
Landform: None assigned

Elve and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Mountainflanks
Slope: 25 to 60 percent
Native plant cover type: Forestland
Plant associations: Douglas-fir/common juniper

Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent boulders
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material:
- Gravelly basalt colluvium
- Gravelly basalt slope alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 2.1 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 6 inches; very cobbly loam
E—6 to 12 inches; very gravelly loam
Bw—12 to 19 inches; very gravelly loam
BC—19 to 33 inches; very gravelly coarse sandy loam
C—33 to 60 inches; extremely gravelly coarse sandy loam

Rock outcrop, volcanic
Composition: 15 percent
Definition: Mainly exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock.
Landform: None assigned

Management Considerations

Rubble land, volcanic
- Nonsoil material

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic
- Nonsoil material

2213E—Sebud, stony-Surdal, stony-Poin, very stony complex, 8 to 35 percent slopes

Setting

Elevation: 5,500 to 7,560
Mean annual precipitation: 15 to 24 inches
Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils
Composition: 55 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Alluvial fans
- Mountain slopes

Slope: 8 to 35 percent
Native plant cover type: Rangeland

Plant associations: None noted
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly metavolcanics colluvium
- Gravelly basalt slope alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 10 inches; very gravelly loam
Bw1—10 to 23 inches; very gravelly loam
Bw2—23 to 32 inches; very gravelly loam
BC—32 to 44 inches; very gravelly loam
C—44 to 60 inches; extremely gravelly loam

Surdal and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform:
- Mountain slopes
- Ridges

Slope: 8 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material:
- Gravelly colluvium over basalt residuum
- Gravelly basalt slope alluvium over basalt residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 3.1 inches
Typical profile:
A—0 to 13 inches; very gravelly loam
Bw1—13 to 23 inches; very cobbly loam
Bw2—23 to 31 inches; very cobbly loam
R—31 to 60 inches; unweathered bedrock

Poin and similar soils
Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform:
- Mountain slopes
- Ridges

Slope: 8 to 35 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones

Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material:
- Gravelly basalt residuum
- Gravelly colluvium over basalt residuum
- Gravelly tuff residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
A—0 to 7 inches; very cobbly loam
Bw—7 to 14 inches; very channery sandy loam
C—14 to 18 inches; extremely channery loamy sand
R—18 to 60 inches; unweathered bedrock

Additional Components

Libeg and similar soils: 3 percent
Tibkey and similar soils: 3 percent
Elve and similar soils: 2 percent
Rock outcrop, volcanic: 2 percent

Management Considerations

Sebud
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Surdal
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibkey
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic
- Nonsoil material

2510C—Philipsburg-Adel families, complex, cirque basins

Setting

Elevation: 8,280 to 9,570
Mean annual precipitation: 37 to 42 inches
Frost-free period: 30 to 70 days

Component Description

Philipsburg and similar soils
Composition: 55 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Cobbly loam
Rock fragments on the soil surface:
- 0 to 3 percent boulders, igneous
- 0 to 3 percent boulders, metamorphic
- 0 to 3 percent boulders, sedimentary

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary till
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.9 inches
Typical profile:
A—0 to 7 inches; cobbly loam
Bt—7 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Adel and similar soils
Composition: 35 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Loam
Rock fragments on the soil surface:
- 0 to 3 percent boulders, igneous
- 0 to 3 percent boulders, metamorphic
- 0 to 3 percent boulders, sedimentary

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary till
Flooding: None

Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 32 inches; loam
Bw—32 to 60 inches; gravelly loam

Additional Components

Wetopa and similar soils: 10 percent

Management Considerations

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

2510T—Midfork-Wetopa-Woodhurst families, complex, cirque basins

Setting

Elevation: 8,240 to 9,700
Mean annual precipitation: 35 to 45 inches
Frost-free period: 30 to 70 days

Component Description

Midfork and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Haplocryolls
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0 to 3 percent boulders, metamorphic
- 0 to 3 percent boulders, igneous
- 0 to 3 percent boulders, sedimentary

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary till
Flooding: None

Available water capacity to 60 inch depth: Approximately 5.2 inches
Typical profile:
Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 5 inches; gravelly loam
Bw—5 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very gravelly loam

Wetopa and similar soils
Composition: 25 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
• *Artemisia tridentata/Festuca idahoensis* h.t.
• *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
Surface layer texture: Clay loam
Rock fragments on the soil surface:
• 0 to 3 percent boulders, metamorphic
• 0 to 3 percent boulders, igneous
• 0 to 3 percent boulders, sedimentary
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary till
Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches
Typical profile:
A—0 to 10 inches; clay loam
Bt—10 to 34 inches; clay
BC—34 to 60 inches; clay loam

Woodhurst and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Argicryolls
Landform: Cirque floors
Slope: 0 to 25 percent
Native plant cover type: Rangeland
Plant associations:
• *Artemisia tridentata/Festuca idahoensis* h.t.
• *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase
Surface layer texture: Loam
Rock fragments on the soil surface:
• 0 to 3 percent boulders, sedimentary
• 0 to 3 percent boulders, metamorphic
• 0 to 3 percent boulders, igneous
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary till
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.2 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 16 inches; gravelly loam

Bt1—16 to 30 inches; very cobbly clay loam
Bt2—30 to 60 inches; extremely cobbly clay loam

Additional Components

Wander and similar soils: 10 percent
Yellowmule and similar soils: 10 percent
Elkner and similar soils: 5 percent

Management Considerations

Midfork
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wander
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Yellowmule
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elkner
- High windthrow hazard

2712D—Libeg-Mooseflat loams, 4 to 25 percent slopes

Setting

Elevation: 5,500 to 7,500
Mean annual precipitation: 15 to 19 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 60 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Hillsides
Slope: 4 to 25 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material:
- Gravelly alluvium
- Gravelly colluvium

- Gravelly slope alluvium
- Gravelly till

Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
A—0 to 15 inches; loam
Bt1—15 to 24 inches; very cobbly loam
Bt2—24 to 34 inches; very cobbly sandy clay loam
BC—34 to 60 inches; extremely gravelly sandy loam

Mooseflat and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Flood plains
Slope: 4 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Organic, woody material over fine-loamy alluvium over sandy and gravelly alluvium
Flooding: Frequent
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oe—0 to 2 inches; moderately decomposed plant material
A—2 to 10 inches; loam
Bg—10 to 18 inches; silt loam
BCg—18 to 22 inches; loamy fine sand
2Cg—22 to 60 inches; very cobbly loamy sand

Additional Components

Libeg, very gravelly and similar soils: 10 percent
Tibkey and similar soils: 4 percent
Water: 1 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg, very gravelly
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Tibkey
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

3410E—Adel-Libeg-Tiban families, complex, glacial moraines

Setting

Elevation: 6,400 to 7,940
Mean annual precipitation: 21 to 32 inches
Frost-free period: 30 to 70 days

Component Description

Adel and similar soils
Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam
Rock fragments on the soil surface:
- 0 to 1 percent boulders, igneous
- 0 to 1 percent boulders, sedimentary
- 0 to 1 percent boulders, metamorphic

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary till
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 32 inches; loam
Bw—32 to 60 inches; gravelly loam

Libeg and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface:
- 0 to 1 percent boulders, igneous
- 0 to 1 percent boulders, sedimentary
- 0 to 1 percent boulders, metamorphic

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary till
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.4 inches
Typical profile:
A—0 to 10 inches; very cobbly sandy loam
Bt—10 to 22 inches; very channery loam
BC—22 to 60 inches; very cobbly sandy loam

Tiban and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Rock fragments on the soil surface:
- 0 to 1 percent boulders, metamorphic
- 0 to 1 percent boulders, sedimentary
- 0 to 1 percent boulders, igneous

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 7 inches; gravelly loam
Bw—7 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Additional Components

Philipsburg and similar soils: 10 percent
Rock outcrop: 10 percent
Wetopa and similar soils: 5 percent

Management Considerations

Adel
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Wetopa
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

3410S—Yellowmule-Worock-Swifton families, complex, glacial moraines

Setting

Elevation: 6,490 to 9,620
Mean annual precipitation: 24 to 47 inches
Frost-free period: 20 to 60 days

Component Description

Yellowmule and similar soils
Composition: 30 percent
Taxonomic class: Fine, mixed, superactive Eutric Haplocryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Loam
Rock fragments on the soil surface:
- 0 to 1 percent boulders, igneous
- 0 to 1 percent boulders, sedimentary
- 0 to 1 percent boulders, metamorphic

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary till
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.3 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 11 inches; loam
Bt1—11 to 19 inches; clay
Bt2—19 to 48 inches; cobbly clay loam
BC—48 to 72 inches; very cobbly clay loam

Worock and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Stony loam
Rock fragments on the soil surface:
- 0.5 to 2.0 percent boulders, igneous
- 0.5 to 2.0 percent boulders, sedimentary
- 0.5 to 2.0 percent boulders, metamorphic

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary till
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 13 inches; stony loam
Bt—13 to 55 inches; very gravelly clay loam
BC—55 to 60 inches; very gravelly loam

Swifton and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Palecryalfs
Landform: Ground moraines
Slope: 10 to 40 percent
Native plant cover type: Forestland
Plant associations:
- subalpine fir/pinegrass
- subalpine fir/heartleaf arnica
- subalpine fir/elk sedge
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam

Rock fragments on the soil surface:
- 0 to 1 percent boulders, sedimentary
- 0 to 1 percent boulders, metamorphic
- 0 to 1 percent boulders, igneous

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary till
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.1 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
E—3 to 10 inches; gravelly loam
B/E—10 to 43 inches; gravelly sandy clay loam
Bt—43 to 72 inches; very gravelly sandy clay loam

Additional Components

Elkner and similar soils: 10 percent
Rock outcrop: 10 percent
Garlet and similar soils: 5 percent

Management Considerations

Yellowmule
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Swifton
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elkner
- Steep slopes
- Erodible surface
- High windthrow hazard

Rock outcrop
- Nonsoil material

Garlet
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

5210E—Libeg-Tiban-Tibson families, complex, gentle mountain slopes

Setting

Elevation: 6,590 to 8,050
Mean annual precipitation: 18 to 29 inches
Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.6 inches
Typical profile:
A—0 to 10 inches; gravelly loam
Bt1—10 to 16 inches; very flaggy loam
Bt2—16 to 30 inches; very flaggy clay loam
BC—30 to 60 inches; very cobbly sandy loam

Tiban and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 7 inches; gravelly loam
Bw—7 to 13 inches; very cobbly loam
Bk1—13 to 23 inches; very cobbly loam
Bk2—23 to 60 inches; very cobbly loam

Tibson and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls
Landform: Gentle mountain slopes
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gneiss colluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 4 inches; gravelly loam
Bw—4 to 8 inches; cobbly loam
Bk1—8 to 14 inches; very cobbly loam
Bk2—14 to 60 inches; very cobbly loam

Additional Components

Woodhurst and similar soils: 10 percent

Management Considerations

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tibson
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Woodhurst
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

6110C—Philipsburg-Wander-Wetopa families, complex, alluvial-colluvial deposits

Setting

Elevation: 8,260 to 9,090
Mean annual precipitation: 33 to 47 inches
Frost-free period: 20 to 60 days

Component Description

Philipsburg and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 8.3 inches
Typical profile:
A—0 to 7 inches; loam
Bt—7 to 20 inches; gravelly clay loam
Bk—20 to 60 inches; gravelly loam

Wander and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.4 inches
Typical profile:
A—0 to 10 inches; very cobbly sandy loam
Bt—10 to 22 inches; very channery loam
BC—22 to 60 inches; very cobbly sandy loam

Wetopa and similar soils
Composition: 25 percent
Taxonomic class: Fine, smectitic Vertic Argicryolls
Landform: Fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Festuca idahoensis/Agropyron caninum* h.t.
- *Festuca idahoensis/Deschampsia caespitosa* h.t.

Surface layer texture: Clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary alluvium

Flooding: None
Available water capacity to 60 inch depth: Approximately 9.8 inches
Typical profile:
A—0 to 10 inches; clay loam
Bt—10 to 34 inches; clay
BC—34 to 60 inches; clay loam

Additional Components

Marcetta and similar soils: 10 percent
Midfork and similar soils: 10 percent

Management Considerations

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wander
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Wetopa
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Marcetta
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Midfork
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

6810E—Adel-Libeg-Marcetta families, complex, alluvial fans

Setting

Elevation: 5,890 to 7,690
Mean annual precipitation: 17 to 31 inches
Frost-free period: 30 to 70 days

Component Description

Adel and similar soils
Composition: 30 percent
Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Loam

Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary pedisediment
Flooding: None
Available water capacity to 60 inch depth: Approximately 7.8 inches
Typical profile:
A1—0 to 9 inches; loam
A2—9 to 32 inches; loam
Bw—32 to 60 inches; gravelly loam

Libeg and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Very cobbly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary pedisediment
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.4 inches
Typical profile:
A—0 to 10 inches; very cobbly sandy loam
Bt—10 to 22 inches; very channery loam
BC—22 to 60 inches; very cobbly sandy loam

Marcetta and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls
Landform: Alluvial fans
Slope: 0 to 20 percent
Native plant cover type: Rangeland
Plant associations:
- *Artemisia tridentata/Festuca idahoensis* h.t.
- *Artemisia tridentata/Festuca idahoensis* h.t.-*geranium viscosissimum* phase

Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Igneous, metamorphic, and sedimentary alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 6.5 inches
Typical profile:
A1—0 to 10 inches; gravelly loam
A2—10 to 17 inches; very gravelly loam
Bw—17 to 48 inches; very gravelly loam
C—48 to 60 inches; very gravelly loam

Additional Components

Bridger and similar soils: 10 percent
Tiban and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Adel
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Marcetta
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bridger
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

9100F—Blackleaf, stony-Twinadams, very stony-Rock outcrop complex, 20 to 60 percent slopes

Setting

Elevation: 5,500 to 6,500
Mean annual precipitation: 10 to 14 inches
Frost-free period: 70 to 90 days

Component Description

Blackleaf and similar soils
Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustalfs
Landform: Strike ridges
Slope: 20 to 60 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very channery sandy loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Sandstone and shale residuum

Flooding: None
Available water capacity to 60 inch depth: Approximately 1.1 inches
Typical profile:
A—0 to 4 inches; very channery sandy loam
Bt—4 to 8 inches; very channery sandy clay loam
Bk—8 to 13 inches; extremely channery loam
R—13 to 60 inches; unweathered bedrock

Twinadams and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Calcidic Haplustalfs
Landform: Strike ridges
Slope: 20 to 60 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones
Depth to restrictive feature:
- Paralithic bedrock: 20 to 36 inches
- Lithic bedrock: 30 to 40 inches

Drainage class: Well drained
Parent material: Sandstone and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 2.0 inches
Typical profile:
A—0 to 4 inches; very channery loam
Bt—4 to 9 inches; very channery clay loam
Bk—9 to 28 inches; very channery sandy loam
Cr—28 to 36 inches; weathered bedrock
R—36 to 60 inches; unweathered bedrock

Rock outcrop
Composition: 15 percent
Landform: None assigned

Additional Components

Twinadams, bouldery and similar soils: 8 percent
Pensore and similar soils: 4 percent
Rencot and similar soils: 3 percent
Spudbar and similar soils: 3 percent
Cabbart and similar soils: 2 percent

Management Considerations

Blackleaf
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Twinadams
- Steep slopes
- Erodible surface
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Twinadams, bouldery
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Pensore
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rencot
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Spudbar
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cabbart
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

9102F—Nathale, very bouldery-Poin, very flaggy-Rock outcrop complex, 20 to 60 percent slopes

Setting

Elevation: 6,000 to 7,000
Mean annual precipitation: 15 to 19 inches
Frost-free period: 30 to 70 days

Component Description

Nathale and similar soils
Composition: 40 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Strike ridges
Slope: 20 to 60 percent

Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very channery sandy clay loam
Rock fragments on the soil surface: 0.1 to 3.0 percent boulders
Depth to restrictive feature:
- Lithic bedrock: 20 to 40 inches

Drainage class: Well drained
Parent material: Sandstone and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 3.5 inches
Typical profile:
A—0 to 10 inches; very channery sandy clay loam
Bt—10 to 31 inches; extremely channery clay loam
Bk—31 to 39 inches; extremely channery sandy clay loam
R—39 to 60 inches; unweathered bedrock

Poin and similar soils
Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform: Strike ridges
Slope: 20 to 60 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.1 to 3.0 percent stones
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Sandstone and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
A—0 to 7 inches; very channery loam
Bw—7 to 14 inches; very channery sandy loam
C—14 to 18 inches; extremely channery loamy sand
R—18 to 60 inches; unweathered bedrock

Rock outcrop
Composition: 20 percent
Landform: None assigned

Additional Components

Cheadle and similar soils: 3 percent
Ratiopeak and similar soils: 3 percent
Hanson and similar soils: 2 percent
Surdal and similar soils: 2 percent

Management Considerations

Nathale
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Cheadle
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Ratiopeak
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Surdal
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

9103D—Faith-Geohrock, stony-Beavrock complex, 2 to 15 percent slopes

Setting

Elevation: 5,500 to 6,500
Mean annual precipitation: 10 to 14 inches
Frost-free period: 90 to 105 days

Component Description

Faith and similar soils
Composition: 35 percent
Taxonomic class: Fine-loamy, mixed, superactive, frigid Torrifluventic Haplustolls
Landform:
- Flood plains
- Stream terraces

Slope: 2 to 8 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted

Drainage class: Moderately well drained
Parent material: Alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60 inch depth: Approximately 10.2 inches
Typical profile:
Ap—0 to 8 inches; silt loam
Bw—8 to 14 inches; silty clay loam
Bk—14 to 31 inches; silty clay loam
2C—31 to 47 inches; fine sandy loam
2Cg—47 to 60 inches; fine sandy loam

Geohrock, stony and similar soils
Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Aridic Haplustalfs
Landform: Alluvial fans
Slope: 8 to 15 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium
Flooding: None
Available water capacity to 60 inch depth: Approximately 4.0 inches
Typical profile:
A—0 to 4 inches; very cobbly loam
Bt—4 to 11 inches; extremely cobbly clay loam
Bk1—11 to 23 inches; very cobbly sandy loam
Bk2—23 to 60 inches; very cobbly sandy clay loam

Beavrock and similar soils
Composition: 20 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, calcareous, frigid Typic Fluvaquents
Landform: Flood plains
Slope: 2 to 4 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Silt loam
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material: Alluvium
Flooding: Occasional
Water table: Present
Available water capacity to 60 inch depth: Approximately 5.4 inches
Typical profile:
Oi—0 to 3 inches; slightly decomposed plant material
A—3 to 8 inches; silt loam
C—8 to 23 inches; stratified clay loam to silty clay loam to sandy loam
Cg1—23 to 28 inches; silty clay loam
2Cg2—28 to 60 inches; extremely gravelly sand

Additional Components

Bronec and similar soils: 4 percent
Dillon and similar soils: 4 percent
Glendive and similar soils: 3 percent
Geohrock, bouldery and similar soils: 2 percent
Rivra and similar soils: 2 percent
Sappington and similar soils: 2 percent
Threeriv and similar soils: 2 percent
Water: 1 percent

Management Considerations

Faith
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Geohrock, stony
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Beavrock
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bronec
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dillon
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Glendive
- High windthrow hazard
- Low bearing strength

Geohrock, bouldery
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rivra
- Flooding
- High windthrow hazard

Sappington
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Threeriv
- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water
- Nonsoil material

9105F—Ratiopeak, bouldery-Poin, flaggy complex, 15 to 45 percent slopes

Setting

Elevation: 5,590 to 7,000
Mean annual precipitation: 15 to 19 inches
Frost-free period: 30 to 70 days

Component Description

Ratiopeak and similar soils
Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Footslope on hills
Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent boulders
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Sandstone and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 5.3 inches
Typical profile:
A—0 to 8 inches; very cobbly loam
Bt—8 to 25 inches; extremely cobbly sandy clay loam
Bk—25 to 60 inches; extremely cobbly sandy loam

Poin and similar soils
Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform: Hillsides
Slope: 15 to 45 percent
Native plant cover type: Rangeland
Plant associations: None noted
Surface layer texture: Very channery loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones
Depth to restrictive feature:
- Lithic bedrock: 10 to 20 inches

Drainage class: Well drained
Parent material: Sandstone and shale residuum
Flooding: None
Available water capacity to 60 inch depth: Approximately 1.4 inches
Typical profile:
A—0 to 7 inches; very channery loam
Bw—7 to 14 inches; very channery sandy loam
C—14 to 18 inches; extremely channery loamy sand
R—18 to 60 inches; unweathered bedrock

Additional Components

Nathale and similar soils: 5 percent
Philipsburg and similar soils: 5 percent
Ratiopeak, lesser slopes and similar soils: 5 percent
Rock outcrop: 5 percent
Cheadle and similar soils: 4 percent
Hanson and similar soils: 3 percent
Tiban and similar soils: 3 percent

Management Considerations

Ratiopeak
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poin
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Nathale
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Philipsburg
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ratiopeak, lesser slopes
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop
- Nonsoil material

Cheadle
- Steep slopes
- Erodible surface
- High windthrow hazard
- Shallow soil
- Low bearing strength

Hanson
- Steep slopes
- Erodible surface
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Tiban
- Steep slopes
- Erodible surface

- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

K—Rock outcrop and Rubble land

Component Description

Rock outcrop
Composition: 0 to 100 percent
Definition: Exposures of bare bedrock
Landform: None assigned

Rubble land
Composition: 0 to 100 percent
Definition: Areas of boulders, stones, and cobbles
Landform: None assigned

Management Considerations

Rock outcrop
- Nonsoil material

Rubble land
- Nonsoil material

M—Dumps, mine

Component Description

Dumps, mine
Composition: 100 percent
Definition: Mine dumps are piles of waste rock generally in the vicinity of active mining sites or are remnants of earlier mining activity.
Landform: None assigned

Management Considerations

Dumps, mine
- Nonsoil material

W—Water

Component Description

Water
Composition: 100 percent
Definition: Water includes streams, lakes, ponds, and reservoirs that in most years are covered with water at least during the period warm enough for plants to grow. Many areas are covered with water throughout the year.
Landform: None assigned

Management Considerations

Water
- Nonsoil material

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 coordinate 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 soil physical properties, chemical properties, related site observations, and other factors that affect various soil uses and management. Field experience and collected performance data are used as a basis in predicting soil behavior.

Information in this section can be used to plan the management of soils as rangeland and forestland, sites for parks and other recreational facilities, sources of construction materials, and ponds and embankments. This information 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 gravel and sand, 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 use this survey to help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, camp areas, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are in both text and numerical format.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited,* and *very limited*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited*, and *unsuited* or as *good, fair*, and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations

appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

General Land Access and Management

The table "Hazard of Erosion and Suitability for Roads and Trails" shows interpretive ratings related to hazard of erosion (disturbed site), hazard of erosion on roads and trails, and suitability for roads (natural surface), The ratings in the table are in both text and numerical format.

Ratings in the column *hazard of erosion (disturbed site)* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *hazard of erosion on roads and trails* are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

The table "Soil Damage by Fire, Fencing Limitations, and Soil Rutting Hazard" shows interpretive ratings related to potential for damage to soil by fire, fencing limitations, and soil rutting hazard. The ratings in the table are in both text and numerical format.

Ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

Rating class terms for fire damage are expressed as *low, moderate*, and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage is highest (1.00) and the point at which the potential is lowest (0.00).

Rating class terms for *fencing limitations* are based on soil texture, flooding frequency, depth to bedrock, coarse fragments, shrink swell potential, slope, depth to water table, potential frost action, salinity, ponding, depth to cemented pan, and surface rock fragments. The soils are described as being very limited, limited, and not limited. The ratings indicate an evaluation of the limitation of the soil for installing fencing, typically driven, or dug, wooden or steel posts.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of forest equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

Range

Barbara Landgraf-Gibbons, Rangeland Management Specialist, Natural Resources Conservation Service, prepared this section.

In areas that have similar climate and topography, differences in the kind and amount of rangeland or forest understory 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.

Rangeland is defined as land on which the native vegetation (the climax, or natural potential, plant community) is predominantly grasses, grasslike plants, forbs, and shrubs suitable for grazing and browsing. Range includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain shrub and forb communities. Range receives no regular or frequent cultural treatment. The composition and production of the plant community are determined by soil, climate, topography, overstory canopy, and grazing management.

Grazed forestland is defined as land on which the understory includes, as an integral part of the forest plant community, plants that can be grazed without significant impairment of other forest values.

Naturalized pasture is defined as forestland that is used primarily for the production of forage for grazing by livestock rather than for the production of wood products. Overstory trees are removed or managed to promote the native and introduced understory vegetation occurring on the site. This vegetation is managed for its forage value through the use of grazing management principles.

The table “Rangeland Ecological Sites and Forest Habitat Types” at the end of this section shows, for each soil that supports vegetation suitable for grazing, the map unit symbol and soil name, the percent composition, the ecological site ID, the ecological site name, the other vegetative class ID, and habitat type. Explanation of the column headings in this table follows.

The *ecological site name* correlates with the *ecological site ID*. When no ecological site ID is available, the numerical habitat type identifier under other vegetative class ID is used. This column lists the soil components and associated vegetation—forestland, wetland, or grasslands—that the Forest Service has assigned a vegetation class identifier. *CL i*s used for alpine habitat types (Cooper, 1997). *HP* is used for wetland habitat types (Hansen, 1995). *MS* is used for sagebrush/grass habitat types (Mueggler, 1980). *PK* is used for forestland habitat types (Pfister, 1977). *TF* is used for habitat types taken from the aggregate of systems used in the Targhee National Forest (Hironaka and others, 1983; Steele and others, 1983; Tart, 1996; Svalberg and others, 1997).

When no ecological site ID is available, a vegetative class ID is assigned and the *habitat type* column is populated with the names of habitat types that occur in each component for each map unit. These names correlate to the numbers represented in the *other vegetative class ID* column.

Rangeland Similarity Index

Rangeland Similarity Index is determined by comparing the present plant community with the potential natural plant community (known as the historic climax plant

community) on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the similarity index. The historic climax plant community is the plant community that was best adapted to an ecological site and is considered to be the community existing in a natural equilibrium with the historic climatic, biotic, and abiotic factors on an ecological site.

Similarity index is determined to provide a basis for describing the extent of change that has occurred on an ecological site. Comparing the present plant community to the historic climax plant community describes the percent of the historic climax plant community remaining on a site. This information assists land managers in setting resources goals and evaluating the effect of current management.

A variety of factors can affect similarity index. Abnormal disturbances that change the natural plant community include repeated overuse by livestock, excessive burning, erosion, and plowing. Grazing animals select the most palatable plants. These plants will eventually die if they are continually grazed. A very severe disturbance may destroy the natural community. Under these conditions, the less desirable plants, such as annuals and weed-like plants, can invade. If the plant community has not deteriorated significantly, it eventually can return to dominantly natural plants if proper grazing management is applied. If the plant community has degraded significantly, inputs such as range seeding, prescribed fire, or mechanical treatment may be required to return the site to a condition similar to the historic climax plant community.

Knowledge of the ecological site, the historic climax plant community, and the potential vegetation states that can exist on a site is necessary as a basis for planning and applying the management needed to maintain or improve the desired plant community for selected uses. Such information is needed to determine management objectives, proper grazing systems and stocking rates, suitable wildlife management practices, the potential for recreational uses, and the condition of watersheds.

Rangeland Management

Rangeland management requires a knowledge of the kinds of soil and of the historic climax plant community. It also requires an evaluation of the present rangeland similarity index and rangeland trend. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in chapter 4 of the “National Range and Pasture Handbook” (http://www.glti.nrcs.usda.gov/technical/publications/nrph.html).

The 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, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a rangeland similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Grazing management is the most important part of any rangeland management program. Proper grazing use, timely deferment of grazing, and planned rotation grazing systems are key practices. The experience of ranchers and research has shown that if no more than one-half of the current year’s growth is grazed, the current plant community can be maintained or possibly improved. The remaining one-half enables plants to make and store food for regrowth and root development. As a result, the desirable plants remain healthy and are not replaced by less desirable grasses and weeds. Also, the plant cover protects the soil from water erosion and soil blowing, improves tilth, increases the rate of water infiltration, and helps to control runoff.

Certain practices commonly are needed to obtain a uniform distribution of grazing. These practices include developing livestock watering facilities, fencing, properly

locating salt and mineral supplements, constructing livestock trails in steeply sloping areas, and riding or herding.

Various kinds of grazing systems can be used in rangeland management. No single grazing system is best under all conditions. The grazing system should increase the quantity and improve the quality of the range vegetation; should meet the needs of the individual operator; and should be designed according to topography, type of grazing animals, and resource management objectives.

Special improvement practices are needed in areas where management practices do not achieve the desired results or where recovery is too slow under forage management alone. These practices include range seeding, brush management, water spreading, prescribed burning, and mechanical treatment.

Some soils are suited to mechanical treatment for rangeland improvement. On other soils, however, only proper grazing management can improve the range. Capability classes are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. Many soils in capability classes 1 through 4 are suited to such practices as seeding, mechanical brush and weed control, and water spreading. Those soils in capability classes 7 and 8, however, are not suitable. Many soils in capability classes 1 through 4 are suited to tillage for seedbed preparation before native or introduced forage plant species are seeded. Soils in capability class 6 may be suited to limited surface disturbance, such as scarification, for seeding and as a means of increasing the rate of water infiltration for seed germination.

Forestland Understory Management

Understory vegetation consists of grasses, forbs, shrubs, and other plants. If well managed, some forestland can produce enough understory vegetation to support grazing of livestock or wildlife, or both, without damage to the trees.

Forest understory production can be influenced by controlling canopy density in addition to the management of stocking rates, distribution, and season of use. Often both the forestland and range resources can be enhanced through thinning the overstory to canopy levels that optimize both timber and forage production. Broadcast seeding of disturbed areas soon after timber harvest can improve forage quantity and quality and reduce the chances of undesirable plants occupying the site.

Steepness of slopes and distance to drinking water are severe grazing management problems in much of the mountain and foothill areas. Variations in primary season of use, production levels, and plant communities because of elevation and aspect changes present additional challenges. Long, steep slopes provide limited access to livestock. Less sloping areas are subject to overuse. Grazing should be delayed until the soil is firm enough to withstand trampling and the plants have matured enough to withstand grazing pressure.

Riparian areas should be protected from overuse by livestock. Misuse results in deterioration of protective vegetation, reduction of stream-bank stability, and excessive erosion. Developing off-stream-watering locations can successfully prevent cattle from overgrazing riparian areas and encourage better livestock distribution.

Forestland

The tables in this section can help forest owners or managers plan the use of soils for wood crops. The soils are rated according to the limitations that affect various aspects of forest management. In these tables, interpretive ratings are given for various aspects of forest management. The ratings in the tables are in both text and numerical format.

Some rating class terms indicate the degree to which the soils are suited to a specified forest management practice. *Well suited* indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

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

The paragraphs that follow indicate the soil properties considered in rating the soils for forest management practices. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet (http://soils.usda.gov/technical/nfmanual/).

The table "Haul Roads, Log Landings, and Seedling Mortality on Forestland," shows interpretive ratings related to limitations affecting construction of haul roads and log landings, suitability for log landings, and potential for seedling mortality.

For *limitations affecting construction of haul roads and log landings.* The ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities; *moderate* indicates that one or more limitations can cause some difficulty in construction; and *severe* indicates that one or more limitations can make construction very difficult or very costly.

The ratings of *suitability for log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited to use as log landings.

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope.

Rating class terms for seedling mortality are expressed as *low, moderate*, and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The table "Forestland Planting and Harvesting," shows interpretive ratings related to suitability for hand planting, suitability for mechanical planting, and suitability for use of harvesting equipment.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

The table "Forestland Site Preparation" shows interpretive ratings related to suitability for mechanical site preparation (surface) and suitability for mechanical site preparation (deep).

Ratings in the column *suitability for mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

Ratings in the column *suitability for mechanical site preparation (deep)* are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Recreation

The soils of the survey area are rated in the "Camp Areas, Paths and Trails, and Off-road Vehicle Trails" table according to limitations that affect their suitability for recreation. The ratings in the table are in both text and numerical format. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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

The ratings in the tables 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. The information in the "Camp Areas, Paths and Trails, and Off-road Vehicle Trails" table can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

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 ratings are based on the soil properties that affect the ease of

developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road vehicle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

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 data in the tables described under the heading "Soil Properties."

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 between the surface and a depth of 5 to 7 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 particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, 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."

Construction Materials

The Construction Materials tables include "Construction Material Potential" and "Source of Reclamation Material, Roadfill, and Topsoil." These tables give information about the soils as potential sources of gravel and sand, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

Gravel and *Sand* 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 Construction Materials tables, only the likelihood 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 gravel or sand are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains gravel or sand, the soil is considered a likely source regardless of thickness. The assumption is that the gravel or sand layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of gravel and sand. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of gravel or sand. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The soils are rated *good, fair,* or *poor* as potential sources of reclamation material and roadfill. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material or roadfill. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

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 whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a 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 AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

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. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material. The soils in this survey area have not been rated for potential use as topsoil because of the degree that the soils have been impacted. Onsite evaluation is required to determine the suitability of the soils for use as topsoil.

Water Management

The “Ponds and Embankments” table 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 ratings in the table are in both text and numerical format. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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

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. Embankments that have zoned construction (core and shell) are not considered. 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.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are ascertained 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 excavations 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 particle-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 are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

The "Engineering Index Properties" table gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

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 15 percent or more, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the "Glossary."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-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 based on particle-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 based on visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of particle-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 generally omitted in the table.

Physical Properties

The “Physical Properties of the Soils” table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the 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.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

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 soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and 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 $^1/_3$- or $^1/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each 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. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in micrometers per second (um/sec), 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 soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil. Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the "Physical Properties of the Soils" 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 by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. 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) and the Revised Universal Soil Loss Equation (RUSLE) 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 and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

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 susceptibility to wind erosion in cultivated areas. 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 rock fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Properties

The “Chemical Properties of the Soils” table shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the 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.

Cation-exchange capacity is the total amount of extractable 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. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable cations plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil 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.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

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.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

Water Features

The "Water Features" table gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

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.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redox features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding.

Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area 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.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

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 is 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.

Soil Features

The “Soil Features” table gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for 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 to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes 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 or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete 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.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2003). 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. The table, "Taxonomic Classification of the Soils," shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve 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 Mollisols, from *mollis*, meaning soft.

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 Cryolls (*Cry*, meaning soil that is icy cold, plus *olls*, from Mollisols).

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 Argicryolls (*Argi*, meaning soils that have an argillic horizon, plus *cryolls*, the suborder of the Mollisols that has a cryic temperature 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. An example is Calcic Argicryolls.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is loamy-skeletal, mixed, superactive Calcic Argicryolls.

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.

The "Taxonomic Classification of the Soils" table indicates the order, suborder, great group, subgroup, and family of the soils in the survey area.

Soils and Their Morphology

In this section, each soil, both series and series family, are collectively identified and labeled after the namesake series. Each soil recognized in the survey area is included. A pedon, a small three-dimensional area of soil, that is an example of the series and/or series family is described. The description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993) and in the "Field Book for Describing and Sampling Soils" (Schoeneberger and others, 2002). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 2003).

Adel Soil

Taxonomic Class: Fine-loamy, mixed, superactive Pachic Haplocryolls

Typical Pedon

Adel silt loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 13 inches; dark gray (10YR 4/1) loam, black (10YR 2/1) moist; moderate fine and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine interstitial pores; many worm casts; slightly acid (pH 6.1); gradual wavy boundary.

A2—13 to 31 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine pores; many worm casts; slightly acid (pH 6.1); diffuse wavy boundary.

A3—31 to 38 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to moderate very fine and fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine pores; neutral (pH 7.0); gradual wavy boundary.

Bw—38 to 60 inches: brown (10YR 5/3) channery loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate very fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine pores; 5 percent angular cobbles; 20 percent angular gravel; neutral (pH 7.0).

Alta Soil

Taxonomic Class: Sandy-skeletal, mixed Pachic Haplocryolls

Typical Pedon

Alta very bouldery coarse sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; slightly decomposed plant material from curl-leaf mountain mahogany leaves and twigs.

A1—1 to 4 inches; dark grayish brown (10YR 4/2) very bouldery coarse sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine roots; many very fine interstitial pores; 25 percent boulders; 15 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

A2—4 to 17 inches; dark grayish brown (10YR 4/2) very bouldery coarse sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; many very

fine tubular pores; 20 percent boulders; 15 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

C1—17 to 20 inches; pale brown (10YR 6/3) very stony loamy coarse sand, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and few fine roots; common very fine interstitial pores; 30 percent stones; 2 percent cobbles; 20 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

C2—20 to 50 inches; pale brown (10YR 6/3) very stony loamy coarse sand, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; 30 percent stones; 20 percent gravel; neutral (pH 6.6); clear smooth boundary.

Cr—50 to 54 inches; weathered granitic rock.

Amesha Soil

Taxonomic Class: Coarse-loamy, mixed, superactive, frigid Aridic Calciustepts

Typical Pedon

Amesha loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 4 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; 5 percent gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bk1—4 to 10 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; weak medium prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; many fine tubular pores; 5 percent gravel; common fine masses of lime; continuous distinct lime casts on undersides of gravel; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk2—10 to 28 inches; very pale brown (10YR 8/3) loam, very pale brown (10YR 7/3) moist; weak coarse blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few fine tubular pores; 5 percent gravel; many large masses of lime; continuous distinct lime coats on gravel; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk3—28 to 49 inches; very pale brown (10YR 8/3) loam, pale brown (10YR 6/3) moist; weak coarse blocky structure separating to weak thin platy; hard, friable, slightly sticky and slightly plastic; few very fine roots and pores; 5 percent gravel; few masses of lime; continuous distinct lime coats on gravel; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

BC—49 to 74 inches; very pale brown (10YR 8/3) loam, pale brown (10YR 6/3) moist; massive; hard, friable, slightly sticky and slightly plastic; 15 percent gravel; common faint carbonate coats on gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.2).

Arrowpeak Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Typical Pedon

Arrowpeak very cobbly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 8 inches; dark grayish brown (10YR 4/2) very cobbly 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 and few medium

roots; few surface stones; 30 percent cobbles; 20 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bw—8 to 17 inches; brown (10YR 5/3) extremely cobbly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine tubular and irregular pores; 30 percent cobbles; 40 percent gravel; neutral (pH 6.6); abrupt wavy boundary.

R—17 inches; hard fractured igneous bedrock.

Ashbough Soil

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Torrifluventic Haplustepts

Typical Pedon

Ashbough silt loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; grayish brown (10YR 5/2) silt loam, dark grayish brown (10YR 4/2) moist; weak fine and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and few fine pores; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bw—4 to 12 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, moderately sticky and moderately plastic; common very fine, fine, and medium roots; many very fine and fine tubular and interstitial pores; disseminated lime; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

C1—12 to 22 inches; pale brown (10YR 6/3) loam, including thin strata of very fine sandy loam and sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, moderately sticky and slightly plastic; common very fine and fine roots; many very fine and few fine tubular and interstitial pores; disseminated lime; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

C2—22 to 43 inches; light yellowish brown (2.5Y 6/3) loam, including thin strata of very fine sandy loam and sandy loam, light olive brown (2.5Y 5/3) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; many very fine and few fine tubular and interstitial pores; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Cg1—43 to 51 inches; light gray (2.5Y 7/2) silt loam, including thin strata of loam and sandy loam, light brownish gray (2.5Y 6/2) moist; common medium distinct light yellowish brown (10YR 6/4) moist, redox concentrations; massive; slightly hard, very friable, moderately sticky and moderately plastic; few very fine and fine roots; common very fine and few fine tubular and interstitial pores; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

Cg2—51 to 61 inches; light brownish gray (2.5Y 6/2) sandy loam, including thin strata of silt loam and loam, grayish brown (2.5Y 5/2) moist; common fine distinct light yellowish brown (10YR 6/4) moist, redox concentrations; massive; soft, very friable, nonsticky and nonplastic; disseminated lime; violently effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

2C—61 to 84 inches; grayish brown (2.5Y 5/2) extremely gravelly sand, dark grayish brown (2.5Y 4/2) moist; single grain; loose, nonsticky and nonplastic; 70 percent gravel; slightly effervescent; moderately alkaline (pH 8.0).

Attewan Soil

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Aridic Argiustolls

Typical Pedon

Attewan loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 6 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; 5 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bt—6 to 15 inches; brown (10YR 5/3) clay loam, dark grayish brown (10YR 4/2) moist; moderate fine and medium prismatic structure parting to fine and medium blocky; hard, friable, moderately sticky and moderately plastic; many fine roots; common very fine and fine pores; very dark grayish brown (10YR 3/2) many faint clay films on faces of peds; 5 percent gravel; slightly alkaline; clear wavy boundary.

Bk1—15 to 20 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; moderate medium prismatic structure parting to weak medium blocky; hard, very friable, slightly sticky and moderately plastic; common fine roots; many very fine and fine pores; 5 percent fine gravel; common fine masses and threads of lime; common faint lime coats on undersides of rock fragments; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk2—20 to 25 inches; light brownish gray (2.5Y 6/2) clay loam, grayish brown (2.5Y 5/2) moist; weak medium and coarse prismatic structure; hard, very friable, slightly sticky and moderately plastic; common fine roots; common fine pores; 10 percent gravel; many medium masses of lime; continuous distinct lime coats on gravel; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

2C—25 to 60 inches; grayish brown (2.5Y 5/2) very gravelly loamy sand; dark grayish brown (2.5Y 4/2) moist; single grain; loose, nonsticky and nonplastic; 60 percent gravel; lime crusts on undersides of gravel in upper part; strongly effervescent; moderately alkaline (pH 8.4).

Barbarela Soil

Taxonomic Class: Fine-loamy, mixed, superactive Ustic Argicryolls

Typical Pedon

Barbarela coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 11 inches; dark grayish brown (10YR 4/2) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, common fine, and few medium roots; 10 percent gravel; neutral (pH 6.8); clear wavy boundary.

AB—11 to 15 inches; dark grayish brown (10YR 4/2) coarse sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; 10 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt—15 to 37 inches; yellowish brown (10YR 5/4), gravelly sandy clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common distinct clay films on faces of peds and lining pores; 5 percent cobbles; 10 percent gravel; neutral (pH 6.8); clear wavy boundary.

Cr—37 to 52 inches; highly weathered, decomposed gneiss bedrock that crushes to very gravelly coarse sand.

R—52 inches; gneiss bedrock.

Bata Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs

Typical Pedon

Bata gravelly ashy silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.

Bw—2 to 11 inches; brown (7.5YR 5/4) gravelly ashy silt loam, brown (7.5YR 4/4) moist; moderate fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many fine, medium, and coarse roots; many fine pores; 15 percent gravel; moderately acid (pH 6.0); clear wavy boundary.

2E/Bt—11 to 22 inches; E part (70 percent) is pinkish gray (7.5YR 7/2) gravelly loam, pinkish gray (7.5YR 6/2) moist interfingering into B part; B part (30 percent) is pink (7.5YR 7/4) gravelly loam, brown (7.5YR 5/4) moist; texture mixed is gravelly loam; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many fine and medium roots; many fine pores; 30 percent gravel; moderately acid (pH 5.7); clear wavy boundary.

2Bt1—22 to 38 inches; pink (7.5YR 7/4) very gravelly clay loam, brown (7.5YR 5/4) moist; moderate fine and medium subangular blocky structure; very hard, firm, slightly sticky and moderately plastic; few fine roots; common fine pores; few distinct clay films on faces of peds and lining pores; 40 percent gravel; moderately acid (pH 6.0); gradual wavy boundary.

2Bt2—38 to 60 inches; light brown (7.5YR 6/4) very gravelly clay loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; very hard, firm, slightly sticky and moderately plastic; few fine roots; common fine pores; continuous prominent clay films on faces of peds and lining pores; 10 percent cobbles; 35 percent gravel; slightly acid (pH 6.2).

Bavdark Soil

Taxonomic Class: Fine-loamy, mixed, superactive Pachic Argicryolls

Typical Pedon

Bavdark coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 10 inches; dark gray (10YR 4/1) coarse sandy loam, black (10YR 2/1) moist; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many very fine and common fine and medium pores; 5 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

AB—10 to 18 inches; dark gray (10YR 4/1) sandy clay loam, very dark gray (10YR 3/1) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; many very fine, common fine, and few medium pores; 5 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

Bt1—18 to 30 inches; dark grayish brown (10YR 4/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, very friable, moderately sticky and moderately plastic; few very fine, fine, and medium roots; many very fine, common fine, and few medium pores; common faint clay films on faces of peds and lining pores; 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt2—30 to 42 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, very friable, moderately sticky and slightly plastic; few very fine, fine, and medium roots; many very fine,

common fine, and few medium pores; common faint clay films on faces of peds and lining pores; 5 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

C—42 to 60 inches; brown (10YR 5/3) coarse sandy loam; brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; many very fine, common fine, and few medium pores; 10 percent gravel; slightly acid (pH 6.2).

Bearmouth Soil

Taxonomic Class: Sandy-skeletal, mixed Ustic Haplocryolls

Typical Pedon

Bearmouth cobbly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; dark gray (10YR 4/1) cobbly loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; 20 percent cobbles; neutral (pH 6.8); clear wavy boundary.

Bw1—4 to 9 inches; brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; 15 percent cobbles; 40 percent gravel; neutral (pH 6.8); gradual wavy boundary.

Bw2—9 to 14 inches; brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; 15 percent cobbles; 40 percent gravel; neutral (pH 6.8); gradual wavy boundary.

2C—14 to 60 inches; brown (10YR 5/3) extremely cobbly sand, dark grayish brown (10YR 4/2) moist; single grain; loose; 50 percent cobbles; 20 percent gravel; few lime coats on undersides of some rock fragments at depths greater than 22 inches; slightly alkaline (pH 7.8).

Beaverell Soil

Taxonomic Class: Loamy-skeletal over sandy or sandy-skeletal, mixed, superactive, frigid Aridic Argiustolls

Typical Pedon

Beaverell gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak very fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many fine and medium pores; 15 percent gravel; neutral (pH 6.6); clear smooth boundary.

Bt1—3 to 9 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate fine and medium blocky; hard, friable, moderately sticky and slightly plastic; many very fine and fine roots; many very fine and fine pores; many faint clay films on faces of peds; 35 percent gravel; neutral (pH 6.6); clear smooth boundary.

Bt2—9 to 11 inches; brown (10YR 5/3) very gravelly sandy clay loam, dark brown (10YR 3/3) moist; moderate fine blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many fine and medium pores; many faint clay films on faces of peds; 50 percent gravel; lime coats on undersides of larger gravel; neutral (pH 6.8); clear wavy boundary.

2Bk1—11 to 17 inches; brown (10YR 5/3) very gravelly loamy sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; common very fine roots;

60 percent gravel; continuous distinct lime coats on undersides of smaller gravel and lime casts on undersides of larger gravel; disseminated lime; strongly effervescent; slightly alkaline (pH 7.8); gradual wavy boundary.

2Bk2—17 to 60 inches; brown (10YR 5/3) very gravelly sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; 60 percent gravel; common faint lime coats on undersides of gravel; disseminated lime; strongly effervescent; slightly alkaline (pH 7.8).

Beaverslide Soil

Taxonomic Class: Fine, mixed, superactive Oxyaquic Argicryolls

Typical Pedon

Beaverslide silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and partially decomposed matted roots; abrupt smooth boundary.

A1—2 to 7 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; few fine and medium faint strong brown (7.5YR 4/6) moist, redox concentrations (due to prolonged saturation from flood irrigation); moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 10 percent gravel; slightly acid (pH 6.5); clear wavy boundary.

A2—7 to 12 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; common fine and medium faint strong brown (7.5YR 4/6) moist, redox concentrations (due to prolonged saturation from flood irrigation); moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 10 percent gravel; neutral (pH 6.7); clear wavy boundary.

E/Bt—12 to 15 inches; E part (70 percent) light gray (10YR 7/1) silt loam, grayish brown (10YR 5/2) moist; Bt part (30 percent) brown (10YR 5/3) silt loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; few faint patchy clay films on faces of peds; many silt and sand skeletans on faces of peds; 5 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt—15 to 21 inches; light brown (7.5YR 6/4) clay, brown (7.5YR 5/4) moist; strong coarse prismatic structure parting to strong medium and coarse angular blocky; hard, firm, moderately sticky and moderately plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; faint continuous and common distinct patchy clay films on faces of peds; 5 percent gravel; slightly alkaline (pH 7.4); clear wavy boundary.

Btk—21 to 37 inches; light brown (7.5YR 6/4) silty clay loam, strong brown (7.5YR 5/6) moist; strong medium prismatic structure parting to strong fine and medium angular blocky; hard, firm, moderately sticky and moderately plastic; few very fine roots; common very fine dendritic tubular pores; faint continuous and few distinct patchy clay films on faces of peds; 5 percent gravel; disseminated lime; common fine and medium patchy soft masses and threads of lime; slightly effervescent on faces of peds; slightly alkaline (pH 7.8); clear wavy boundary.

Bk—37 to 60 inches; light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; few very fine roots; common very fine dendritic tubular pores; 10 percent

gravel; disseminated lime; common fine and medium patchy soft masses and threads of lime; strongly effervescent; moderately alkaline (pH 8.4).

Beavrock Soil

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, calcareous, frigid Typic Fluvaquents

Typical Pedon

Beavrock silt loam (Colors are for dry soil unless otherwise noted.)

Oe—0 to 3 inches; mat of roots and partially decomposed sedges and grasses; clear smooth boundary.

A—3 to 8 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate thin and medium platy structure; very hard, firm, very sticky and very plastic; many very fine, fine, medium, and coarse roots; many very fine and few fine interstitial pores; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

C1—8 to 15 inches; grayish brown (2.5Y 5/2) clay loam consisting of thin strata of silty clay loam, loam, and sandy loam, dark grayish brown (2.5Y 4/2) moist; massive; very hard, firm, very sticky and very plastic; common very fine, fine, medium, and coarse roots; many very fine and fine tubular and interstitial pores; disseminated lime; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

C2—15 to 20 inches; light brownish gray (2.5Y 6/2) clay loam consisting of thin strata of silty clay loam and sandy loam, dark grayish brown (2.5Y 4/2) moist; few fine and medium distinct brownish yellow (10YR 6/6) redox concentrations; massive; very hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine tubular and interstitial pores; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

C3—20 to 23 inches; light yellowish brown (2.5Y 6/3) sandy loam, light olive brown (2.5Y 5/3) moist; common fine, medium, and coarse prominent brownish yellow (10YR 6/6) redox concentrations; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; disseminated lime; strongly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.

Cg1—23 to 28 inches; light greenish gray (10Y 7/1) silty clay loam, dark gray (N 4/) moist; many medium and coarse prominent brownish yellow (10YR 6/6) redox concentrations; massive; extremely hard, firm, very sticky and very plastic; disseminated lime; strongly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

2Cg2—28 to 60 inches; light greenish gray (10Y 7/1) extremely gravelly sand, dark gray (N 4/) moist; massive; loose, nonsticky and nonplastic; 10 percent cobbles; 65 percent gravel; disseminated lime; slightly effervescent; slightly alkaline (pH 7.8).

Beeftrail Soil

Taxonomic Class: Sandy, mixed Ustic Haplocryolls

Typical Pedon

Beeftrail coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; dark grayish brown (10YR 4/2) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, very friable, slightly

sticky and slightly plastic; many very fine and common fine and medium roots; 10 percent, mainly fine, gravel; moderately acid (pH 5.8); clear smooth boundary.

A2—3 to 8 inches; very dark grayish brown (10YR 3/2) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; few very fine and fine tubular pores; 10 percent, mainly fine, gravel; slightly acid (pH 6.2); clear wavy boundary.

Bw—8 to 14 inches; brown (10YR 5/3) gravelly coarse sandy loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and few fine and medium roots; few very fine tubular pores; 20 percent, mainly fine, gravel; slightly acid (pH 6.4); gradual wavy boundary.

BC—14 to 26 inches; pale brown (10YR 6/3) gravelly loamy coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine and common fine and medium interstitial pores; 30 percent, mainly fine, gravel; slightly acid (pH 6.4); clear wavy boundary.

Cr—26 to 35 inches; soft weathered granite bedrock.

R—35 inches; hard granite bedrock.

Benteen Soil

Taxonomic Class: Fine-loamy, mixed, superactive Pachic Argicryolls

Typical Pedon

Benteen loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 2 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; weak very thin platy structure; soft, very friable, slightly sticky and moderately plastic; many very fine roots; neutral (pH 6.8); clear smooth boundary.

A2—2 to 4 inches; brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; weak coarse prismatic structure; hard, friable, moderately sticky and moderately plastic; many very fine roots; common very fine pores; neutral (pH 6.8); clear wavy boundary.

Bt1—4 to 10 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium and coarse prismatic structure; hard, friable, moderately sticky and moderately plastic; common very fine roots and pores; few patches of faint clay films on peds; neutral (pH 7.0); gradual wavy boundary.

Bt2—10 to 17 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium and coarse prismatic structure; hard, friable, moderately sticky and moderately plastic; common very fine roots and pores; few patches of faint clay films on peds; neutral (pH 7.1); clear wavy boundary.

BC—17 to 22 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; weak medium blocky structure; hard, friable, moderately sticky and moderately plastic; common very fine roots and pores; 15 percent flat limestone fragments; slightly alkaline (pH 7.6); clear wavy boundary.

C—22 to 29 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, friable, moderately sticky and moderately plastic; 25 percent limestone fragments; slightly effervescent in spots; slightly alkaline; abrupt irregular boundary.

R—29 inches; limestone.

Bighole Soil

Taxonomic Class: Fine-loamy, mixed, superactive Oxyaquic Argicryolls

Typical Pedon

Bighole silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and partially decomposed matted roots; abrupt smooth boundary.

A1—2 to 8 inches; grayish brown (10YR 5/2) silt loam, very dark gray (10YR 3/1) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 10 percent gravel; neutral (pH 6.7); clear wavy boundary.

A2—8 to 17 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 10 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt/E—17 to 26 inches; Bt part (60 percent) light yellowish brown (10YR 6/4) silt loam, yellowish brown (10YR 5/4) moist; E part (40 percent) very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; few fine faint brown (7.5YR 5/4) moist, redox concentrations (due to prolonged saturation from flood irrigation); moderate very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; few faint patchy clay films on faces of peds; many silt and sand skeletans on faces of peds; 10 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt—26 to 41 inches; light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; few very fine roots; common very fine and few fine dendritic tubular pores; common faint patchy clay films on faces of peds; 10 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bk—41 to 60 inches; very pale brown (10YR 7/4) silt loam, yellowish brown (10YR 5/6) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; very few fine roots; common very fine dendritic tubular pores; 10 percent gravel; disseminated lime; many fine and medium patchy soft masses and threads of lime; strongly effervescent; slightly alkaline (pH 7.8).

Blackhall Soil

Taxonomic Class: Loamy, mixed, superactive, calcareous, frigid, shallow Ustic Torriorthents

Typical Pedon

Blackhall fine sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; light yellowish brown (2.5Y 6/3) fine sandy loam, olive brown (2.5Y 4/3) moist; moderate very fine granular structure; soft, very friable, nonsticky and nonplastic; few soft sandstone fragments; slightly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

C—4 to 12 inches; pale yellow (2.5Y 7/3) fine sandy loam, light yellowish brown (2.5Y 6/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few soft

sandstone chips; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Cr—12 to 20 inches; soft, strongly effervescent sandstone.

Blackleaf Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustalfs

Typical Pedon

Blackleaf very channery sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; light brownish gray (2.5Y 6/2) very channery sandy loam, olive brown (2.5Y 4/3) moist; weak fine and medium subangular blocky structure parting to weak fine granular; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; common very fine and fine interstitial pores; 40 percent channers; neutral (pH 7.2); clear smooth boundary.

Bt—4 to 8 inches; brown (10YR 5/3) very channery sandy clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and fine tubular and interstitial pores; common faint clay films bridging sand grains and on faces of peds; 40 percent channers; slightly alkaline (pH 7.4); clear smooth boundary.

Bk—8 to 13 inches; light yellowish brown (2.5Y 6/3) extremely channery loam, light olive brown (2.5Y 5/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and fine tubular and interstitial pores; 15 percent flagstones; 55 percent channers; disseminated lime; common distinct lime casts on undersides of rock fragments; strongly effervescent; slightly alkaline (pH 7.7); abrupt smooth boundary.

R—13 inches; hard fractured sandstone.

Blackleed Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lamellic Eutrocryepts

Typical Pedon

Blackleed gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, black (10YR 2/1) moist; moderate fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; 20 percent gravel; noncalcareous; clear wavy boundary.

A&B1—4 to 14 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; many fine roots; 3 loam lamellae 1/4-inch thick and 4 inches apart; 35 percent gravel; noncalcareous; clear wavy boundary.

A&B2—14 to 26 inches; reddish yellow (7.5YR 6/6) extremely gravelly loam, brown (7.5YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; loam lamellae as in above horizon; 65 percent gravel; noncalcareous; clear wavy boundary.

C—26 to 40 inches; yellow (10YR 7/6) extremely gravelly sandy loam, strong brown (7.5YR 5/6) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; 75 percent gravel—many subangular partially weathered granitic rock fragments; noncalcareous.

Blaine Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Typical Pedon

Blaine gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; 35 percent gravel; slightly alkaline (pH 7.4); clear smooth boundary.

Bt—4 to 10 inches; brown (10YR 4/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate fine blocky; hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; common distinct clay films on faces of peds and on coarse fragments; 5 percent cobbles; 35 percent gravel; slightly alkaline (pH 7.4); clear wavy boundary.

Bk1—10 to 16 inches; light gray (2.5Y 7/2) very gravelly loam, grayish brown (2.5Y 5/2) moist; weak medium prismatic structure parting to moderate fine blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; 15 percent cobbles; 30 percent gravel; many films and soft masses of calcium carbonate and lime casts on undersides of rock fragments; violently effervescent; clear wavy boundary.

Bk2—16 to 24 inches; light olive gray (5Y 6/2) very gravelly loam, olive (5Y 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; 15 percent cobbles; 35 percent gravel; few soft masses of calcium carbonate and many thin lime casts on undersides of rock fragments; strongly effervescent; abrupt wavy boundary.

R—24 inches; fractured igneous bedrock.

Blossberg Soil

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Endoaquolls

Typical Pedon

Blossberg loam (Colors are for moist soil unless otherwise noted.)

A—0 to 14 inches; black (10YR 2/1) loam, very dark gray (10YR 3/1) dry; many large prominent yellowish brown (10YR 5/6) redox concentrations, dry; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, fine, medium, and coarse roots; many very fine and fine irregular pores; neutral (pH 7.2); clear smooth boundary.

Bg1—14 to 23 inches; dark grayish brown (2.5Y 4/2) loam, grayish brown (2.5Y 5/2) dry; many coarse prominent yellowish brown (10YR 5/8) redox concentrations, dry; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and moderately plastic; many very fine roots; many very fine and fine irregular pores; 5 percent cobbles; slightly alkaline (pH 7.6); gradual smooth boundary.

Bg2—23 to 28 inches; grayish brown (2.5Y 5/2) gravelly loam, light brownish gray (2.5Y 6/2) dry; few fine prominent red (2.5YR 5/8) redox concentrations, dry; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and moderately plastic; many very fine and fine roots; many very fine and fine irregular pores; 5 percent cobbles; 20 percent gravel; slightly alkaline (pH 7.6); gradual wavy boundary.

2Cg—28 to 60 inches; dark grayish brown (10YR 4/2) very cobbly loamy coarse sand, light brownish gray (10YR 6/2) dry; common coarse prominent red (2.5YR 5/8) redox concentrations, dry; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine irregular pores; 35 percent cobbles; 20 percent gravel; slightly alkaline (pH 7.6).

Branham Soil

Taxonomic Class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Typical Pedon

Branham coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 2 inches; grayish brown (10YR 5/2) coarse sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; 10 percent gravel; moderately acid (pH 5.8); abrupt smooth boundary.

A2—2 to 4 inches; brown (10YR 5/3) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine pores; 10 percent gravel; moderately acid (pH 5.8); clear smooth boundary.

Bw—4 to 22 inches; brown (10YR 5/3) gravelly coarse sandy loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common very fine roots; many very fine and fine pores; few thin clay films bridging sand grains; 25 percent gravel; neutral (pH 7.1); clear smooth boundary.

BC—22 to 30 inches; very pale brown (10YR 7/3) and very pale brown (10YR 8/2) dry or moist gravelly coarse sand; single grain; loose, nonsticky and nonplastic; few very fine roots; 30 percent gravel; slightly alkaline (pH 7.6); abrupt smooth boundary.

R—30 inches; granite bedrock.

Brickner Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustalfs

Typical Pedon

Brickner gravelly sandy clay loam, stony (Colors are for dry soil unless otherwise noted.)

Oi—0 to 0.5 inch; partially decomposed needles, twigs, and leaves.

A—0.5 to 3 inches; brown (10YR 4/3) gravelly sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 25 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bt—3 to 8 inches; dark yellowish brown (10YR 4/4) very gravelly sandy clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine and fine interstitial and tubular pores; common faint brown (10YR 4/3) clay films on faces of peds and bridging sand grains; 5 percent cobbles; 35 percent gravel; moderately acid (pH 6.0); clear wavy boundary

BC—8 to 12 inches; yellowish brown (10YR 5/4) extremely gravelly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky

structure; slightly hard, friable, slightly sticky and nonplastic; common very fine and fine and few medium roots; 15 percent cobbles; 55 percent gravel; moderately acid (pH 6.0); abrupt smooth boundary.

R—12 inches; hard fractured sandstone.

Bridger Soil

Taxonomic Class: Fine, mixed, superactive Ustic Argicryolls

Typical Pedon

Bridger loam (Colors are for dry soil unless otherwise noted.)

A—0 to 9 inches, very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine pores; 1 percent stones below surface; 5 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bt—9 to 24 inches; brown (10YR 5/3) clay, brown (10YR 4/3) moist; moderate medium prismatic structure parting to strong fine, medium, and coarse blocky; very hard, firm, moderately sticky and moderately plastic; common very fine roots; many very fine pores; distinct continuous very dark grayish brown (10YR 3/2) moist; clay films on faces of peds; 1 percent stones; 5 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bk1—24 to 36 inches; brown (10YR 5/3) gravelly clay loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots and pores; 5 percent cobbles; 15 percent gravel; few large masses of lime; continuous distinct lime casts on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.

Bk2—36 to 60 inches, light yellowish brown (2.5Y 6/3) gravelly loam, light olive brown (2.5Y 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots and pores; 5 percent cobbles; 20 percent gravel; common distinct lime casts on undersides of rock fragments mainly in the upper part of the horizon; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0).

Brocko Soil

Taxonomic Class: Coarse-silty, mixed, superactive, frigid Aridic Calciustepts

Typical Pedon

Brocko silt loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 7 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; disseminated lime; strongly effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bk1—7 to 28 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; common fine seams and masses of lime; disseminated lime; violently effervescent; moderately alkaline (pH 8.0); gradual smooth boundary.

Bk2—28 to 44 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; common fine seams and masses of lime; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bky—44 to 60 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few fine masses of lime; disseminated lime; few masses and filaments of gypsum crystals; violently effervescent; moderately alkaline (pH 7.9).

Bronec Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Aridic Calciustepts

Typical Pedon

Bronec gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 2 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; weak medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine pores; 15 percent gravel; slightly effervescent; slightly alkaline (pH 7.6); clear wavy boundary.

Bk1—2 to 9 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine pores; 25 percent gravel; disseminated lime; few fine masses and threads of lime; common faint lime coats on undersides of gravel; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Bk2—9 to 21 inches; very pale brown (10YR 7/3) gravelly loam, pale brown (10YR 6/3) moist; weak coarse prismatic structure parting to moderate medium subangular blocky; hard, friable, moderately sticky and slightly plastic; few very fine and fine roots; common very and fine pores; 30 percent gravel; disseminated lime; common fine masses and threads of lime; common distinct lime coats on gravel; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

Bk3—21 to 35 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 5/3) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; common very fine pores; 45 percent gravel; disseminated lime; common fine masses and threads of lime; common distinct lime coats on undersides of gravel; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk4—35 to 48 inches; pale brown (10YR 6/3) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; weak coarse prismatic structure; slightly hard, very friable, nonsticky and nonplastic; 45 percent gravel; disseminated lime; few faint lime coats on undersides of gravel; violently effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.

BC—48 to 60 inches; brown (10YR 5/3) very gravelly loamy sand, dark brown (10YR 3/3) moist; single grain; loose, nonsticky and nonplastic; 40 percent gravel; few faint lime coats on undersides of gravel; strongly effervescent; moderately alkaline (pH 8.0).

Brownsgulch Soil

Taxonomic Class: Coarse-loamy, mixed, superactive Pachic Haplocryolls

Typical Pedon

Brownsgulch sandy loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 6 inches; very dark grayish brown (10YR 3/2) sandy loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, slightly

sticky and slightly plastic; many very fine and fine roots; many fine irregular pores; 8 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

A2—6 to 12 inches; very dark grayish brown (10YR 3/2) gravelly sandy loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many fine irregular pores; 15 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

A3—12 to 20 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine irregular pores; 20 percent gravel; neutral (pH 6.8); abrupt wavy boundary.

Bw—20 to 33 inches; brown (10YR 5/3) gravelly sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; many very fine and common fine roots; common fine irregular pores; 25 percent gravel; neutral (pH 6.8); abrupt wavy boundary.

C—33 to 60 inches; brown (10YR 5/3) gravelly sandy loam, brown (10YR 4/3) moist; massive; firm, hard, nonsticky and nonplastic; few fine roots; common fine irregular pores; 30 percent gravel; neutral (pH 6.8).

Bullrey Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Typical Pedon

Bullrey very gravelly loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches; dark grayish brown (10YR 4/2) angular very gravelly loam, very dark brown (10YR 2/2) moist; weak very thin platy and weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; many very fine interstitial pores; 40 to 50 percent of surface is covered by channery fragments and angular gravel; strongly acid (pH 5.5); clear wavy boundary.

A2—4 to 9 inches; dark grayish brown (10YR 4/2) angular very gravelly loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure parting to moderate very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many very fine tubular pores; 45 percent coarse gravel; moderately acid (pH 5.7); clear wavy boundary.

Bw1—9 to 14 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark brown (10YR 2/2) moist (rubbed); weak fine and medium subangular blocky structure parting to moderate very fine and fine granular; slightly hard, friable, slightly sticky and slightly plastic; common fine and few medium roots; many very fine tubular pores; common thin clay films in pores and root channels; 50 percent coarse gravel; moderately acid (pH 5.7); clear wavy boundary.

Bw2—14 to 22 inches; grayish brown (10YR 5/2) very gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to weak very fine and fine granular; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; few fine pores; 55 percent coarse gravel; moderately acid (pH 5.7); clear wavy boundary.

C1—22 to 26 inches; light gray (10YR 7/2) very gravelly loam, brown (10YR 5/3) moist; very weak medium and thick platy and weak very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and few medium roots; many very fine tubular pores; common speckling of uncoated sand grains; 35 percent coarse gravel; moderately acid (pH 5.7); clear irregular boundary.

C2—26 to 48 inches; light gray (10YR 7/2) gravelly sandy loam, brown (10YR 5/3) moist; common fine distinct light yellowish brown (10YR 6/4) streaks and mottles,

yellowish brown (10YR 5/4) moist; weak thick platy structure; hard, firm (brittle), nonsticky and nonplastic; few fine, medium, and coarse roots; many very fine tubular pores; 3 percent flagstones; 20 percent gravel; strongly acid (pH 5.5); clear irregular boundary.

C3—48 to 60 inches; light gray (10YR 7/2) extremely gravelly sandy loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; few fine roots; few very fine pores; 10 percent flagstones; 60 to 70 percent gravel; strongly acid (pH 5.5).

Burnette Soil

Taxonomic Class: Fine, smectitic Pachic Argicryolls

Typical Pedon

Burnette loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) loam, black (10YR 2/1) moist; moderate very fine crumb structure; soft, friable, slightly sticky and slightly plastic; heavy mat of roots in surface inch, many very fine roots below; slightly acid (pH 6.4); clear smooth boundary.

A2—5 to 15 inches; very dark grayish brown (10YR 3/2) clay loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; slightly acid (pH 6.4); clear irregular boundary.

Bt1—15 to 26 inches; grayish brown (2.5Y 5/2) clay, very dark grayish brown (10YR 3/2) moist; dark gray (10YR 4/1) staining on faces of peds; weak coarse prismatic structure parting to strong very fine and fine subangular blocky; very hard, firm, very sticky and very plastic; common very fine roots mainly on faces of peds; few very fine roots and fine tubular pores in peds; many distinct clay films on faces of peds; neutral (pH 6.6); gradual irregular boundary.

Bt2—26 to 32 inches; olive gray (5Y 5/2) clay, very dark grayish brown (2.5Y 3/2) moist; dark gray staining on faces of prisms; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; very hard, firm, very sticky and very plastic; many very fine roots on prism faces and few very fine roots through blocks; many distinct clay films on faces of peds; slightly alkaline (pH 7.5); clear wavy boundary.

Bk—32 to 50 inches; gray (5Y 5/1) clay, dark gray (5Y 4/1) moist; weak coarse prismatic structure; hard, friable, moderately sticky and moderately plastic; few very fine roots and fine tubular pores; some small areas of light gray (5Y 7/1); common fine threads of lime; strongly effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.

BC—50 to 66 inches; olive gray (5Y 5/2) clay, dark gray (5Y 4/1) moist; massive; hard, friable, moderately sticky and moderately plastic; few fine roots; many disoriented gray shale chips; occasional fine masses of lime; strongly effervescent; moderately alkaline (pH 8.4).

Butchhill Soil

Taxonomic Class: Clayey-skeletal, smectitic Alfic Argicryolls

Typical Pedon

Butchhill gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 12 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; 5 percent cobbles; 15 percent gravel; slightly acid (pH 6.4); clear irregular boundary.

E/Bt—12 to 19 inches; E part (80 percent): pinkish gray (7.5YR 7/2), light brown (7.5YR 6/4) moist; Bt part (20 percent): light brown (7.5YR 6/3), brown (7.5YR 5/4) moist, very gravelly loam; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common distinct clay films on all faces of peds; many very fine, fine, and medium roots; 10 percent cobbles; 30 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bt1—19 to 30 inches; light brown (7.5YR 6/3) very cobbly clay, brown (7.5YR 5/4) moist; strong medium subangular blocky structure; very hard, firm, very sticky and very plastic; many prominent clay films on all faces of peds; many very fine, fine, and medium roots; 20 percent cobbles; 30 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

Bt2—30 to 60 inches; pink (7.5YR 7/3) very cobbly clay loam, brown (7.5YR 5/4) moist; moderate medium subangular blocky structure; very hard, firm, very sticky and very plastic; common distinct clay films on all faces of peds; few fine and medium roots; 20 percent cobbles; 35 percent gravel; slightly acid (pH 6.2).

Cabbart Soil

Taxonomic Class: Loamy, mixed, superactive, calcareous, frigid, shallow Aridic Ustorthents

Typical Pedon

Cabbart loam (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; light brownish gray (2.5Y 6/2) loam, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots and pores; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk1—3 to 7 inches; light brownish gray (2.5Y 6/2) loam, grayish brown (2.5Y 5/2) moist; weak medium prismatic structure; hard, very friable, slightly sticky and slightly plastic; many fine roots and pores; few fine masses of lime; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk2—7 to 16 inches; pale yellow (2.5Y 7/4) loam, light yellowish brown (2.5Y 6/4) moist; weak coarse prismatic structure; hard, very friable, slightly sticky and slightly plastic; many fine roots and pores; common fine masses of lime; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

BC—16 to 18 inches; pale yellow (2.5Y 7/4) loam, light yellowish brown (2.5Y 6/4) moist; weak coarse prismatic structure; very hard, friable, slightly sticky and slightly plastic; many fine roots and pores; disseminated lime; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Cr—18 to 60 inches; pale yellow (5Y 7/4) semiconsolidated loamy sedimentary beds that crush to loam; few widely spaced vertical cracks in upper 4 to 6 inches with roots; root mat at contact of beds.

Caseypeak Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts

Typical Pedon

Caseypeak gravelly coarse sandy loam, bouldery (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1.5 inches; partially decomposed needles, twigs, and leaves.

E—1.5 to 6 inches; light brownish gray (10YR 6/2) gravelly coarse sandy loam, brown (10YR 5/3) moist; moderate medium granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; many very fine and fine and few medium pores; 20 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bw1—6 to 12 inches; brown (10YR 5/3) very gravelly coarse sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; many very fine and few fine tubular and interstitial pores; 40 percent gravel; neutral (pH 6.6); gradual wavy boundary.

Bw2—12 to 17 inches; pale brown (10YR 6/3) very gravelly coarse sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, common fine, and few medium roots; many very fine and few fine tubular and interstitial pores; 40 percent gravel; neutral (pH 6.7); clear wavy boundary.

Cr—17 to 19 inches; light yellowish brown (2.5Y 6/4) decomposed granite bedrock (grus) that crushes to very gravelly loamy coarse sand; neutral (pH 6.8).

R—19 inches; hard granite bedrock.

Cheadle Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Typical Pedon

Cheadle channery loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 7 inches; dark grayish brown (10YR 4/2) channery loam, very dark brown (10YR 2/2) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; 25 percent channers; neutral (pH 6.6); clear wavy boundary.

A2—7 to 15 inches; brown (10YR 4/3) extremely channery loam, dark brown (10YR 3/3) moist; weak very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; 10 percent gravel; 55 percent channers; pockets of disseminated lime and lime coats on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bk—15 to 19 inches; light yellowish brown (10YR 6/4) extremely channery loam, dark yellowish brown (10YR 4/4) moist; weak very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots in mats between rock fragments; 20 percent gravel; 55 percent channers; disseminated lime and continuous faint lime coats on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

R—19 inches; fractured hard sandstone.

Comad Soil

Taxonomic Class: Sandy-skeletal, mixed Lamellic Cryorthents

Typical Pedon

Comad extremely stony sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 3 inches; undecomposed and slightly decomposed forest litter.

E1—3 to 8 inches; light brownish gray (10YR 6/2) extremely stony sandy loam, brown (10YR 5/3) moist; moderate very fine and fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; 30 percent stones; 25 percent cobbles; 15 percent gravel; strongly acid (pH 5.4); clear smooth boundary.

E2—8 to 20 inches; very pale brown (10YR 7/3) extremely stony loamy sand, brown (10YR 5/3) moist; weak fine and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many very fine tubular and interstitial pores; 30 percent stones; 25 percent cobbles; 15 percent gravel; strongly acid (pH 5.3); gradual wavy boundary.

E and Bt1—20 to 33 inches; E part (90 percent) very pale brown (10YR 7/3) extremely stony loamy sand, yellowish brown (10YR 5/4) moist; weak fine granular structure; slightly hard, very friable, nonsticky and nonplastic; Bt part (10 percent) yellowish brown (10YR 5/4) sandy clay loam lamellae; hard, friable, slightly sticky and slightly plastic; lamellae are wavy and discontinuous, 1/8- to 1/2-inch thick and 2- to 6-inches apart; common very fine and fine and few medium roots; many very fine tubular and interstitial pores; 30 percent stones; 25 percent cobbles; 20 percent gravel; moderately acid (pH 5.7); gradual smooth boundary.

E and Bt2—33 to 60 inches; E part (95 percent) very pale brown (10YR 7/4) extremely stony loamy sand, yellowish brown (10YR 5/6) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few fine and medium roots; few very fine tubular pores; Bt2 part (5 percent) dark yellowish brown (10YR 4/4) moist sandy loam lamellae; 35 percent stones; 30 percent cobbles; 15 percent gravel; moderately acid (pH 5.7).

Como Soil

Taxonomic Class: Sandy-skeletal, mixed Typic Eutrocryepts

Typical Pedon

Como cobbly sandy loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 2 inches; gray (10YR 5/1) dry, dark gray (10YR 4/1) moist; matted loamy organic-mineral soil layer; slightly acid; abrupt smooth boundary.

A2—2 to 18 inches; light gray (10YR 7/1) dry, very pale brown (10YR 7/3) moist; single grain; cobbly sandy loam containing firm lumps of pale-brown (dry) brown (moist) sandy loam or loam in the lower part, which appear to be a kind of B horizon development; otherwise the B1 and B2 horizons are not well defined; medium-acid; gradual smooth boundary.

Bw—18 to 32 inches; gray (10YR 6/1) dry, pale brown (10YR 6/3) moist; cobbly loose granitic sand or loamy sand; moderately to strongly weathered stone fragments, some fall apart easily when disturbed; usually very noticeable fine mica flakes; neutral.

Copenhaver Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Argicryolls

Typical Pedon

Copenhaver gravelly loam Copenhaver (Colors are for dry unless otherwise noted.)

A—0 to 5 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine pores; 25 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bt—5 to 14 inches; reddish brown (5YR 4/3) very gravelly clay loam, dark reddish brown (5YR 3/3) moist; weak fine subangular blocky structure; very hard, friable, slightly sticky and moderately plastic; many very fine and fine roots; many very fine and fine pores; few faint clay films on faces of peds and on rock fragments; 10 percent cobbles; 40 percent gravel; slightly alkaline (pH 7.6); abrupt smooth boundary.

R—14 inches; andesite bedrock.

Copperbasin Soil

Taxonomic Class: Sandy-skeletal, mixed Aquic Haplocryolls

Typical Pedon

Copperbasin very gravelly fine sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 5 inches; grayish brown (10YR 5/2) very gravelly fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium and thick platy structure; slightly hard, friable, slightly sticky and nonplastic; many very fine and fine and common medium and coarse roots; common very fine and fine tubular and interstitial pores; 10 percent cobbles; 35 percent gravel; slightly alkaline (pH 7.5); clear smooth boundary.

AC—5 to 10 inches; grayish brown (10YR 5/2) extremely gravelly loamy fine sand, dark brown (10YR 3/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and common medium and coarse roots; common fine and medium irregular pores; 20 percent cobbles; 65 percent gravel; slightly alkaline (pH 7.4); clear wavy boundary.

C1—10 to 25 inches; multicolored extremely gravelly loamy sand; common fine and medium prominent yellowish brown (10YR 5/6 and 5/8) redox concentrations on rock fragments; single grain; loose; common very fine, fine, medium, and coarse roots; many medium and coarse irregular pores; 5 percent stones; 30 percent cobbles; 50 percent gravel; slightly alkaline (pH 7.4); gradual wavy boundary.

C2—25 to 33 inches; multicolored extremely cobbly sand; common fine and medium prominent yellowish brown (10YR 5/6 and 5/8) redox concentrations on rock fragments; single grain; loose; few fine and coarse irregular pores; 5 percent stones; 40 percent cobbles; 30 percent gravel; neutral (pH 7.2); gradual wavy boundary.

C3—33 to 60 inches; multicolored extremely gravelly coarse sand; common fine and medium prominent yellowish brown (10YR 5/6 and 5/8) redox concentrations on rock fragments; single grain; loose; few fine and medium roots; many medium and coarse irregular pores; 10 percent stones; 30 percent cobbles; 45 percent gravel; neutral (pH 7.2).

Cowcamp Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Oxyaquic Argicryolls

Typical Pedon

Cowcamp silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and partially decomposed matted roots; abrupt smooth boundary.

A1—2 to 6 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; weak very fine and fine subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic and tubular pores; 5 percent gravel; neutral (pH 6.7); clear wavy boundary.

A2—6 to 13 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak very fine and fine subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic and tubular pores; 5 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt/E—13 to 18 inches; Bt part (60 percent) light brown (7.5YR 6/3) gravelly silt loam, brown (7.5YR 5/3) moist; E part (40 percent) pinkish gray (7.5YR 7/2) gravelly silt loam, pinkish gray (7.5YR 6/2) moist; common fine and medium faint strong brown (7.5YR 5/6) moist, redox concentrations (due to prolonged saturation from flood irrigation); moderate very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; few faint patchy clay films on faces of peds; many silt and sand skeletans on faces of peds; 20 percent gravel; slightly acid (pH 6.5); clear wavy boundary.

Bt1—18 to 28 inches; light yellowish brown (10YR 6/4) very cobbly clay loam, yellowish brown (10YR 5/4) moist; few fine faint strong brown (7.5YR 5/6) moist, redox concentrations (due to prolonged saturation from flood irrigation); moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; common faint patchy clay films on faces of peds; 20 percent cobbles; 25 percent gravel; neutral (pH 6.7); clear wavy boundary.

Bt2—28 to 35 inches; brownish yellow (10YR 6/6) very gravelly loam, yellowish brown (10YR 5/6) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine dendritic tubular pores; few faint patchy clay films on faces of peds; 10 percent cobbles; 40 percent gravel; slightly acid (pH 6.5); clear wavy boundary.

BC—35 to 60 inches; pink (7.5YR 7/4) very gravelly sandy loam, strong brown (7.5YR 5/6) moist; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; common very fine interstitial pores; 15 percent cobbles; 40 percent gravel; neutral (pH 6.7).

Cowood Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts

Typical Pedon

Cowood very channery loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; root mat and forest litter of needles and twigs; abrupt smooth boundary.

E—1 to 5 inches; brown (10YR 5/3) very channery loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine tubular and interstitial pores; many silt and sand skeletans on faces of peds; 40 percent channers; strongly acid (pH 5.1); clear smooth boundary.

Bw—5 to 16 inches; light yellowish brown (10YR 6/4) extremely channery loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure parting to moderate very fine and fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular and interstitial pores; 65 percent channers; strongly acid (pH 5.1); abrupt wavy boundary.

R—16 inches; hard argillite bedrock with a few vertical cracks; few fine roots in some cracks.

Crago Soil

Taxonomic Class: Loamy-skeletal, carbonatic, frigid Aridic Calciustepts

Typical Pedon

Crago gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; light brownish gray (10YR 6/2) gravelly loam, grayish brown (10YR 5/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; 20 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk1—4 to 10 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; 35 percent gravel; continuous distinct lime casts on undersides of gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk2—10 to 21 inches; very pale brown (10YR 7/3) very gravelly loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; 60 percent gravel; continuous prominent lime casts on surface of gravel; some cementation between individual gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk3—21 to 37 inches; very pale brown (10YR 7/3) extremely gravelly sandy loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; loose, soft, nonsticky and nonplastic; 75 percent gravel; continuous distinct lime casts on gravel; some lime cementation between individual gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

2C—37 to 60 inches; brownish yellow (10YR 6/6) extremely gravelly loamy sand, yellowish brown (10YR 5/6) moist; massive; loose, nonsticky and nonplastic; 75 percent gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.4).

Crawfish Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Humicryepts

Typical Pedon

Crawfish extremely gravelly loam (Colors are for moist soil unless otherwise noted.)

A—0 to 3 inches; dark brown (7.5YR 3/2) extremely gravelly loam, brown (7.5YR 4/2) dry; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common fine irregular pores; 20 percent cobbles; 50 percent gravel; moderately acid (pH 5.8); clear wavy boundary.

Bw—3 to 8 inches; dark brown (7.5YR 3/2) extremely cobbly silt loam, brown (7.5YR 4/4) dry; moderate very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium and few very fine roots; few fine tubular pores; few faint clay films on faces of peds; 5 percent stones; 40 percent cobbles; 30 percent gravel; moderately acid (pH 5.8); abrupt irregular boundary.

R—8 inches; hard, platy andesitic basalt.

Danaher Soil

Taxonomic Class: Fine, mixed, superactive Ustic Glossocryalfs

Typical Pedon

Danaher loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 0.5 inch; forest litter, mostly undecomposed.

Oe—0.5 to 2 inches; forest litter, mostly decomposed.

E—2 to 5 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; many very fine and fine continuous irregular pores; slightly acid (pH 6.2); clear wavy boundary.

E/Bt—5 to 9 inches; E part (70 percent) light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist tongues; Bt part (30 percent) grayish brown (10YR 5/2) clay loam, brown (7.5YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common fine and medium roots; common very fine and fine irregular pores; 5 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

Bt1—9 to 22 inches; brown (7.5YR 5/4) clay loam, reddish brown (5YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; common very fine and fine irregular pores; many faint clay films on faces of peds; 10 percent gravel; moderately acid (pH 5.8); gradual wavy boundary.

Bt2—22 to 40 inches; reddish brown (5YR 5/3) clay loam, strong brown (7.5YR 5/6) moist; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; few fine discontinuous tubular pores; continuous faint clay films on faces of peds; 10 percent gravel; slightly acid (pH 6.3); gradual wavy boundary.

Bt3—40 to 60 inches; reddish brown (5YR 5/3) clay, reddish brown (5YR 4/3) moist; moderate medium subangular blocky structure; very hard, very fine, moderately sticky and moderately plastic; few very fine roots; few fine discontinuous tubular pores; few faint clay films on faces of peds; 10 percent gravel; neutral (pH 7.0).

Danielvil Soil

Taxonomic Class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Typical Pedon

Danielvil loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 7 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

A2—7 to 12 inches; dark grayish brown (10YR 4/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to moderate fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine interstitial pores; 5 percent cobbles; 10 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bw—12 to 21 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine interstitial pores; 5 percent cobbles; 10 percent gravel; neutral (pH 7.0); clear smooth boundary.

C1—21 to 34 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; common very fine interstitial pores; 5 percent cobbles; 10 percent gravel; neutral (pH 7.0); gradual smooth boundary.

C2—34 to 60 inches; brown (10YR 4/3) sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and nonplastic; few very fine and fine roots; common very fine interstitial pores; 5 percent cobbles; 10 percent gravel; neutral (pH 7.0).

Daras Soil

Taxonomic Class: Ashy, glassy Vitrandic Eutrocryepts

Typical Pedon

Daras gravelly ashy sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 0.5 inch; partially decomposed needles, twigs, and leaves.

A—0.5 to 3 inches; grayish brown (10YR 5/2) gravelly ashy sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many very fine and fine pores; 20 percent gravel; strongly acid (pH 5.4); clear wavy boundary.

E—3 to 7 inches; gray (10YR 6/1) very gravelly ashy loamy coarse sand, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and few medium roots; many very fine and fine pores; 10 percent cobbles; 30 percent gravel; moderately acid (pH 5.8); clear wavy boundary.

Bw—7 to 16 inches; pale brown (10YR 6/3) gravelly ashy sandy loam, dark grayish brown (2.5Y 4/2) moist; moderate medium prismatic structure parting to weak medium subangular blocky; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and few medium and coarse roots; many very fine and fine pores; 20 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

BC—16 to 35 inches; light gray (2.5Y 7/2) gravelly ashy coarse sandy loam, olive gray (5Y 4/2) moist; weak coarse prismatic structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common very fine and fine pores; 20 percent gravel; slightly acid (pH 6.2); gradual irregular boundary.

C1—35 to 51 inches; light brownish gray (2.5Y 6/2) gravelly ashy coarse sandy loam, olive gray (5Y 4/2) moist; massive; slightly hard, very friable, nonsticky and

nonplastic; few very fine and fine roots; few very fine and fine pores; 25 percent gravel; slightly acid (pH 6.4); gradual irregular boundary.

C2—51 to 60 inches; gray (N 6/) very gravelly ashy coarse sandy loam, olive gray (5Y 4/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; 5 percent cobbles; 40 percent gravel; neutral (pH 6.6).

Dillon Soil

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Oxyaquic Haplustepts

Typical Pedon

Dillon silt loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 4 inches; gray (2.5Y 5/1) silt loam, very dark grayish brown (2.5Y 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine roots; many very fine and few fine interstitial pores; disseminated lime; strongly effervescent; slightly alkaline (pH 7.7); clear smooth boundary.

Bw—4 to 11 inches; gray (2.5Y 6/1) silt loam, dark gray (2.5Y 4/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine roots; many very fine and few fine tubular and interstitial pores; disseminated lime; strongly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

BC—11 to 31 inches; light gray (2.5Y 7/1) loam, gray (2.5Y 6/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine and few fine tubular and interstitial pores; disseminated lime; violently effervescent; moderately alkaline (pH 8.1); clear smooth boundary.

2C1—31 to 36 inches; light gray (5Y 7/1) loamy sand, gray (5Y 6/1) moist; common fine and medium distinct brown (7.5YR 4/4) moist, redox concentrations; single grain; loose, nonsticky and nonplastic; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

2C2—36 to 60 inches; light gray (5Y 7/1) very gravelly sand, gray (5Y 6/1) moist; single grain; loose, nonsticky and nonplastic; 10 percent cobbles; 40 percent gravel; slightly effervescent; slightly alkaline (pH 7.6).

Dinnen Soil

Taxonomic Class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Typical Pedon

Dinnen sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 8 inches; brown (10YR 5/3) coarse sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots; slightly acid; clear wavy boundary.

AC—8 to 16 inches; yellowish brown (10YR 5/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure parting to moderate fine granular; extremely hard, very friable, nonsticky and nonplastic; 15 to 20 percent very fine and fine angular granitic gravel; soil peds show small volume change on wetting and drying; few fine and medium roots; moderately acid; clear wavy boundary.

C—16 to 60 inches; yellowish brown (10YR 5/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive separating to single grain; extremely hard, very friable, nonsticky and nonplastic; 20 percent very fine and fine angular granitic gravel; little volume change on wetting and drying; few fine roots to 30 inches; moderately acid.

Donald Soil

Taxonomic Class: Fine, smectitic Alfic Argicryolls

Typical Pedon

Donald loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 5 inches; very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; moderate medium subangular blocky structure parting to strong medium granular; hard, firm, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine tubular pores; 5 percent gravel; neutral (pH 6.6); clear smooth boundary.

A2—5 to 9 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to strong medium granular; hard, firm, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine tubular pores; 5 percent stones; 5 percent gravel; neutral (pH 7.0); clear wavy boundary.

E—9 to 13 inches; pinkish gray (7.5YR 7/2) sandy loam, brown (7.5YR 5/2) moist; weak coarse subangular blocky structure; hard, firm, nonsticky and nonplastic; many very fine, fine, and medium roots; many fine irregular pores; 3 percent stones; 5 percent cobbles; 5 percent gravel; neutral (pH 6.8); abrupt wavy boundary.

Bt1—13 to 16 inches; light brown (7.5YR 6/4) clay, brown (7.5YR 5/4) moist; strong medium columnar structure; very hard, very firm, very sticky and very plastic; common fine roots; few very fine and fine tubular pores; many continuous distinct unstained sand grains on tops of columns and discontinuous distinct unstained sand grains on vertical faces of peds; many distinct clay films on vertical faces of peds and in pores; neutral (pH 7.2); clear wavy boundary.

Bt2—16 to 23 inches; light brown (7.5YR 6/4) clay, brown (7.5YR 5/4) moist; moderate medium prismatic structure; very hard, very firm, very sticky and very plastic; common fine roots; few very fine and fine tubular pores; many distinct clay films on faces of peds and in pores; slightly alkaline (pH 7.8); clear wavy boundary.

Btk—23 to 35 inches; light brown (7.5YR 6/4) clay, brown (7.5YR 5/4) moist; moderate medium angular blocky structure; very hard, very firm, very sticky and very plastic; few fine roots; common fine and few medium tubular pores; common distinct clay films on faces of peds and in pores; common medium irregular seams of lime; slightly effervescent on faces of peds; moderately alkaline (pH 8.2); clear wavy boundary.

BC—35 to 60 inches; light brown (7.5YR 6/4) clay, light brown (7.5YR 6/4) moist; massive; hard, firm, moderately sticky and moderately plastic; few fine tubular pores; moderately alkaline (pH 8.2).

Doolittle Soil

Taxonomic Class: Fine, smectitic Vertic Haplocryalfs

Typical Pedon

Doolittle clay loam (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; weak very fine and fine subangular blocky structure parting to weak very fine and fine granular; slightly hard, very friable, moderately sticky and moderately plastic; many very fine and fine and few medium roots; 5 percent gravel; slightly acid (pH 6.5); gradual wavy boundary.

Bt1—3 to 12 inches; gray (10YR 6/1) silty clay loam, dark grayish brown (10YR 4/2) moist; strong medium and coarse angular blocky structure; extremely hard, very firm, very sticky and very plastic; few very fine and fine roots; many distinct clay films on faces of peds; 5 percent gravel; neutral (pH 6.7); clear smooth boundary.

Bt2—12 to 28 inches; light brownish gray (10YR 6/2) silty clay, brown (10YR 5/3) moist; strong medium and coarse prismatic structure; extremely hard, very firm, very sticky and very plastic; few very fine roots; many prominent clay films on faces of peds; 5 percent gravel; neutral (pH 6.8); clear smooth boundary.

Bk—28 to 39 inches; very pale brown (10YR 8/2) paragravelly silt loam, pale brown (10YR 6/3) moist; weak fine and medium subangular blocky structure; soft, very friable, very sticky and nonplastic; 20 percent paragravel; disseminated lime; many fine and medium patchy soft masses and threads of lime; strongly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

Cr—39 to 60 inches; white (2.5Y 8/1) semiconsolidated sedimentary beds that crush to silt loam, light brownish gray (2.5Y 6/2) moist; neutral (pH 7.2).

Dunkleber Soil

Taxonomic Class: Euic Typic Cryofibrists

Typical Pedon

Dunkleber mucky peat (Colors are for moist soil unless otherwise noted.)

Oi1—0 to 12 inches; black (10YR 2/1) mucky peat, dark gray (10YR 4/1) dry; about 80 percent fiber and raw herbaceous plant material, 70 percent rubbed; massive; nonsticky and nonplastic; slightly acid (pH 6.2); clear smooth boundary.

Oi2—12 to 28 inches; very dark gray (10YR 3/1) mucky peat, dark gray (10YR 4/1) dry; about 85 percent fiber, 80 percent rubbed; massive; nonsticky and nonplastic; slightly acid (pH 6.2); clear smooth boundary.

Oi3—28 to 38 inches; black (10YR 2/1) mucky peat, dark gray (10YR 4/1) dry; about 80 percent fiber, 75 percent rubbed; massive; nonsticky and nonplastic; slightly acid (pH 6.4); clear wavy boundary.

Oi4—38 to 44 inches; black (10YR 2/1) mucky peat, dark gray (10YR 4/1) dry; about 80 percent fiber, 75 percent rubbed; massive; nonsticky and nonplastic; slightly acid (pH 6.4); clear smooth boundary.

Oi5—44 to 60 inches; black (10YR 2/1) mucky peat, very dark gray (10YR 3/1) dry; about 80 percent fiber, 75 percent rubbed; massive; nonsticky and nonplastic; slightly acid (pH 6.4).

Earcree Soil

Taxonomic Class: Coarse-loamy, mixed, superactive Pachic Haplocryolls

Typical Pedon

Earcree gravelly coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 6 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable; many

very fine and fine roots; many fine interstitial pores; moderately acid (pH 6.0); clear smooth boundary.

A2—6 to 20 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable; many very fine and fine roots; many fine tubular pores; slightly acid (pH 6.2); clear smooth boundary.

A3—20 to 28 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; slightly hard, friable; many very fine and fine roots; many fine tubular pores; slightly acid (pH 6.4); clear wavy boundary.

A4—28 to 33 inches; grayish brown (10YR 5/2) gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; slightly hard, friable; many very fine and fine roots; many fine tubular pores; slightly acid (pH 6.5); abrupt wavy boundary.

C1—33 to 50 inches; light brownish gray (2.5Y 6/2) gravelly loamy coarse sand, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, friable; few very fine and fine roots; few very fine tubular pores; neutral (pH 6.6); clear smooth boundary.

C2—50 to 58 inches; light olive gray (5Y 6/2) loamy coarse sand, light olive gray (5Y 6/2) moist; massive; slightly hard, friable; few very fine and fine roots; few very fine tubular pores; neutral (pH 7.0); clear smooth boundary.

C3—58 to 64 inches; light yellowish brown (2.5Y 6/4) loamy coarse sand; massive; slightly hard, friable; few very fine roots; few very fine tubular pores; neutral (pH 6.9).

Elkner Soil

Taxonomic Class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts

Typical Pedon

Elkner sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.

E1—2 to 9 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; weak coarse granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium and few coarse roots; 5 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

E2—9 to 22 inches; light yellowish brown (10YR 6/4) coarse sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium and few coarse roots; 5 percent gravel; moderately acid (pH 6.0); clear wavy boundary.

E and Bt—22 to 38 inches; E part (80 percent) is light yellowish brown (10YR 6/4) coarse sandy loam, brown (10YR 4/3) moist; B part (20 percent) is yellowish brown (10YR 5/4) coarse sandy loam, lamellae 1/8- to 1/2-inch thick, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; 10 percent gravel; moderately acid (pH 5.8); gradual wavy boundary.

BC—38 to 60 inches; light yellowish brown (10YR 6/4) gravelly loamy coarse sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; 20 percent gravel; moderately acid (pH 5.8).

Ellena Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Typical Pedon

Ellena very cobbly sandy loam, very bouldery (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; partially decomposed needles, twigs, and leaves.

A—2 to 7 inches; grayish brown (10YR 5/2) very cobbly sandy loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; many very fine, common fine, and few medium roots; many very fine and fine pores; 30 percent cobbles; 10 percent gravel; neutral (pH 6.6); clear smooth boundary.

E—7 to 22 inches; light brownish gray (2.5Y 6/2) very cobbly coarse sandy loam, grayish brown (2.5Y 5/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; many very fine and few fine and medium roots; many very fine and fine pores; 5 percent stones; 25 percent cobbles; 10 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

E/Bw—22 to 35 inches; E part (85 percent) is light brownish gray (2.5Y 6/2) very cobbly coarse sandy loam, grayish brown (2.5Y 5/2) moist; Bw part (15 percent) is light olive brown (2.5Y 5/4) very cobbly sandy clay loam, olive brown (2.5Y 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; many very fine and few fine and medium roots; many very fine and few fine tubular and interstitial pores; 5 percent stones; 35 percent cobbles; 10 percent gravel; slightly acid (pH 6.3); clear wavy boundary.

Cr—35 to 38 inches; light brownish gray (2.5Y 6/2) decomposed granitic bedrock (grus) that crushes to very gravelly coarse sand; neutral (pH 6.8).

R—38 inches; hard granitic bedrock.

Elve Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Typical Pedon

Elve very cobbly loam (Colors are for dry soil unless otherwise noted.)

Oe—0 to 1 inch; forest litter of undecomposed and decomposed needles, twigs, and cones.

A—1 to 3 inches; pale brown (10YR 6/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many medium and coarse roots; many very fine and fine pores; 25 percent angular cobbles; 30 percent angular gravel; moderately acid (pH 5.8); abrupt wavy boundary.

E—3 to 18 inches; very pale brown (10YR 7/4) very cobbly loam, yellowish brown (10YR 5/4) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine, medium, and coarse roots; many very fine and fine pores; 30 percent angular cobbles; 25 percent angular gravel; strongly acid (pH 5.5); gradual wavy boundary.

Bw1—18 to 34 inches; light yellowish brown (10YR 6/4) extremely cobbly loam, yellowish brown (10YR 5/6) moist; moderate fine subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; common fine, medium, and coarse roots; many very fine and fine pores; 35 percent angular cobbles; 30 percent angular gravel; strongly acid (pH 5.4); gradual wavy boundary.

Bw2—34 to 47 inches; yellow (10YR 7/6) extremely cobbly sandy loam, yellowish brown (10YR 5/6) moist; weak fine subangular blocky structure parting to weak fine granular; hard, friable, slightly sticky and slightly plastic; common fine, medium, and coarse roots; many very fine and fine pores; 35 percent angular cobbles; 30 percent angular gravel; strongly acid (pH 5.4); gradual wavy boundary.

BC—47 to 60 inches; yellow (10YR 7/6) extremely cobbly sandy loam, yellowish brown (10YR 5/6) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few very fine and fine roots; common fine irregular pores; 45 percent angular cobbles; 40 percent angular gravel; strongly acid (pH 5.2).

Elvick Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocryepts

Typical Pedon

Elvick very cobbly loam, very bouldery (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; partially decomposed needles, leaves, and twigs.

A—2 to 3 inch; dark grayish brown (10YR 4/2) cobbly loam, very dark brown (10YR 2/2) moist; weak medium granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and few medium and coarse roots; many very fine and fine interstitial pores; 20 percent cobbles; 15 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

E1—3 to 9 inches; light brownish gray (10YR 6/2) very cobbly loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and few medium and coarse roots; many very fine and fine interstitial pores; 25 percent cobbles; 20 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

E2—9 to 20 inches; light brownish gray (10YR 6/2) very cobbly loam, grayish brown (10YR 5/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine and few medium and coarse roots; many very fine and fine interstitial pores; 30 percent cobbles; 20 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

E/Bw—20 to 28 inches; E part (80 percent) is light brownish gray (10YR 6/2) very cobbly coarse sandy loam, brown (10YR 5/3) moist; Bw part (20 percent) is pale brown (10YR 6/3) very cobbly coarse sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; many very fine and fine interstitial pores; 30 percent cobbles; 25 percent gravel; slightly acid (pH 6.3); gradual wavy boundary.

Bw—28 to 40 inches; pale brown (10YR 6/3) very cobbly coarse sandy loam, brown (10YR 4/3) moist; common fine distinct strong brown (7.5YR 5/6) redox concentrations; moderate medium subangular blocky structure; hard, firm, slightly sticky and nonplastic; common very fine, fine, and medium roots; many very fine and fine interstitial pores; 30 percent cobbles; 25 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

BC—40 to 60 inches; light yellowish brown (10YR 6/4) extremely cobbly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; common fine distinct strong brown (7.5YR 5/6) redox concentrations; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and nonplastic; few very fine, fine, and medium roots; common very fine and fine interstitial pores; 40 percent cobbles; 25 percent gravel; slightly acid (pH 6.4).

Evaro Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lamellic Eutrocryepts

Typical Pedon

Evaro gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; slightly decomposed forest litter.

A—2 to 8 inches; light yellowish brown (10YR 6/4) gravelly ashy loam, dark yellowish brown (10YR 4/4) moist; weak medium granular structure; soft, very friable, nonsticky and slightly plastic; many fine and medium roots; many fine pores; 25 percent gravel; ash influenced with about 50 percent glass and a moist bulk density of less than 0.95 g/cm^3; slightly acid (pH 6.4); clear smooth boundary.

2E1—8 to 17 inches; light brownish gray (10YR 6/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; common fine pores; 10 percent cobbles; 40 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

2E2—17 to 25 inches; light gray (10YR 7/2) very gravelly sandy loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and medium roots; common fine pores; 10 percent cobbles; 45 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

2E and Bt—25 to 60 inches; E part (75 percent) is very pale brown (10YR 7/3) extremely gravelly sandy loam, brown (10YR 5/3) moist; B part (25 percent) is few discontinuous pale brown (10YR 6/3) extremely gravelly fine sandy loam lamellae 1/16- to 1/4-inch thick, brown (10YR 5/3) moist; texture, mixed, is extremely gravelly sandy loam; massive; slightly hard, very friable, nonsticky and nonplastic; few fine roots; common fine pores; 15 percent cobbles; 60 percent gravel; neutral (pH 6.6).

Faith Soil

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Torrifluventic Haplustolls

Typical Pedon

Faith loam (Colors are for dry soil unless otherwise noted.)

Ap1—0 to 4 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; slightly alkaline (pH 7.4); clear smooth boundary.

Ap2—4 to 8 inches; grayish brown (10YR 5/2) 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; many very fine and fine roots; many very fine and fine interstitial and tubular pores; disseminated lime; slightly effervescent; slightly alkaline (pH 7.8); clear wavy boundary.

Bw—8 to 14 inches; grayish brown (10YR 5/2) silty clay loam, dark grayish brown (10YR 4/2) moist; strong medium prismatic structure parting to moderate medium subangular blocky; slightly hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; disseminated lime; slightly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

Bk—14 to 31 inches; light brownish gray (10YR 6/2) silty clay loam, grayish brown (10YR 5/2) moist; strong coarse prismatic structure parting to strong medium

subangular blocky; slightly hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; disseminated lime; few very fine threads of lime; strongly effervescent; moderately alkaline (pH 8.3); clear smooth boundary.

2C—31 to 47 inches; light brownish gray (2.5Y 6/2) fine sandy loam, dark grayish brown (2.5Y 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; moderately alkaline (pH 8.2); clear smooth boundary.

2Cg1—47 to 56 inches; grayish brown (2.5Y 5/2) silt loam, dark grayish brown (2.5Y 4/2) moist; common distinct yellowish red (5YR 5/6) redox concentrations; massive; slightly hard, very friable, slightly sticky and nonplastic; moderately alkaline (pH 8.0).

2Cg2—56 to 60 inches; light olive gray (5Y 6/2) loam, olive gray (5Y 4/2) moist; common faint very dark gray (5Y 3/1) redox depletions; common faint yellowish red (5YR 5/6) redox concentrations; massive; slightly hard, very friable, slightly sticky and nonplastic; moderately alkaline (pH 8.2).

Finn Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Cryaquolls

Typical Pedon

Finn gravelly loam (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 inches; partially decomposed organic matter.

A—2 to 12 inches; black (10YR 2/1) gravelly loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; slightly hard, very friable, nonsticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine discontinuous pores; 5 percent cobbles; 10 percent gravel; strongly acid (pH 5.2); clear smooth boundary.

Bw1—12 to 18 inches; dark yellowish brown (10YR 3/4) very gravelly loam, yellowish brown (10YR 5/4) dry; common fine distinct yellowish brown (10YR 5/8), brownish yellow (10YR 6/8) dry redox concentrations; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; common very fine and fine roots; many very fine and fine discontinuous pores; 5 percent cobbles; 35 percent gravel; strongly acid (pH 5.4); clear smooth boundary.

2Bw2—18 to 24 inches; dark brown (10YR 3/3) very gravelly sandy clay loam, brown (10YR 5/3) dry; common fine distinct yellowish brown (10YR 5/8), brownish yellow (10YR 6/8) dry redox concentrations; weak fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few very fine and fine roots; many very fine and fine discontinuous pores; 10 percent cobbles; 40 percent gravel; moderately acid (pH 5.6); gradual wavy boundary.

2C—24 to 60 inches; dark yellowish brown (10YR 4/4) very gravelly sandy clay loam, light yellowish brown (10YR 6/4) dry; many medium distinct yellowish brown (10YR 5/8), brownish yellow (10YR 6/8) dry redox concentrations; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine discontinuous pores; 15 percent cobbles; 40 percent gravel; moderately acid (pH 6.0).

Fleecer Soil

Taxonomic Class: Coarse-loamy, mixed, superactive Pachic Haplocryolls

Typical Pedon

Fleecer coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine and medium roots; 10 percent, mainly fine, gravel; moderately acid (pH 6.0); clear smooth boundary.

A2—4 to 18 inches; very dark brown (10YR 2/2) gravelly coarse sandy loam, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few very fine and fine tubular pores; 15 percent, mainly fine, gravel; slightly acid (pH 6.4); clear wavy boundary.

Bw—18 to 32 inches; brown (10YR 4/3) gravelly coarse sandy loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; few very fine tubular pores; 20 percent, mainly fine, gravel; neutral (pH 6.6); gradual wavy boundary.

BC—32 to 50 inches; grayish brown (10YR 5/2) gravelly loamy coarse sand, dark grayish brown (10YR 4/2) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots in upper portion; common very fine and fine interstitial pores; 2 percent cobbles; 30 percent, mainly fine, gravel; neutral (pH 6.8); diffuse wavy boundary.

C—50 to 60 inches; light yellowish brown (2.5Y 6/4) gravelly loamy coarse sand, light olive brown (2.5Y 5/4) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine interstitial pores; 5 percent cobbles; 25 percent, mainly fine, gravel; slightly alkaline (pH 7.4).

Foxgulch Soil

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Fluvaquentic Haplocryolls

Typical Pedon

Foxgulch silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; undecomposed and partially decomposed matted roots; abrupt smooth boundary.

A1—1 to 11 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 5 percent mica flakes; neutral (pH 6.7); clear wavy boundary.

A2—11 to 16 inches; very dark gray (10YR 3/1) silty clay loam, black (10YR 2/1) moist; strong fine and medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and few fine roots; many very fine and fine dendritic tubular pores; 5 percent mica flakes; slightly alkaline (pH 7.5); clear wavy boundary.

Bw—16 to 29 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; common threads and masses of dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; strong fine, medium, and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; 10 percent mica flakes; slightly alkaline (pH 7.6); clear wavy boundary.

BC—29 to 36 inches; light gray (2.5Y 7/2) sandy clay loam, light olive brown (2.5Y 5/3) moist; few fine faint yellowish brown (10YR 5/6) moist, redox concentrations;

weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine dendritic tubular pores; 5 percent gravel; 10 percent mica flakes; neutral (pH 7.3); clear wavy boundary.

2C—36 to 60 inches; pinkish gray (7.5YR 6/2) very gravelly sand, brown (7.5YR 5/2) moist; the upper 10 inches is stratified with lenses of loamy sand, sandy loam, and loam with common fine and medium distinct strong brown (7.5YR 5/6) moist, redox concentrations; single grain; loose, nonsticky and nonplastic; 5 percent cobbles; 45 percent gravel; 10 percent mica flakes; neutral (pH 6.8).

Gambler Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Typical Pedon

Gambler stony loam (Colors are for dry soil unless otherwise noted.)

Oe—0 to 0.5 inch; decomposing needles, leaves, and twigs.

E—0.5 to 8 inches; very pale brown (10YR 7/3) stony loam, brown (10YR 5/3) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; 3 percent stones; 3 percent cobbles; 2 percent gravel; slightly acid; clear wavy boundary.

E/B—8 to 18 inches; about 60 percent pinkish gray (7.5YR 7/2) stony clay loam, light brown (7.5YR 6/4) moist (E part); 40 percent light brown (7.5YR 6/4) stony clay loam, brown (7.5YR 5/4) moist (B part); weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; 15 percent stones; 3 percent cobbles; 2 percent gravel; neutral; clear wavy boundary.

Bt—18 to 38 inches; light brown (7.5YR 6/4) very stony clay loam, brown (7.5YR 5/4) moist; moderate medium subangular and angular blocky structure; hard, friable, moderately sticky and moderately plastic; 40 percent stones; 5 percent cobbles; 5 percent gravel; few distinct clay films on faces of peds; neutral; clear wavy boundary.

BC—38 to 48 inches; light brown (7.5YR 6/4) very stony clay loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; 35 percent stones; 5 percent cobbles; 5 percent gravel; slightly alkaline; clear wavy boundary.

C—48 to 55 inches; pinkish gray (7.5YR 7/2) very stony clay loam, light brown (7.5YR 6/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; 35 percent stones; 5 percent cobbles; 5 percent gravel; slightly alkaline.

R—55 inches; hard basalt rock.

Garlet Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts

Typical Pedon

Garlet stony loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; partially decomposed and undecomposed forest litter.

E1—2 to 6 inches; gray (10YR 6/1) stony loam, dark gray (10YR 4/1) moist; weak thin platy structure parting to very fine granular; soft, very friable, nonsticky and nonplastic; many fine and common coarse roots; 15 percent stones; 25 percent gravel; moderately acid (pH 5.8); abrupt smooth boundary.

E2—6 to 21 inches; light brownish gray (10YR 6/2) extremely cobbly loam, brown (10YR 5/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; common very fine pores; 5 percent stones; 25 percent cobbles; 40 percent gravel; slightly acid (pH 6.3); clear irregular boundary.

Bw/E—21 to 48 inches; B part (60 percent) light brown (7.5YR 6/4), brown (7.5YR 5/4) moist; E part (40 percent) pinkish gray (7.5YR 6/2), brown (7.5YR 5/2) moist; extremely cobbly sandy clay loam; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine and fine pores; faces of peds are coated with gray (10YR 6/1) very fine sand; 5 percent stones; 25 percent cobbles; 40 percent gravel; slightly alkaline (pH 7.6); clear smooth boundary.

Bk—48 to 70 inches; light brownish gray (10YR 6/2) extremely cobbly loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; 5 percent stones; 25 percent cobbles; 40 percent gravel; continuous distinct lime coats on undersides of rock fragments; disseminated lime; strongly effervescent; moderately alkaline (pH 8.1)

Gateview Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Typical Pedon

Gateview gravelly loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 10 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; 5 percent cobbles; 15 percent gravel; neutral; clear smooth boundary.

A2—10 to 22 inches; grayish brown (10YR 5/2) very gravelly sandy loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure parting to fine granular; slightly hard, very friable, nonsticky and nonplastic; 5 percent cobbles; 50 percent gravel; neutral; gradual smooth boundary.

C—22 to 60 inches; brown (10YR 5/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; 5 percent cobbles; 50 percent gravel; neutral.

Gaylord Soil

Taxonomic Class: Fine, smectitic Vertic Glossocryalfs

Typical Pedon

Gaylord silt loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 6 inches; grayish brown (10YR 5/2) silt loam, dark brown (10YR 3/3) moist; weak thin and medium platy structure separating to moderate very fine and fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many uncoated silt and sand grains that give clod surfaces gray (10YR 6/1) color; slightly acid (pH 6.4); abrupt smooth boundary.

B/A—6 to 15 inches; brown (10YR 5/3) silty clay loam, brown (10YR 4/3) moist, with 30 to 40 percent light gray (10YR 7/1) and white (10YR 8/1) silt loam, dark grayish brown (10YR 4/2) moist; mixed soil is light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; weak coarse platy structure separating to strong very fine blocky; hard, friable, moderately sticky and moderately plastic;

many very fine roots; patchy clay films on some vertical faces of peds and thick coats of light gray and white silt and sand; slightly acid (pH 6.4); gradual irregular boundary.

Bt—15 to 24 inches; light brownish gray (10YR 6/2) silty clay, dark grayish brown (10YR 4/2) moist; strong fine and medium blocky structure; hard, firm, very sticky and very plastic; few very fine roots and tubular pores; continuous clay films on faces of peds; many uncoated sand grains; moderately alkaline (pH 8.2); gradual smooth boundary.

Bk—24 to 55 inches; pale brown (10YR 6/3) silty clay, brown (10YR 5/3) moist; strong medium angular blocky structure grading to moderate coarse angular blocky in the lower part; very hard, firm, very sticky and very plastic; few very fine roots and tubular pores; continuous clay films on faces of peds; few clear sand grains; few lime nodules and lime coats on the few fine gravel; strongly effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

Ck—55 to 60 inches; light brownish gray (10YR 6/2) silty clay, brown (10YR 4/3) moist; massive; hard, firm, very sticky and very plastic; few lime nodules; strongly effervescent; strongly alkaline (pH 8.6).

Geohrock Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Aridic Haplustalfs

Typical Pedon

Geohrock gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; pinkish gray (7.5YR 6/2) gravelly loam, brown (7.5YR 4/2) moist; moderate very thin platy structure parting to moderate very fine granular; slightly hard, very friable, moderately sticky and slightly plastic; many very fine roots; 20 percent angular gravel; slightly alkaline (pH 7.4); clear smooth boundary.

Bt—4 to 10 inches; brown (7.5YR 5/3) gravelly clay loam, brown (7.5YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, moderately sticky and moderately plastic; common very fine roots; many very fine tubular and interstitial pores; continuous distinct clay films on faces of peds and lining pores; 30 percent angular gravel; slightly alkaline (pH 7.4); clear smooth boundary.

Btk—10 to 18 inches; brown (7.5YR 5/3) very gravelly loam, brown (7.5YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine roots; many very fine tubular and interstitial pores; few faint clay films on faces of peds; 40 percent angular gravel; many medium masses of lime; continuous faint coats of lime on undersides of gravel; strongly effervescent; moderately alkaline (pH 8.1); gradual wavy boundary.

Bk1—18 to 24 inches; light brown (7.5YR 6/4) extremely gravelly loam, brown (7.5YR 5/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine roots; many very fine tubular and interstitial pores; 60 percent angular gravel; disseminated lime; continuous distinct lime casts on undersides of gravel; violently effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.

Bk2—24 to 40 inches; pale brown (10YR 6/3) extremely gravelly loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine roots; 70 percent angular gravel; disseminated lime; continuous distinct lime casts on undersides of gravel; violently effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.

C1—40 to 45 inches; pinkish gray (7.5YR 6/2) extremely gravelly loam, brown (7.5YR 5/2) moist; massive; slightly hard, friable, moderately sticky and slightly plastic;

few very fine roots; 80 percent angular gravel; disseminated lime; slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

C2—45 to 60 inches; pinkish gray (7.5YR 6/2) extremely gravelly loam, brown (7.5YR 5/3) moist; massive; slightly hard, friable, moderately sticky and slightly plastic; 60 percent angular gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0).

Glendive Soil

Taxonomic Class: Coarse-loamy, mixed, superactive, calcareous, frigid Aridic Ustifluvents

Typical Pedon

Glendive loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 5 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; very hard, friable, slightly sticky and slightly plastic; many very fine roots; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

C1—5 to 10 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine pores; strongly effervescent; moderately alkaline (pH 8.0); gradual smooth boundary.

C2—10 to 16 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak coarse prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine pores; strongly effervescent; strongly alkaline (pH 8.5); gradual smooth boundary.

C3—16 to 60 inches; light brownish gray (10YR 6/2) fine sandy loam that consists of thin layers of loam, sandy loam, and loamy fine sand, grayish brown (2.5Y 5/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots grading to few in lower part; common fine pores; strongly effervescent; strongly alkaline (pH 8.5).

Gnojek Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Argiustolls

Typical Pedon

Gnojek very cobbly loam, stony (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 25 percent cobbles; 20 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bt—3 to 7 inches; dark grayish brown (10YR 4/2) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; slightly hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; common distinct clay films on faces of peds and bridging sand grains; 15 percent cobbles; 35 percent gravel; slightly alkaline (pH 7.4); clear wavy boundary.

Bk—7 to 16 inches; light brownish gray (10YR 6/2) very cobbly loam, brown (10YR 5/3) moist; moderate fine subangular blocky structure; soft, friable, slightly sticky and

slightly plastic; common very fine and fine roots; many very fine and fine interstitial and tubular pores; 25 percent cobbles; 30 percent gravel; disseminated lime; common medium masses and threads of lime; common distinct lime coats on rock fragments; violently effervescent; moderately alkaline (pH 8.2).

R—16 inches; hard fine-grained sandstone.

Goldflint Soil

Taxonomic Class: Sandy-skeletal, mixed Lithic Cryorthents

Typical Pedon

Goldflint loamy coarse sand (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; litter layer of largely undecomposed conifer needles and twigs.

A—1 to 3 inches; brown (10YR 4/3) loamy coarse sand, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium and few coarse and very coarse roots; 10 percent fine subangular gravel; slightly acid (pH 6.4); clear smooth boundary.

Bw—3 to 11 inches; yellowish brown (10YR 5/4) gravelly loamy coarse sand, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine, fine, medium, coarse, and very coarse roots; 2 percent subrounded cobbles; 25 percent fine subangular gravel; slightly acid (pH 6.4); clear smooth boundary.

BC—11 to 18 inches; variegated colors, mainly yellowish brown (10YR 5/4) and brownish yellow (10YR 6/6) very gravelly coarse sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; common very fine, fine, and medium and few coarse and very coarse roots; many very fine and fine and common medium interstitial pores; 2 percent subrounded cobbles; 40 percent fine subangular gravel; neutral (pH 6.8); abrupt wavy boundary.

R—18 inches; hard granite bedrock.

Hairpin Soil

Taxonomic Class: Fine, smectitic Vertic Argicryolls

Typical Pedon

Hairpin silt loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure parting to weak fine and medium granular; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; 10 percent subangular quartzite gravel; moderately acid (pH 6.0); clear smooth boundary.

A2—4 to 12 inches; dark grayish brown (10YR 4/2) cobbly silt loam, very dark grayish brown (10YR 3/2) moist; weak medium and coarse subangular blocky structure parting to moderate fine and medium subangular blocky; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; 15 percent subangular cobbles; 10 percent subangular quartzite gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt/E1—12 to 18 inches; Bt part (80 percent) brown (10YR 5/3), brown (10YR 4/3) moist; E part (20 percent) light gray (10YR 7/2), light brownish gray (10YR 6/2) moist, clay loam; moderate medium and coarse subangular blocky structure parting to strong fine and medium subangular blocky; very hard, firm, moderately sticky and moderately plastic; common distinct clay films on all faces of peds; common

very fine and fine roots; 10 percent subangular quartzite gravel; neutral (pH 6.8); clear wavy boundary.

Bt/E2—18 to 22 inches; Bt part (60 percent) pale brown (10YR 6/3), brown (10YR 5/3) moist; E part (40 percent) light gray (10YR 7/2), light brownish gray (10YR 6/2) moist, clay loam; moderate fine and medium subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; common distinct clay films on all faces of peds; common very fine roots; 10 percent subangular quartzite gravel; neutral (pH 7.0); abrupt wavy boundary.

2Btss1—22 to 42 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong coarse prismatic structure; extremely hard, very firm, very sticky and very plastic; many prominent clay films on all faces of peds; common prominent slickensides on vertical faces of peds; few very fine roots; 1 percent subangular cobbles; 10 percent subangular quartzite gravel; noneffervescent; neutral (pH 7.0); gradual wavy boundary.

2Btss2—42 to 60 inches; light yellowish brown (10YR 6/4) gravelly clay, yellowish brown (10YR 5/4) moist; moderate coarse subangular blocky structure; extremely hard, very firm, very sticky and very plastic; many prominent clay films on all faces of peds; common prominent slickensides on vertical faces of peds; few very fine roots; 5 percent subangular cobbles; 20 percent subangular quartzite gravel; neutral (pH 7.0).

Hanson Soil

Taxonomic Class: Loamy-skeletal, carbonatic Calcic Haplocryolls

Typical Pedon

Hanson loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 8 inches; dark gray (10YR 4/1) loam, black (10YR 2/1) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; 5 percent gravel; neutral; gradual smooth boundary.

A2—8 to 14 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak medium prismatic structure parting to weak fine and medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular and interstitial pores; 10 percent limestone gravel; disseminated lime; strongly effervescent; slightly alkaline; clear smooth boundary.

Bk1—14 to 26 inches; very pale brown (10YR 7/3) very cobbly loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular and interstitial pores; 50 percent cobbles; 10 percent gravel; disseminated lime; many masses of lime; continuous distinct lime crusts on undersides of rock fragments; violently effervescent; slightly alkaline; diffuse smooth boundary.

Bk2—26 to 42 inches; pale yellow (2.5Y 8/4) extremely cobbly loam, light yellowish brown (2.5Y 6/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; many very fine tubular and interstitial pores; 55 percent cobbles; 25 percent gravel; disseminated lime; many masses of lime; continuous distinct lime crusts on undersides of rock fragments; violently effervescent; moderately alkaline; gradual wavy boundary.

Bk3—42 to 60 inches; pale yellow (2.5Y 7/4) extremely cobbly loam, light yellowish brown (2.5Y 6/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular and interstitial pores; 55 percent cobbles; 10 percent gravel; disseminated

lime; continuous distinct lime coats on rock fragments; violently effervescent; moderately alkaline.

Hapgood Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Typical Pedon

Hapgood very gravelly loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark brown (10YR 2/2) moist; moderate thin and medium platy structure; soft, very friable, nonsticky and slightly plastic; many very fine and few fine roots; many fine interstitial and few very fine tubular pores; 40 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

A2—3 to 8 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark brown (10YR 2/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine interstitial and common very fine tubular pores; 40 percent gravel; neutral (pH 6.6); clear smooth boundary.

A3—8 to 26 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine interstitial and common very fine tubular pores; 30 percent gravel; neutral (pH 6.6); clear smooth boundary.

AC—26 to 36 inches; grayish brown (10YR 5/2) very gravelly loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine interstitial and common very fine tubular pores; 50 percent gravel; neutral (pH 6.8); abrupt wavy boundary.

C—36 to 50 inches; very pale brown (10YR 7/3) very cobbly loam, brown (10YR 5/3) moist; many fine and medium faint brown (10YR 5/3) iron stains along vertical cleavage planes; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 20 percent cobbles; 20 percent gravel; neutral (pH 6.8); abrupt wavy boundary.

R—50 inches; hard, fractured andesite.

Havre Soil

Taxonomic Class: Fine-loamy, mixed, superactive, calcareous, frigid Aridic Ustifluvents

Typical Pedon

Havre loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 8 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; weak granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; strongly effervescent; moderately alkaline (pH 7.9); abrupt wavy boundary.

C1—8 to 36 inches; light brownish gray (2.5Y 6/2) loam consisting of thin strata of fine sandy loam, silt loam, and clay loam, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; many and common fine and medium pores; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

C2—36 to 60 inches; light brownish gray (2.5Y 6/2) loam consisting of thin strata of clay loam, fine sandy loam, and silt loam, dark grayish brown (2.5Y 4/2) moist;

massive; slightly hard, very friable, slightly sticky and nonplastic; few very fine and fine roots; common fine and medium pores; strongly effervescent; moderately alkaline (pH 8.2).

Haxby Soil

Taxonomic Class: Coarse-loamy, mixed, superactive, frigid Haplocalcidic Haplustepts

Typical Pedon

Haxby loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine interstitial pores; neutral (pH 7.2); clear wavy boundary.

A2—3 to 5 inches; yellowish brown (10YR 5/4) 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; many very fine and fine roots; common very fine and fine interstitial and tubular pores; slightly alkaline (pH 7.4); clear smooth boundary.

Bk1—5 to 14 inches; light gray (10YR 7/2) loam, pale brown (10YR 6/3) moist; moderate medium prismatic structure parting to weak medium subangular blocky; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine interstitial and tubular pores; 5 percent gravel; disseminated lime; common fine masses and threads of lime; violently effervescent; moderately alkaline (pH 8.3); gradual wavy boundary.

Bk2—14 to 21 inches; pale yellow (2.5Y 7/4) sandy loam, light yellowish brown (2.5Y 6/4) moist; weak and moderate coarse prismatic structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common and few very fine interstitial and tubular pores; 5 percent gravel; disseminated lime; common fine masses and threads of lime; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk3—21 to 32 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, yellowish brown (10YR 5/4) moist; weak coarse prismatic structure; slightly hard, friable, nonsticky and nonplastic; few very fine roots; common and few very fine and fine pores; 20 percent gravel; common distinct lime coats on rock fragments; common masses and threads of lime; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

R—32 inches; hard fine-grained igneous bedrock.

Helmville Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Typical Pedon

Helmville cobbly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; slightly decomposed forest litter.

E—2 to 10 inches; yellowish brown (10YR 5/4) cobbly loam, dark brown (7.5YR 3/4) moist; weak fine granular structure; soft, friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine and fine discontinuous irregular pores; 15 percent cobbles; 15 percent gravel; neutral (pH 6.6); gradual wavy boundary.

Bt1—10 to 14 inches; dark yellowish brown (10YR 4/4) very cobbly clay loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure parting to weak medium granular; slightly hard, friable, slightly sticky and moderately plastic; many very fine and fine, common medium, and few coarse roots; many very fine and fine discontinuous irregular pores; many thin continuous clay films on faces of peds; 25 percent cobbles; 20 percent gravel; neutral (pH 7.2); gradual wavy boundary.

Bt2—14 to 25 inches; brownish yellow (10YR 6/6) very cobbly clay loam, yellowish brown (10YR 5/6) moist; weak medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine, fine, and medium roots; many very fine and fine discontinuous irregular pores; many thin continuous clay films on faces of peds; 30 percent cobbles; 25 percent gravel; slightly alkaline (pH 7.6); clear smooth boundary.

Bk—25 to 60 inches; brownish yellow (10YR 6/6) very cobbly clay loam, yellowish brown (10YR 5/6) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine discontinuous irregular pores; 30 percent cobbles; 30 percent gravel; disseminated lime; continuous distinct lime coats on cobbles and gravel; few faint and distinct lime casts on undersides of rock fragments; violently effervescent; moderately alkaline (pH 7.9).

Highrye Soil

Taxonomic Class: Fine-loamy, mixed, superactive Ustic Argicryolls

Typical Pedon

Highrye sandy loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; very dark grayish brown (10YR 3/2) sandy loam, black (10YR 2/1) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine and common medium roots; many very fine irregular pores; 5 percent fine gravel; moderately acid (pH 5.6); clear smooth boundary.

A2—3 to 11 inches; dark grayish brown (10YR 4/2) coarse sandy loam, black (10YR 2/1) moist; moderate medium subangular block structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine and few medium roots; common very fine irregular and few very fine and fine tubular pores; 10 percent fine gravel; slightly acid (pH 6.2); clear wavy boundary.

Bt1—11 to 23 inches; brown (10YR 5/3) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine and few fine tubular pores; 20 percent fine gravel; slightly acid (pH 6.4); gradual wavy boundary.

Bt2—23 to 32 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; 30 percent fine gravel; neutral (pH 6.6); gradual irregular boundary.

BC—32 to 46 inches; yellowish brown (10YR 5/4) gravelly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; common very fine irregular pores; 25 percent fine gravel; neutral (pH 6.8); gradual irregular boundary.

C—46 to 56 inches; yellowish brown (10YR 5/4) very gravelly coarse sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; 35 percent, mainly fine, gravel; neutral (pH 6.8); gradual wavy boundary.

Cr—56 to 60 inches; weathered granite bedrock.

Hiore Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Typical Pedon

Hiore coarse sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; forest litter of partially decomposed needles and twigs.

A1—1 to 3 inches; dark grayish brown (10YR 4/2) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine and few medium and coarse roots; many very fine and fine pores; 5 percent gravel; neutral (pH 7.0); abrupt smooth boundary.

A2—3 to 10 inches; grayish brown (10YR 5/2) gravelly coarse sandy loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine and few medium and coarse roots; many very fine and fine pores; 15 percent gravel; neutral (pH 7.0); gradual smooth boundary.

Bw1—10 to 23 inches; light brownish gray (10YR 6/2) gravelly coarse sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and few medium roots; common fine pores; 30 percent gravel; neutral (pH 7.2); gradual smooth boundary.

Bw2—23 to 36 inches; light gray (10YR 7/2) very gravelly loamy coarse sand, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few fine and medium roots; 40 percent gravel; neutral (pH 7.2); gradual smooth boundary.

BC—36 to 60 inches; light yellowish brown (10YR 6/4) very gravelly loamy coarse sand, yellowish brown (10YR 5/6) moist; single grain; loose, nonsticky and nonplastic; 60 percent gravel; few medium roots; neutral (pH 7.2).

Holloway Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts

Typical Pedon

Holloway gravelly ashy silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 3 inches; undecomposed and slightly decomposed forest litter.

A—3 to 13 inches; light yellowish brown (10YR 6/4) gravelly ashy silt loam, dark yellowish brown (10YR 4/4) moist; moderate very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; many very fine and fine pores; 5 percent angular cobbles; 25 percent angular gravel; ash influenced with 5 percent or more glass; strongly acid (pH 5.5); clear wavy boundary.

2E—13 to 20 inches; light gray (10YR 7/2) extremely gravelly fine sandy loam, light brownish gray (10YR 6/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine, medium, and coarse roots; common very fine and fine pores; 10 percent angular cobbles; 55 percent angular gravel; moderately acid (pH 5.6); gradual smooth boundary.

2E and Bt—20 to 55 inches; E part (75 percent) is light gray (10YR 7/2) extremely gravelly sandy loam, pale brown (10YR 6/3) moist; B part (25 percent) is pale brown (10YR 6/3) fine sandy loam lamellae 1/8- to 1/2-inch thick; brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine pores; 10 percent angular

cobbles; 55 percent angular gravel; moderately acid (pH 5.9); gradual smooth boundary.

2C—55 to 60 inches; very pale brown (10YR 7/3) extremely gravelly sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; few fine pores; 15 percent angular cobbles; 55 percent angular gravel; slightly acid (pH 6.4).

Hooligan Soil

Taxonomic Class: Fine-loamy, mixed, superactive Ustic Argicryolls

Typical Pedon

Hooligan silt loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak very fine and fine subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

A2—5 to 10 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak very fine and fine subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 10 percent mica flakes; 10 percent gravel; slightly acid (pH 6.5); clear wavy boundary.

Bt1—10 to 26 inches; pale brown (10YR 6/3), gravelly clay loam, brown (10YR 5/3) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; common faint patchy clay films on faces of peds; 20 percent gravel; 10 percent mica flakes; neutral (pH 6.7); clear wavy boundary.

Bt2—26 to 35 inches; light yellowish brown (10YR 6/4), clay loam, yellowish brown (10YR 5/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; common faint patchy clay films on faces of peds; 5 percent gravel; neutral (pH 6.8); gradual wavy boundary.

Cr1—35 to 45 inches; pale yellow (2.5Y 7/3) semiconsolidated siltite beds that crush to loam, light yellowish brown (2.5Y 6/4) moist; neutral (pH 7.1); gradual smooth boundary.

Cr2—45 to 60 inches; pale yellow (2.5Y 7/3) semiconsolidated siltite beds that crush to loam, light yellowish brown (2.5Y 6/4) moist; neutral (pH 7.0).

Howardsville Soil

Taxonomic Class: Sandy-skeletal, mixed Ustic Eutrocryepts

Typical Pedon

Howardsville gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 2 inches; dark grayish brown (10YR 4/2) gravelly loam, black (10YR 2/1) moist; moderate fine granular structure; soft, friable, nonsticky and nonplastic; 5 percent cobbles; 15 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

Bw—2 to 10 inches; brown (7.5YR 5/4) very gravelly sandy loam, dark brown (7.5YR 3/4) moist; weak fine granular structure; soft, friable, nonsticky and nonplastic; 2 percent stones; 10 percent cobbles; 30 percent gravel; moderately acid (pH 6.0); clear wavy boundary.

C—10 to 60 inches; light brown (7.5YR 6/4) extremely cobbly loamy sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; 10 percent stones; 25 percent cobbles; 30 percent gravel; moderately acid (pH 5.8).

Hun Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Dystrocryepts

Typical Pedon

Hun gravelly silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1.5 inches; needles, leaves, twigs, and cones.

Oe—1.5 to 2 inches; decomposed organic matter with discontinuous light gray (10YR 7/1) volcanic ash.

Bw1—2 to 9 inches; light yellowish brown (10YR 6/4) gravelly silt loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure parting to strong fine granular; soft, very friable, nonsticky and slightly plastic; many very fine and fine and common medium and coarse roots; many very fine and fine and common medium tubular pores; 25 percent gravel; moderately acid (pH 6.0); clear wavy boundary.

2Bw2—9 to 14 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine and common medium roots; common very fine and fine tubular pores; 15 percent cobbles; 35 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

2Bw3—14 to 25 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine and few medium roots; many very fine and common fine tubular pores; 10 percent cobbles; 35 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

2C—25 to 55 inches; very pale brown (10YR 7/4) extremely cobbly loamy sand, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; common very fine interstitial pores; 20 percent stones; 20 percent cobbles; 40 percent gravel; moderately acid (pH 6.0); gradual wavy boundary.

Cr—55 to 60 inches; fractured and weathered granite.

Inabnit Soil

Taxonomic Class: Loamy, mixed, superactive, shallow Ustic Haplocryalfs

Typical Pedon

Inabnit very cobbly loam, stony (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; grayish brown (10YR 5/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 20 percent cobbles; 30 percent gravel; neutral (pH 7.1); clear wavy boundary.

Bt—3 to 15 inches; light yellowish brown (10YR 6/4) very paragravelly silty clay loam, yellowish brown (10YR 5/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine roots; common very fine and few fine dendritic tubular pores; common faint patchy clay films on faces of peds and many faint discontinuous clay films on paragravels; 50 percent semiconsolidated siltite fragments; neutral (pH 7.1); clear wavy boundary.

Cr—15 to 60 inches; light gray (2.5Y 7/1) semiconsolidated siltite beds that crush to silt loam, light yellowish brown (2.5Y 6/3) moist; neutral (pH 7.3).

Jeru Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Typical Pedon

Jeru very stony loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 0.5 inch; needles, leaves, and twigs.

Oe—0.5 to 2 inches; decomposed organic matter with 0.5 inch of discontinuous, light gray (10YR 7/1) volcanic ash.

A—2 to 7 inches, yellowish brown (10YR 5/4) very stony loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine interstitial and few fine tubular pores; 4 percent stones on surface; 15 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bw1—7 to 24 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; many very fine interstitial and few fine tubular pores; 5 percent cobbles; 15 percent gravel; common very fine mica flakes; slightly acid (pH 6.4); clear wavy boundary.

Bw2—24 to 33 inches; very pale brown (10YR 7/4) very cobbly sandy loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine roots; many very fine interstitial and common fine tubular pores; many very fine and common fine mica flakes; 20 percent cobbles; 20 percent gravel; neutral (pH 6.6); clear wavy boundary.

C—33 to 62 inches; very pale brown (10YR 7/3) very stony sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine interstitial and few fine tubular pores; many very fine and fine and few medium mica flakes; 20 percent stones; 20 percent cobbles; 20 percent gravel; neutral (pH 6.6).

Jurvannah Soil

Taxonomic Class: Sandy-skeletal, mixed Typic Cryaquents

Typical Pedon

Jurvannah sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 6 inches; grayish brown (10YR 5/2) sandy loam, very dark gray (10YR 3/1) moist; weak fine granular structure; loose; common very fine roots; many very fine interstitial pores; moderately acid (pH 6.0); abrupt smooth boundary.

C1—6 to 10 inches; very pale brown (10YR 7/3) sand, brown (10YR 5/3) moist; common distinct fine and medium brown (7.5YR 4/4) and few fine faint light

yellowish brown (10YR 6/4) mottles; weak granular structure; loose; few very fine roots; moderately acid (pH 5.6); abrupt smooth boundary.

C2—10 to 22 inches; white (10YR 8/1) and brownish yellow (10YR 6/6) gravelly sand, brownish yellow (10YR 6/6) moist; single grain; loose; moderately acid (pH 5.9); clear smooth boundary.

C3—22 to 38 inches; pink (7.5YR 7/4) and yellowish red (5YR 4/6) very gravelly sand, yellowish red (5YR 4/6) moist; single grain; loose; slightly acid (pH 6.2); abrupt smooth boundary.

C4—38 to 60 inches; very pale brown (10YR 7/3) and pale brown (10YR 6/3) very gravelly sand; pale brown (10YR 6/3), very pale brown (10YR 7/3), and dark yellowish brown (10YR 4/4) moist; single grain; loose; slightly acid (pH 6.2).

Kalsted Soil

Taxonomic Class: Coarse-loamy, mixed, superactive, frigid Aridic Calciustepts

Typical Pedon

Kalsted sandy loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 7 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine pores; disseminated lime; strongly effervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bw—7 to 11 inches; very pale brown (10YR 7/3) sandy loam, brown (10YR 5/3) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine pores; 5 percent gravel; disseminated lime; strongly effervescent; slightly alkaline (pH 7.5); clear wavy boundary.

Bk1—11 to 30 inches; very pale brown (10YR 8/2) sandy loam, very pale brown (10YR 7/3) moist; weak coarse prismatic structure; hard, firm, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 5 percent gravel; disseminated lime; continuous distinct lime coats on surface of gravel; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk2—30 to 54 inches; pale brown (10YR 6/3) gravelly sandy loam, stratified with thin lenses of loamy sand, yellowish brown (10YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; 20 percent gravel; continuous distinct lime coats on surface of gravel; many fine and medium masses of lime; violently effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

BC—54 to 60 inches; pale brown (10YR 6/3) gravelly sandy loam, stratified with common thin lenses of loamy sand, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine vesicular pores; 20 percent gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.3).

Kamack Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Haplocryolls

Typical Pedon

Kamack gravelly loam (Colors are for moist soil unless otherwise noted.)

A1—0 to 1 inch; very dark brown (10YR 2/2) gravelly loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; loose, friable, slightly sticky and slightly

plastic; many fine and common medium roots; many very fine pores; slightly acid (pH 6.2); abrupt wavy boundary.

A2—1 to 6 inches; very dark grayish brown (10YR 3/2) gravelly loam, grayish brown (10YR 5/2) dry; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; few fine pores; 35 percent gravel; slightly acid (pH 6.1); clear smooth boundary.

A3—6 to 15 inches; dark brown (10YR 3/3) gravelly loam, brown (10YR 5/3) dry, moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common fine and medium roots; many fine pores; 20 percent gravel; slightly acid (pH 6.2); gradual smooth boundary.

Bw1—15 to 24 inches; strong brown (7.5YR 5/6) very gravelly loam, light brown (7.5YR 6/4) dry; moderate medium subangular blocky structure; hard, friable, slightly sticky and moderately plastic; many fine and common medium roots; common fine pores; 15 percent cobbles; 35 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bw2—24 to 44 inches; brown (7.5YR 4/4) very gravelly loam, light brown (7.5YR 6/4) dry; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine roots; few fine pores; 15 percent cobbles; 40 percent gravel; slightly acid (pH 6.4); gradual smooth boundary.

R—44 inches; fractured sandstone.

Kilgore Soil

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Cumulic Cryaquolls

Typical Pedon

Kilgore silt loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots and pores; few fine yellowish brown (10YR 5/6) iron concentrations; neutral (pH 7.2); clear smooth boundary.

A2—4 to 16 inches; dark gray (10YR 4/1) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure parting to moderate fine granular; soft, very friable, slightly sticky and moderately plastic; many fine roots and pores; few fine yellowish brown (10YR 5/6) iron concentrations; slightly alkaline (pH 7.4); clear smooth boundary.

Ag—16 to 25 inches; dark gray (10YR 4/1) silt loam, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; few fine roots; few fine yellowish brown (10YR 5/6) iron concentrations; slightly alkaline (pH 7.4); clear smooth boundary.

2Cg—25 to 29 inches; dark gray (10YR 4/1) very gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, friable, nonsticky and nonplastic; 5 percent cobbles; 25 percent gravel; common distinct medium yellowish brown (10YR 5/6) iron concentrations; neutral (pH 7.3); clear wavy boundary.

2C—29 to 60 inches; very gravelly loamy sand; single grain; loose; 15 percent cobbles; 40 percent gravel; neutral.

Kimpton Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs

Typical Pedon

Kimpton very cobbly loam, very bouldery (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; partially decomposed needles, twigs, and leaves.

A—1 to 5 inches; dark grayish brown (10YR 4/2) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine and few medium roots; many very fine and fine interstitial and tubular pores; 20 percent cobbles; 25 percent gravel; neutral (pH 6.6); clear wavy boundary.

E—5 to 7 inches; grayish brown (10YR 5/2) very cobbly loam, brown (10YR 4/3) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine and fine interstitial and tubular pores; 20 percent cobbles; 20 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt—7 to 14 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; common medium interstitial and tubular pores; common distinct very dark grayish brown (10YR 3/2) clay films on faces of peds and bridging sand grains; 20 percent cobbles; 25 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bk—14 to 33 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; 25 percent cobbles; 25 percent gravel; common fine and medium masses and threads of lime; common distinct lime coats on undersides of rock fragments; slightly alkaline (pH 7.8); clear smooth boundary.

R—33 inches; hard, fine-grained sandstone bedrock.

Klootch Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Typical Pedon

Klootch gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; slightly decomposed needles, leaves, and twigs.

Oe—1 to 1.5 inch; well-decomposed needles, leaves, and twigs.

A—1.5 to 6 inches; brown (10YR 5/3) gravelly sandy loam, dark brown (10YR 3/3) moist; moderate fine and medium granular structure; very soft, very friable, nonsticky and slightly plastic; common very fine and fine and few medium roots; common very fine and few fine tubular and interstitial pores; 30 percent gravel; slightly acid (pH 6.1); clear wavy boundary.

Bw1—6 to 12 inches; yellowish brown (10YR 5/6) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; common very fine interstitial pores; 10 percent cobbles; 30 percent gravel; slightly acid (pH 6.3); gradual wavy boundary.

Bw2—12 to 27 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, yellowish brown (10YR 5/6) moist; moderate medium and coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots;

common very fine interstitial pores; 10 percent cobbles; 50 percent gravel; slightly acid (pH 6.5); abrupt wavy boundary.

R—27 inches; hard fractured granite.

Kurrie Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Typical Pedon

Kurrie very cobbly sandy loam, very bouldery (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; partially decomposed needles, twigs, and leaves.

A—2 to 6 inches; brown (10YR 5/3) very cobbly sandy loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and fine pores; 20 percent cobbles; 15 percent gravel; neutral (pH 6.6); clear wavy boundary.

E—6 to 11 inches; light gray (2.5Y 7/2) very cobbly sandy loam, grayish brown (2.5Y 5/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium and coarse roots; many very fine and fine pores; 5 percent stones; 20 percent cobbles; 10 percent gravel; slightly acid (pH 6.1); clear wavy boundary.

E/Bt—11 to 25 inches; E part (80 percent) is light gray (2.5Y 7/2) very cobbly sandy loam, grayish brown (2.5Y 5/2) moist; B part (20 percent) is light yellowish brown (2.5Y 6/4) very cobbly sandy clay loam, olive brown (2.5Y 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine, medium, and coarse roots; many very fine and fine tubular and interstitial pores; many faint clay films bridging sand grains in B part; 5 percent stones; 30 percent cobbles; 10 percent gravel; slightly acid (pH 6.3); clear wavy boundary.

Bt—25 to 43 inches; light yellowish brown (2.5Y 6/4) very cobbly sandy clay loam, olive brown (2.5Y 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine and few fine, medium, and coarse roots; many very fine and few fine tubular pores; many faint clay films bridging sand grains; 30 percent cobbles; 10 percent gravel; slightly acid (pH 6.5); clear wavy boundary.

BC—43 to 48 inches; grayish brown (2.5Y 5/2) gravelly coarse sandy loam, dark grayish brown (2.5Y 4/2) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; many very fine and few fine tubular and interstitial pores; 20 percent gravel; neutral (pH 6.8); clear wavy boundary.

Cr—48 to 55 inches; light brownish gray (2.5Y 6/2) decomposed granite bedrock (grus) that crushes to gravelly coarse sand; neutral (pH 6.8).

R—55 inches; hard granite bedrock.

Leavitt Soil

Taxonomic Class: Fine-loamy, mixed, superactive Ustic Argicryolls

Typical Pedon

Leavitt silt loam (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; dark gray (10YR 4/1) silt loam, black (10YR 2/1) moist; strong medium granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine, fine, and medium roots; neutral (pH 7.0); clear smooth boundary.

Bt1—7 to 12 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; strong very fine subangular blocky structure; hard, very friable, moderately sticky and slightly plastic; many very fine, fine, and medium roots; many prominent clay films on faces of peds; 5 percent rounded gravel; neutral (pH 6.8); clear smooth boundary.

Bt2—12 to 29 inches; brown (7.5YR 5/2) clay loam, brown (7.5YR 4/2) moist; moderate medium subangular blocky structure; hard, very friable, moderately sticky and moderately plastic; common fine and medium roots; many prominent clay films on faces of peds and in pores; 5 percent rounded gravel; neutral (pH 6.8); gradual smooth boundary.

Btk—29 to 38 inches; light brown (7.5YR 6/3) clay loam, brown (7.5YR 5/3) moist; weak coarse subangular blocky structure; hard, friable, moderately sticky and moderately plastic; few fine and medium roots; common distinct clay films on faces of peds and in root channels and pores; slightly effervescent matrix; strongly effervescent near calcium carbonate masses and filaments; 10 percent rounded gravel; moderately alkaline (pH 8.0); gradual smooth boundary.

Bk—38 to 60 inches; light brown (7.5YR 6/3) loam, brown (7.5YR 5/3) moist; massive; hard, friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate as common soft masses and thin pendants on rock fragments; 10 percent rounded gravel; moderately alkaline (pH 8.2).

Ledgefork Soil

Taxonomic Class: Sandy-skeletal, mixed Typic Haplocryolls

Typical Pedon

Ledgefork gravelly loamy fine sand (Colors are for moist soil unless otherwise noted.)

A1—0 to 7 inches; black (10YR 2/1) very gravelly loamy fine sand, very dark gray (10YR 3/1) dry; weak very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and medium roots; few fine pores; neutral (pH 6.7); clear smooth boundary.

A2—7 to 13 inches; very dark brown (10YR 2/2) very gravelly loamy fine sand, dark grayish brown (10YR 4/2) dry; very weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and medium roots; neutral (pH 6.6); gradual wavy boundary.

C1—13 to 31 inches; brown (7.5YR 4/4) extremely gravelly loamy fine sand, light brown (7.5YR 6/4) dry; massive parting to single grain; loose, friable, nonsticky and nonplastic; many fine, medium, and coarse roots; slightly acid (pH 6.5); abrupt wavy boundary.

C2—31 to 60 inches; brown (7.5YR 5/4) extremely cobbly fine sand; brown (7.5YR 5/4) dry; massive parting to single grain; slightly hard and hard, very friable, nonsticky and nonplastic; few fine and medium roots; neutral (pH 6.6).

Lehunt Soil

Taxonomic Class: Fine-loamy, mixed, superactive Oxyaquic Haplocryalfs

Typical Pedon

Lehunt fine sandy loam and pasture (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; dark grayish brown (10YR 4/2), fine sandy loam, very dark brown (10YR 2/2) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine dendritic tubular pores; moderately alkaline (pH 8.2); abrupt smooth boundary.

E—3 to 7 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; moderate very coarse angular blocky structure; hard, friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and common fine dendritic tubular pores; very strongly alkaline (pH 9.8); abrupt smooth boundary.

Btn—7 to 11 inches; brown (10YR 5/3) sandy clay, dark brown (10YR 3/3) moist; strong medium and coarse columnar structure; extremely hard, firm, moderately sticky and moderately plastic; common very fine roots; common very fine and few fine dendritic tubular pores; very many continuous prominent very dark gray (10YR 3/1) clay films on faces of peds; very strongly alkaline (pH 10.0); clear smooth boundary.

Btkn—11 to 15 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; moderate very coarse prismatic structure; extremely hard, firm, very sticky and very plastic; few very fine roots; common very fine and few fine dendritic tubular pores; many continuous distinct clay films on faces of peds; strongly effervescent; disseminated lime and many fine and medium patchy soft masses and threads of lime; very strongly alkaline (pH 10.3); clear wavy boundary.

BCn1—15 to 32 inches; pale brown (10YR 6/3) sandy loam, yellowish brown (10YR 5/4) moist; weak very coarse and coarse prismatic structure; hard, friable, slightly sticky and nonplastic; few very fine roots; common very fine dendritic tubular pores; slightly effervescent; very strongly alkaline (pH 10.3); clear wavy boundary.

BCn2—32 to 40 inches; light yellowish brown (10YR 6/4) sandy clay loam, brown (10YR 5/3) moist; weak medium and coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine roots; few very fine dendritic tubular pores; few medium prominent irregular, strong brown (7.5YR 5/6) masses of oxidized iron; very strongly alkaline (pH 9.8); clear wavy boundary.

2C—40 to 60 inches; pale brown (10YR 6/3) extremely gravelly sand, grayish brown (10YR 5/2) moist; single grain; loose, nonsticky and nonplastic; 65 percent gravel; slightly alkaline (pH 7.5).

Leighcan Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Typical Pedon

Leighcan very stony sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; forest duff.

E—1 to 8 inches; light brownish gray (10YR 6/2) very stony sandy loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many medium and coarse and few fine roots; 10 percent boulders and stones; 15 percent cobbles; 25 percent gneiss gravel; strongly acid (pH 5.3); clear smooth boundary.

Bw1—8 to 46 inches; pale brown (10YR 6/3) very stony sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many medium and coarse and few fine roots; 10 percent boulders and stones; 15 percent cobbles; 25 percent gneiss gravel; moderately acid (pH 5.6); gradual wavy boundary.

Bw2—46 to 61 inches; light yellowish brown (10YR 6/4) very stony sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky

and nonplastic; few prominent redox concentrations and few distinct redox depletions; rock fragments have some remnant patches of reddish brown clay coats; 10 percent boulders and stones; 15 percent cobbles; 25 percent gneiss gravel; moderately acid (pH 5.6).

Levengood Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Calcic Pachic Haplocryolls

Typical Pedon

Levengood gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 6 inches; very dark grayish brown (10YR 3/2) gravelly loam, black (10YR 2/1) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine interstitial pores; 5 percent cobbles; 20 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bw—6 to 12 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine tubular pores; 5 percent cobbles; 30 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bk1—12 to 19 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine pores; 10 percent cobbles; 35 percent gravel; disseminated lime; few fine masses of lime; strongly effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.

Bk2—19 to 30 inches; pale yellow (2.5Y 7/4) very gravelly fine sandy loam, light yellowish brown (2.5Y 6/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; 10 percent cobbles; 35 percent gravel; disseminated lime; few fine masses of lime; violently effervescent; moderately alkaline (pH 8.2); gradual smooth boundary.

Bk3—30 to 60 inches; very pale brown (10YR 7/4) very cobbly loam, light yellowish brown (10YR 6/4) moist; weak coarse prismatic structure; soft, very friable, nonsticky and nonplastic; few very fine roots; 25 percent cobbles; 20 percent gravel; disseminated lime; few fine masses of lime; violently effervescent; moderately alkaline (pH 8.0).

Libeg Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Typical Pedon

Libeg stony loam (Colors are for dry soil unless otherwise noted.)

A—0 to 6 inches; dark grayish brown (10YR 4/2) stony loam, black (10YR 2/1) moist; weak thin platy structure parting to moderate very fine and fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine and fine pores; 25 percent sandstone fragments; slightly acid (pH 6.4); clear wavy boundary.

Bt1—6 to 11 inches; brown (10YR 5/3) very channery loam, dark brown (10YR 3/3) moist; strong very fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine and fine roots; many very fine and fine pores; pale brown (10YR 6/3) fine sand coats on some faces of peds; faint clay

films on faces of some peds and on rock fragments; 35 percent channery sandstone fragments; slightly acid (pH 6.5); clear wavy boundary.

Bt2—11 to 16 inches; brown (7.5YR 5/4) very channery clay loam, brown (7.5YR 4/4) moist; strong very fine and fine angular blocky structure; very hard, friable, moderately sticky and moderately plastic; many very fine and fine roots; many very fine and fine pores; pale brown (10YR 6/3) fine sand coats on vertical faces of peds; faint clay films on faces of some peds and on rock fragments; 40 percent sandstone fragments; slightly acid (pH 6.5); clear wavy boundary.

Bt3—16 to 30 inches; reddish brown (5YR 5/4) very channery sandy clay loam, reddish brown (5YR 4/4) moist; strong fine and medium angular blocky structure; extremely hard, friable, moderately sticky and moderately plastic; common very fine and fine and few coarse roots; many very fine and fine and few medium pores; distinct continuous clay films on all faces of peds and on rock fragments; 60 percent channers; slightly acid (pH 6.2); gradual irregular boundary.

BC—30 to 60 inches; light reddish brown (5YR 6/4) very stony sandy loam, yellowish red (5YR 5/6) moist; weak fine and medium subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; common very fine and fine pores; 50 percent stones; 30 percent angular gravel; 80 percent sandstone fragments; slightly acid (pH 6.5).

Lilylake Soil

Taxonomic Class: Sandy-skeletal, mixed Histic Cryaquepts

Typical Pedon

Lilylake muck (Colors are for moist soil unless otherwise noted.)

Oa1—0 to 3 inches; black (10YR 2/1) on broken face and rubbed, muck; about 25 percent fibers, about 5 percent after rubbing; weak medium granular structure; many very fine and fine and few coarse roots; slightly acid (pH 6.2); clear smooth boundary.

Oa2—3 to 9 inches; very dark brown (10YR 2/2) on broken face and rubbed, muck; about 30 percent fibers, about 10 percent after rubbing; massive; many very fine and fine and few coarse roots; moderately acid (pH 6.0); clear wavy boundary.

Oa3—9 to 12 inches; very dark brown (10YR 2/2) on broken face and black (10YR 2/1) rubbed, muck; about 40 percent fibers, about 5 percent after rubbing; massive; many very fine and few coarse roots; moderately acid (pH 6.0); clear wavy boundary.

2C1—12 to 15 inches; dark grayish brown (2.5Y 4/2) sand, brown (10YR 5/3) dry; common fine and medium prominent brown (7.5YR 4/4) and strong brown (7.5YR 4/6) redox concentrations; single grain; loose; many very fine and fine irregular pores; 5 percent gravel; slightly acid (pH 6.4); abrupt wavy boundary.

2C2—15 to 60 inches; dark grayish brown (2.5Y 4/2) extremely gravelly coarse sand, light brownish gray (2.5Y 6/2) dry; many coarse prominent brown (7.5YR 4/4) and strong brown (7.5YR 4/6) redox concentrations; single grain; loose; many fine and medium irregular pores; 1 percent stones; 25 percent cobbles; 50 percent gravel; slightly acid (pH 6.4).

Littlesalmon Soil

Taxonomic Class: Sandy-skeletal, mixed Andic Haplocryepts

Typical Pedon

Littlesalmon ashy loam (Colors are for dry soil unless otherwise noted.)

Oe—0 to 2 inches; slightly decomposed cones, twigs, needles, and leaves.

Oa—2 to 3 inches; highly decomposed Oe horizon material.

A1—3 to 7 inches; grayish brown (10YR 5/2) ashy loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; many very fine irregular pores; slightly acid (pH 6.4); clear smooth boundary.

A2—7 to 16 inches; brown (10YR 5/3) ashy loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; many very fine irregular pores; 1 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

2Bw—16 to 23 inches; pale brown (10YR 6/3) cobbly sandy loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and few coarse roots; many fine tubular pores; 15 percent cobbles; 15 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

2BC—23 to 31 inches; pale brown (10YR 6/3) very cobbly loamy coarse sand, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; many medium irregular pores; 30 percent cobbles; 20 percent gravel; neutral (pH 6.6); abrupt wavy boundary.

2Cl—31 to 43 inches; grayish brown (10YR 5/2) and light gray (10YR 7/2) extremely cobbly loamy coarse sand, dark grayish brown (10YR 4/2) and light brownish gray (10YR 6/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and few coarse roots; many medium irregular pores; 90 percent cobbles; slightly acid (pH 6.2); clear wavy boundary.

2C2—43 to 63 inches; similar to 2Cl except colors of grayish brown (10YR 5/2) and very pale brown (10YR 8/3) dry and dark grayish brown (10YR 4/2) and brown (10YR 5/3) moist.

2Cr—63 inches; highly weathered granite.

Loberg Soil

Taxonomic Class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs

Typical Pedon

Loberg stony clay loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; forest litter and humus.

E—2 to 5 inches; light brownish gray (10YR 6/2) stony clay loam, dark brown (7.5YR 3/2) moist; weak thick platy structure parting to moderate fine granular; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; sand grains are clear and unstained; 0.05 percent stones on surface; 10 percent cobbles; 15 percent gravel; strongly acid (pH 5.1); clear wavy boundary.

E/Bt—5 to 14 inches; E part (75 percent) light brownish gray (10YR 6/2) stony loam, dark brown (7.5YR 3/3) moist, tongues; Bt part (25 percent) pale brown (10YR 6/3) stony clay, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure parting to moderate fine granular; hard, friable, slightly sticky and slightly plastic; many fine roots; continuous distinct clay films on faces

of peds that are coated with clear unstained sand grains; 10 percent stones; 5 percent cobbles; 15 percent gravel; strongly acid (pH 5.2); clear wavy boundary.

Bt1—14 to 29 inches; pale brown (10YR 6/3) very stony clay, dark brown (10YR 3/3) moist; strong fine and medium blocky structure; very hard, firm, very sticky and very plastic; continuous prominent clay films on faces of peds; continuous prominent clay films on surfaces of gravel; common fine roots; 10 percent stones; 10 percent cobbles; 20 percent gravel; moderately acid (pH 5.6); gradual smooth boundary.

Bt2—29 to 51 inches; pale brown (10YR 6/3) very stony clay, dark brown (10YR 3/3) moist; strong fine and medium blocky structure parting to moderate medium blocky in lower part; very hard, firm, very sticky and very plastic; common fine roots; continuous prominent clay films on faces of peds; continuous prominent clay films on surface of gravel; 10 percent stones; 10 percent cobbles; 20 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

Bt3—51 to 68 inches; grayish brown (10YR 5/2) stony clay, dark grayish brown (10YR 4/2) moist; very weak fine and medium blocky structure; very hard, firm, very sticky and very plastic; common fine roots; common faint clay films on faces of peds; common distinct clay films on surface of gravel; 10 percent stones; 15 percent cobbles; 25 percent gravel; slightly alkaline (pH 7.4); abrupt smooth boundary.

BC—68 to 72 inches; grayish brown (10YR 5/2) stony clay, very dark grayish brown (10YR 3/2) moist; massive; very hard, firm, very sticky and very plastic; continuous faint clay films on surfaces of gravel; 10 percent stones; 5 percent cobbles; 25 percent gravel; few fine pores; slightly alkaline (pH 7.8).

Lolon Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Typical Pedon

Lolon loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 8 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate fine and medium crumb structure; slightly hard, friable, nonsticky and nonplastic; many very fine roots and interstitial pores; neutral (pH 7.0); clear smooth boundary.

A2—8 to 17 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; brown (10YR 4/3) coats on peds, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots and tubular pores; 25 percent gravel; neutral (pH 7.0); clear wavy boundary.

C1—17 to 28 inches; brown (10YR 5/3) very gravelly loam, dark grayish brown (10YR 4/2) moist; grayish brown (10YR 5/2) coats on peds, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine roots and interstitial pores; 50 percent gravel; neutral (pH 7.0); gradual irregular boundary.

IIC2—28 to 40 inches; loose sand, gravel, and some cobbles.

Lowder Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts

Typical Pedon

Lowder very cobbly loam, very bouldery (Colors are for moist soil unless otherwise noted.)

Oe—0 to 2 inches; very dark brown (10YR 2/2) cobbly mucky-peat, very dark gray (10YR 3/1) dry; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; 5 percent cobbles; 10 percent gravel; moderately acid (pH 6.0); abrupt smooth boundary.

A—2 to 4 inches; black (10YR 2/1) cobbly mucky-loam, dark gray (10YR 4/1) dry; weak medium subangular blocky structure; many very fine and fine and common medium roots; many very fine and fine interstitial pores; 5 percent cobbles; 10 percent gravel; slightly acid (pH 6.2); abrupt smooth boundary.

Bg1—4 to 9 inches; very dark grayish brown (10YR 3/2) very cobbly sandy clay loam, grayish brown (10YR 5/2) dry; common medium faint dark gray (5Y 4/1) redox depletions; moderate medium subangular blocky structure; hard, friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 20 percent cobbles; 25 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

Bg2—9 to 14 inches; dark grayish brown (10YR 4/2) very cobbly sandy clay loam, light brownish gray (10YR 6/2) dry; common medium faint dark gray (5Y 4/1) redox depletions and few fine faint reddish yellow (7.5YR 6/6) redox concentrations; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine and few coarse roots; many very fine and fine interstitial pores; 25 percent cobbles; 20 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

Bg3—14 to 23 inches; dark grayish brown (2.5Y 4/2) very cobbly coarse sandy loam, light brownish gray (10YR 6/2) dry; common fine distinct reddish yellow (7.5YR 6/6) redox concentrations and few medium faint very dark gray (5Y 3/1) redox depletions; massive; hard, firm, slightly sticky and slightly plastic; common very fine and fine and few coarse roots; many very fine and fine tubular pores; 20 percent cobbles; 25 percent gravel; slightly acid (pH 6.4); gradual irregular boundary.

Bg4—23 to 35 inches; dark brown (10YR 3/3) very gravelly sandy clay loam, light olive brown (2.5Y 5/4) dry; common distinct very dark gray (5Y 3/1) redox depletions, many distinct strong brown (7.5YR 5/8) redox concentrations; massive; hard, firm, slightly sticky and slightly plastic; few very fine, fine, and medium roots; 15 percent cobbles; 35 percent gravel; slightly acid (pH 6.4); gradual irregular boundary.

BCg—35 to 60 inches; brown (10YR 4/3) very gravelly sandy clay loam, light olive brown (2.5Y 5/4) dry; common medium distinct very dark gray (5Y 3/1) redox depletions, few fine distinct strong brown (7.5YR 5/8) redox concentrations; massive; very hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; 15 percent cobbles; 40 percent gravel; neutral (pH 6.6).

Macabre Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Vitrandic Argiustolls

Typical Pedon

Macabre very cobbly ashy sandy clay loam (Colors are for dry soil unless otherwise noted.)

A—0 to 9 inches; gray (10YR 5/1) very cobbly ashy sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; 15 percent cobbles; 25 percent gravel; slightly alkaline (pH 7.4); clear wavy boundary.

Bt—9 to 17 inches; grayish brown (2.5Y 5/2) very cobbly ashy sandy clay loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; many medium tubular pores; common distinct clay films on faces of peds; 15 percent cobbles; 25 percent gravel; slightly alkaline (pH 7.6); gradual wavy boundary.

BC—17 to 27 inches; light brownish gray (2.5Y 6/2) very cobbly ashy sandy clay loam, light olive brown (2.5Y 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; common medium tubular pores; 20 percent cobbles; 25 percent gravel; slightly alkaline (pH 7.8); gradual irregular boundary.

Cr—27 to 41 inches; light gray (N 7/) decomposing welded tuff bedrock.

R—41 inches; fractured hard welded tuff bedrock.

MacFarlane Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Typical Pedon

MacFarlane extremely stony sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 3 inches; undecomposed organic material, mainly bark, twigs, and needles.

Oe—3 to 4 inches; decomposed organic material like that of the horizon above.

A—4 to 6 inches; dark grayish brown (10YR 4/2) extremely stony loam, very dark brown (10YR 2/2) moist; strong fine crumb structure; soft, very friable, slightly sticky and slightly plastic; 40 percent stones; neutral (pH 6.6); clear smooth boundary.

E—6 to 16 inches; very pale brown (10YR 7/3) very stony sandy loam, brown (10YR 5/3) moist; weak medium platy structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; 25 percent stones; neutral (pH 6.6); gradual wavy boundary.

E/B—16 to 22 inches; mixed colors including very pale brown (10YR 7/3) and yellowish brown (10YR 5/4) very stony sandy loam, brown (10YR 5/3) moist and dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure parting to moderate fine granular; slightly hard, very friable, nonsticky and nonplastic; this horizon consists of seams and nodules of more clayey material like that of the underlying horizon embedded in a light-colored matrix like that of the overlying horizon; few faint clay films on some faces of peds; 25 percent stones; neutral (pH 6.6); gradual wavy boundary.

Bt—22 to 40 inches; yellowish brown (10YR 5/4) extremely stony sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; faint clay films on some faces of peds, sand grains, bridges between sand grains, and the insides of root channels and pores; 60 percent stones; neutral (pH 6.8); gradual wavy boundary.

BC—40 to 44 inches; yellowish brown (10YR 5/4) extremely stony sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few faint clay films on rock

fragments and clay bridges between sand grains; 60 percent stones; neutral (pH 6.8); diffuse wavy boundary.

C—44 to 60 inches; pale brown (10YR 6/3) extremely stony sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; 65 percent stones; neutral (pH 7.0).

Maciver Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Calcic Argicryolls

Typical Pedon

Maciver loam (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; few very fine and fine tubular pores; 10 percent gravel; neutral (pH 7.2); gradual wavy boundary.

Bt—7 to 11 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine and fine roots; few very fine and fine tubular pores; few faint clay films on faces of peds; 5 percent cobbles; 35 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bk1—11 to 23 inches; pale yellow (2.5Y 7/4) very gravelly clay loam, light olive brown (2.5Y 5/4) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and moderately plastic; many very fine and fine roots; few very fine and fine tubular pores; 5 percent cobbles; 35 percent gravel; many medium segregated masses of lime; violently effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

Bk2—23 to 30 inches; light yellowish brown (2.5Y 6/4) very gravely clay loam, light olive brown (2.5Y 5/4) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; few very fine and fine tubular pores; 10 percent cobbles; 35 percent gravel; many medium segregated masses of lime; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk3—30 to 60 inches; pale brown (10YR 6/3) very gravely loam, yellowish brown (10YR 5/4) moist; weak coarse prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; few very fine and fine tubular pores; 15 percent cobbles; 40 percent gravel; many medium segregated masses of lime; violently effervescent; moderately alkaline (pH 8.2).

Madbeaver Soil

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Aridic Calciustepts

Typical Pedon

Madbeaver silt loam (Colors are for dry soil unless otherwise noted.)

A—0 to 9 inches; gray (10YR 6/1) silt loam, dark gray (10YR 4/1) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and common fine interstitial pores; disseminated lime; violently effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

Bk1—9 to 25 inches; very pale brown (10YR 8/2) silt loam, pale brown (10YR 6/3) moist; weak medium prismatic structure parting to moderate fine and medium

subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine and few fine interstitial pores; common threads and masses of lime; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

Bk2—25 to 33 inches; light gray (10YR 7/2) loam, light brownish gray (10YR 6/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine interstitial pores; few fine prominent strong brown (7.5YR 5/6) redox concentrations; common threads and masses of lime; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

C—33 to 48 inches; light gray (2.5Y 7/2) fine sandy loam, light brownish gray (2.5Y 6/2) moist; massive; soft, very friable, slightly sticky and nonplastic; few very fine roots and interstitial pores; common fine, medium, and coarse prominent strong brown (7.5YR 5/6) redox concentrations; disseminated lime; violently effervescent; moderately alkaline (pH 8.3); abrupt smooth boundary.

2Cg—48 to 60 inches; pale yellow (5Y 8/2) extremely gravelly loamy sand, light olive gray (5Y 6/2) moist; single grain; loose, nonsticky and nonplastic; 15 percent cobbles; 50 percent gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.4).

Mannixlee Soil

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Cumulic Endoaquolls

Typical Pedon

Mannixlee clay loam (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 inches; partially decomposed organic matter.

A1—2 to 9 inches; very dark gray (10YR 3/1) clay loam, dark gray (10YR 4/1) dry; common medium distinct dark brown (7.5YR 4/4) redox concentrations; moderate medium granular structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular and discontinuous irregular pores; neutral (pH 7.2); gradual smooth boundary.

A2—9 to 16 inches; very dark gray (10YR 3/1) clay loam, dark gray (10YR 4/1) dry; moderate medium subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine discontinuous irregular and common very fine tubular pores; neutral (pH 7.2); gradual smooth boundary.

A3—16 to 25 inches; very dark gray (10YR 3/1) loam, dark gray (10YR 4/1) dry; common medium distinct dark brown (7.5YR 4/4) redox concentrations; moderate medium subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few fine tubular and few very fine and fine discontinuous irregular pores; neutral; (pH 7.2); gradual smooth boundary.

Bw—25 to 45 inches; very dark gray (10YR 3/1) loam, dark gray (10YR 4/1) dry; many medium distinct dark brown (7.5YR 4/4) redox concentrations; weak medium subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine discontinuous irregular and few fine tubular pores; neutral (pH 6.6); abrupt smooth boundary.

2Cg—45 to 60 inches; grayish brown (10YR 5/2) extremely cobbly loamy coarse sand, light brownish gray (10YR 6/2) dry; single grain; loose, nonsticky and nonplastic; 35 percent cobbles; 30 percent gravel; neutral (pH 7.2).

Marcetta Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Typical Pedon

Marcetta gravelly loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 10 inches; dark gray (7.5YR 4/1) gravelly loam, black (7.5YR 2/1) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial pores; 30 percent gravel; neutral; gradual smooth boundary.

A2—10 to 17 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores; 30 percent gravel; neutral; gradual smooth boundary.

A3—17 to 25 inches; brown (10YR 5/3) very gravelly loam, dark brown with streaks of very dark brown (10YR 3/3 and 10YR 2/2) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common fine tubular pores; 40 percent gravel; neutral; gradual smooth boundary.

E—25 to 33 inches; light gray (10YR 7/2) very gravelly loam, brown (7.5YR 4/2) moist; weak coarse subangular blocky structure; common fine pores; slightly hard, friable, nonsticky and nonplastic; common very fine roots; common fine tubular pores; 50 percent gravel; neutral; gradual wavy boundary.

E/B—33 to 48 inches; light gray (10YR 7/2) and very pale brown (10YR 7/3) very gravelly loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; sand grains clear and unstained with few patches of clay film and clay flow; few very fine roots; common fine tubular pores; 55 percent gravel; neutral; gradual wavy boundary.

C—48 to 70 inches; light gray (10YR 7/2) extremely gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; 65 percent coarse fragments including angular fragments ranging from stone to gravel size; neutral.

Marias Soil

Taxonomic Class: Fine, smectitic, frigid Aridic Haplusterts

Typical Pedon

Marias clay (Colors are for dry soil unless otherwise noted.)

Ap—0 to 6 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; strong very fine granular structure; hard, friable, very sticky and very plastic; common fine roots; after a rain a thin weak crust consisting of adhering soil granules forms on the soil surface; slightly effervescent; moderately alkaline (pH 7.9); abrupt smooth boundary.

Bw—6 to 11 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; strong coarse angular blocky structure parting to moderate very fine angular blocky; very hard, firm, very sticky and very plastic; common fine roots; common fine tubular pores; dark grayish brown (2.5Y 4/2) organic coats on faces of peds; slightly effervescent; moderately alkaline (pH 8.0); gradual smooth boundary.

Bss—11 to 27 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; strong coarse angular blocky structure parting to moderate very fine angular blocky; very hard, firm, very sticky and very plastic; few fine roots; common very fine tubular pores; common slickensides with intersecting surfaces 20 to 40

degrees from horizontal; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bssy—27 to 60 inches, gray (5Y 5/1) clay, very dark gray (5Y 3/1) moist; moderate very coarse prismatic structure parting to moderate very fine granular; very hard, firm, very sticky and very plastic; thick slickensides on faces of prisms; many large (1 inch diameter) masses and threads of gypsum crystals; slightly effervescent; moderately alkaline (pH 8.0).

Mariel Soil

Taxonomic Class: Euic Typic Cryohemists

Typical Pedon

Mariel peat (Colors are for moist soil unless otherwise noted.)

Oe1—0 to 7 inches; black (10YR 2/1) rubbed and pressed hemic material; about 100 percent unrubbed fibers, 40 percent rubbed; many very fine, fine, and medium roots; strongly acid (pH 5.4); gradual smooth boundary.

Oe2—7 to 14 inches; very dark brown (10YR 2/2) rubbed and pressed hemic material; about 90 percent unrubbed fibers; 30 percent rubbed; many very fine and fine roots; strongly acid (pH 5.4); clear wavy boundary.

Oe3—14 to 34 inches; very dark gray (10YR 3/1) rubbed and pressed hemic material; about 60 percent unrubbed fibers, 25 percent rubbed; many very fine roots; strongly acid (pH 5.4); clear smooth boundary.

Oa—34 to 60 inches; very dark brown (10YR 2/2) rubbed and pressed sapric material; about 40 percent unrubbed fibers, 10 percent rubbed; many very fine roots; strongly acid (pH 5.2).

Matcher Soil

Taxonomic Class: Sandy-skeletal, mixed Humic Dystrocryepts

Typical Pedon

Matcher stony sandy loam (Colors are for dry soil unless otherwise noted.)

O1—0 to 2 inches; undecomposed organic material, mainly needles, bark, and twigs.

O2—2 to 3 inches; partially decomposed organic material.

A1—3 to 12 inches; grayish brown (10YR 5/2) stony sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine crumb structure; soft, very friable, nonsticky and slightly plastic; 20 percent stones; slightly acid; abrupt smooth boundary.

B21—12 to 16 inches; reddish gray (5YR 5/2) very stony sandy loam, dark reddish brown (5YR 3/2) moist; moderate fine crumb structure; slightly hard, very friable, nonsticky and slightly plastic; 60 percent stones; moderately acid; clear smooth boundary.

B22—16 to 21 inches; reddish brown (5YR 5/4) very stony sandy loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure parting to strong very fine subangular blocky; slightly hard, very friable, nonsticky and slightly plastic; 60 percent stones; moderately acid; clear smooth boundary.

B3—21 to 25 inches; yellowish brown (10YR 5/4) very stony loamy sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; 60 percent stones; slightly acid; clear smooth boundary.

C—25 to 60 inches; light olive brown (2.5Y 5/4) very stony sand, olive brown (2.5Y 4/4) moist; single grain; loose, nonsticky and nonplastic; 60 percent stones and cobbles; slightly acid.

Maurice Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Typical Pedon

Maurice stony loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; dark grayish brown (10YR 4/2) stony loam, very dark grayish brown (10YR 3/2) moist; very dark gray (10YR 3/1) moist coats; moderate fine granular structure; soft, friable, nonsticky and nonplastic; many very fine and fine roots; 0.05 percent stones on surface; 5 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—3 to 13 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; black (10YR 2/1) coats, moist; weak medium prisms parting to moderate fine and medium blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; 10 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bw1—13 to 24 inches; brown (10YR 4/3) very gravelly fine sandy loam, brown (10YR 4/3) moist; weak medium prismatic structure; slightly hard, friable, nonsticky and nonplastic; common very fine roots; 10 percent cobbles; 30 percent gravel; moderately alkaline (pH 8.2); gradual wavy boundary.

Bw2—24 to 60 inches; light brownish gray (10YR 6/2) very gravelly fine sandy loam, grayish brown (10YR 5/2) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; 10 percent cobbles; 40 percent gravel; slightly alkaline (pH 7.8).

Mawspring Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryepts

Typical Pedon

Mawspring very channery loam (Colors are for dry soil unless otherwise noted.)

A—0 to 6 inches; dark grayish brown (10YR 4/2) very channery loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; many fine irregular pores; 35 percent channers; slightly acid (pH 6.4); clear smooth boundary.

Bw—6 to 13 inches; light yellowish brown (10YR 6/4) very channery loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; 45 percent channers; neutral (pH 6.6); gradual wavy boundary.

BC—13 to 33 inches; light yellowish brown (10YR 6/4) extremely channery loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common fine irregular pores; 65 percent channers; neutral (pH 6.6); gradual irregular boundary.

C—33 to 60 inches; light olive brown (2.5Y 5/4) extremely channery sandy loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common fine irregular pores; 65 percent channers; neutral (pH 6.6).

Maxville Soil

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Ustic Haplocryolls

Typical Pedon

Maxville gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 11 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; 15 percent gravel; neutral (pH 6.9); clear wavy boundary.

Bw—11 to 19 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; weak medium prismatic structure parting to weak medium subangular blocky; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; 10 percent gravel; neutral (pH 7.2); abrupt wavy boundary.

Bk1—19 to 28 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; 10 percent gravel; lime coats on gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk2—28 to 34 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; 25 percent gravel; lime coats on gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

2C—34 to 60 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few fine and medium roots; 5 percent cobbles; 50 percent gravel; strongly effervescent; slightly alkaline (pH 7.5).

Maybee Soil

Taxonomic Class: Loamy-skeletal over sandy or sandy-skeletal, mixed, superactive Oxyaquic Argicryolls

Typical Pedon

Maybee silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and partially decomposed matted roots; abrupt smooth boundary.

A1—2 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; few fine faint strong brown (7.5YR 4/6) moist, redox concentrations due to prolonged saturation from flood irrigation; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 10 percent gravel; neutral (pH 6.7); clear wavy boundary.

A2—7 to 12 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; few fine faint strong brown (7.5YR 4/6) moist, redox concentrations due to prolonged saturation from flood irrigation; weak very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine and fine dendritic tubular pores; 20 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt1—12 to 21 inches; pale brown (10YR 6/3) very gravelly clay loam, brown (10YR 4/3) moist; few fine faint strong brown (7.5YR 4/6) moist, redox concentrations due to prolonged saturation from flood irrigation; moderate fine and medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; common distinct patchy clay films on faces of peds; 10 percent cobbles; 35 percent gravel; neutral (pH 6.7); clear wavy boundary.

Bt2—21 to 27 inches; light yellowish brown (10YR 6/4) very cobbly sandy clay loam, yellowish brown (10YR 5/4) moist; few fine faint strong brown (7.5YR 4/6) moist, redox concentrations (due to prolonged saturation from flood irrigation); moderate fine and medium subangular blocky structure; moderately hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and few fine dendritic tubular pores; common faint patchy clay films between sand grains and few faint patchy clay films on faces of peds; 35 percent gravel, 20 percent cobbles; neutral (pH 6.8); clear wavy boundary. (Combined thickness of the Bt horizons is 12 to 24 inches.)

2C—27 to 60 inches; light yellowish brown (2.5Y 6/4) very cobbly loamy sand, light olive brown (2.5Y 5/4) moist; few fine faint strong brown (7.5YR 4/6) moist, redox concentrations due to prolonged saturation from flood irrigation; single grain; loose, nonsticky and nonplastic; 20 percent cobbles; 35 percent gravel; neutral (pH 7.2).

Meadowcreek Soil

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Fluvaquentic Haplustolls

Typical Pedon

Meadowcreek loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 5 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine roots; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

A2—5 to 10 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to weak fine and medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; common very fine roots; many fine tubular and interstitial pores; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

A3—10 to 15 inches; gray (10YR 5/1) silt loam, very dark gray (10YR 3/1) moist; weak medium prismatic structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine roots; many very fine tubular and interstitial pores; slightly alkaline (pH 7.4); clear smooth boundary.

Bg1—15 to 27 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; few fine distinct brown (7.5YR 5/3) moist, redox concentrations; weak coarse prismatic structure; few thin very dark grayish brown (10YR 3/2) moist layers of soils; slightly hard, friable, moderately sticky and slightly plastic; common very fine roots; many very fine tubular and interstitial pores; neutral (pH 7.0); gradual smooth boundary.

Bg2—27 to 31 inches; gray (10YR 6/1) sandy loam, dark grayish brown (10YR 4/2) moist; common fine distinct brown (7.5YR 5/4) moist, redox concentrations; weak coarse prismatic structure; slightly hard, friable, nonsticky and moderately plastic; common very fine roots; many very fine tubular and interstitial pores; few gravel; neutral (pH 7.2); clear smooth boundary.

2C—31 to 60 inches; variegated colors, very gravelly sand; single grain; loose, nonsticky and nonplastic; few very fine roots; 55 percent gravel; neutral (pH 7.2).

Midfork Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Haplocryolls

Typical Pedon

Midfork very stony loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches; brown (7.5YR 5/2) very stony loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine, medium, and coarse roots; 10 percent stones; 10 percent cobbles; 20 percent limestone and dolomite gravel; slightly alkaline (pH 7.7); clear wavy boundary.

A2—4 to 10 inches; brown (7.5YR 5/2) very stony loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure parting to weak fine and medium granular; soft, very friable, slightly sticky and slightly plastic; many medium and coarse and common fine roots; 10 percent stones; 10 percent cobbles; 20 percent limestone and dolomite gravel; slightly alkaline (pH 7.7); gradual wavy boundary.

C1—10 to 15 inches; brown (7.5YR 5/3) very cobbly loam, brown (7.5YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many medium and coarse and common fine roots; 10 percent stones; 20 percent cobbles; 20 percent limestone and dolomite gravel; slightly alkaline (pH 7.7); gradual wavy boundary.

C2—15 to 60 inches; light brownish gray (10YR 6/2) very cobbly loam, grayish brown (10YR 5/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few fine and medium roots; strongly effervescent; lime disseminated; 10 percent stones; 20 percent cobbles; 20 percent limestone and dolomite gravel; moderately alkaline (pH 8.0).

Mikesell Soil

Taxonomic Class: Fine, smectitic Eutric Haplocryalfs

Typical Pedon

Mikesell stony silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 0.5 inch; undecomposed needles, cones, twigs, and leaves; moderately acid (pH 6.0 chlorphenol red); abrupt wavy boundary.

Oe—0.5 to 1 inch; dark grayish brown (10YR 4/2) partially decomposed needles, twigs, leaves, and cones, very dark brown (10YR 2/2) moist; slightly matted; abrupt wavy boundary.

Oa—1 to 1.5 inches; dark gray (10YR 4/1) decomposed organic matter, black (10YR 2/1) moist; strongly acid (pH 5.3); abrupt wavy boundary.

E1—1.5 to 5 inches; light brownish gray (10YR 6/2) stony silt loam, grayish brown (10YR 5/2) moist; weak thick platy structure parting to weak very fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; common very fine tubular pores; common fine rounded iron and manganese concretions; 10 percent stones; 10 percent gravel; moderately acid (pH 5.6); abrupt smooth boundary.

E2—5 to 12 inches; light brownish gray (10YR 6/2) stony silt loam, dark grayish brown (10YR 4/2) moist; weak coarse and very coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and

fine and few medium, coarse, and very coarse roots; common very fine tubular pores; few fine rounded iron and manganese concretions; 10 percent stones; 10 percent gravel; moderately acid (pH 5.7); abrupt irregular boundary.

B/E—12 to 16 inches; 90 percent light yellowish brown (10YR 6/4) cobbly clay loam, dark yellowish brown (10YR 4/4) moist; 10 percent light gray (10YR 7/2) cobbly loam, grayish brown (10YR 5/2) moist E material that occurs between peds and as coats on and between peds; weak medium prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium, coarse, and very coarse roots; common very fine tubular pores; few thin clay films on faces of peds and in pores; few fine rounded iron and manganese concretions: 15 percent cobbles; 10 percent gravel; moderately acid (pH 5.7); abrupt wavy boundary.

Bt1—16 to 32 inches; yellowish brown (10YR 5/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; few medium prominent strong brown (7.5YR 5/8) and reddish brown (2.5YR 4/4) and dark reddish brown (2.5YR 3/4) moist spots of weathering rock material; weak medium prismatic structure parting to strong fine and medium subangular and angular blocky; very hard, very firm, moderately sticky and moderately plastic; few very fine and fine roots mostly between peds and few medium, coarse, and very coarse roots; few very fine tubular pores; continuous prominent clay films of brown (10YR 5/3), brown (10YR 4/3) moist, and dark grayish brown (10YR 4/2), very dark grayish brown (10YR 3/2) moist; 10 percent cobbles; 20 percent gravel; moderately acid (pH 5.8); clear wavy boundary.

Bt2—32 to 46 inches; light yellowish brown (2.5Y 6/3) cobbly clay, olive brown (2.5Y 4/3) moist; strong fine and medium angular blocky structure; very hard, very firm, moderately sticky and moderately plastic; few very fine and fine roots mostly between peds and few medium, coarse, and very coarse roots; few very fine tubular pores; continuous distinct clay films in pores and on faces of peds; clay film colors of brown (10YR 5/3) and brown (10YR 4/3) moist; 15 percent cobbles; 10 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bt3—46 to 60 inches; light brownish gray (2.5Y 6/2) cobbly clay loam, grayish brown (2.5Y 5/2) moist; strong fine angular blocky structure; very hard, firm, moderately sticky and moderately plastic; few fine roots; few very fine tubular pores; many prominent and distinct clay films of yellowish brown (10YR 5/4) on faces of peds and in pores; light olive brown (2.5Y 5/3) weathering rock fragments, olive brown (2.5Y 4/3) moist; 20 percent cobbles; 10 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt4—60 to 66 inches; light brownish gray (2.5Y 6/2) clay loam, grayish brown (2.5Y 5/2) moist; strong very thick platy structure parting to weak coarse angular blocky; very hard, firm, moderately sticky and moderately plastic; few very fine roots; few very fine tubular pores; few distinct very dark brown (10YR 2/2) organic stains on faces of peds; many faint clay films on faces of peds; 5 percent cobbles; 5 percent gravel; neutral (pH 6.8); clear wavy boundary.

R—66 inches; shale or fine-grained sandstone bedrock.

Mohaggin Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Dystrocryepts

Typical Pedon

Mohaggin bouldery ashy very fine sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed needles and twigs.

Oe—2 to 5 inches; partially decomposed needles and twigs.

A—5 to 14 inches; light yellowish brown (10YR 6/4) bouldery ashy very fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; common very fine tubular pores; 10 percent boulders; 5 percent cobbles; 15 percent gravel; slightly acid (pH 6.3); clear wavy boundary.

2Bw—14 to 22 inches; brown (10YR 4/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; common fine and medium tubular pores; 1 percent boulders; 15 percent cobbles; 30 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

2BC—22 to 32 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common fine tubular pores; 1 percent boulders; 15 percent cobbles; 30 percent gravel; slightly acid (pH 6.1); clear wavy boundary.

2C—32 to 60 inches; very pale brown (10YR 7/3) very cobbly loamy sand, pale brown (10YR 6/3) moist; weak medium subangular blocky structure parting to single grain; soft, friable, nonsticky and nonplastic; common very fine and few fine and medium roots; common very fine interstitial pores; 1 percent boulders; 20 percent cobbles; 20 percent gravel; slightly acid (pH 6.1).

Mollet Soil

Taxonomic Class: Fine, mixed, superactive Ustic Argicryolls

Typical Pedon

Mollet loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 7 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine, common fine, and few medium roots; many very fine and fine irregular pores; 5 percent gravel; moderately acid (pH 5.6); clear wavy boundary.

A2—7 to 12 inches; grayish brown (10YR 5/2) loam, very dark brown (10YR 2/2) moist; weak very fine subangular blocky structure; hard, friable, nonsticky and nonplastic; many very fine, common fine, and few medium roots; few very fine and fine tubular pores; 10 percent gravel; moderately acid (pH 5.8); abrupt wavy boundary.

Bt1—12 to 16 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine and fine tubular pores; common distinct clay films on faces of peds; 10 percent gravel; moderately acid (pH 6.0); abrupt smooth boundary.

Bt2—16 to 29 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and moderately plastic; common very fine and few fine and medium roots; common very fine and few fine and medium tubular pores; common distinct clay films on faces of peds; 5 percent cobbles; 10 percent gravel; moderately acid (pH 6.0); abrupt wavy boundary.

Bt3—29 to 60 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; common very fine and few fine and medium tubular pores; few faint clay films on

faces of peds; 5 percent cobbles; 10 percent gravel; moderately acid (pH 6.0); abrupt wavy boundary.

Monaberg Soil

Taxonomic Class: Fine-loamy, mixed, superactive Ustic Argicryolls

Typical Pedon

Monaberg gravelly loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; very dark grayish brown (10YR 3/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine roots; many very fine and fine interstitial pores; 20 percent gravel; neutral (pH 6.6); clear wavy boundary.

A2—3 to 11 inches; very dark grayish brown (10YR 3/2) gravelly loam, black (10YR 2/1) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine tubular pores; 20 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt1—11 to 17 inches; light olive brown (2.5Y 5/4) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure parting to strong medium subangular blocky; slightly hard, firm, moderately sticky and moderately plastic; many very fine and fine roots; many very fine tubular pores; common distinct clay films on faces of peds; 20 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bt2—17 to 27 inches; light olive brown (2.5Y 5/4) gravelly clay loam, olive brown (2.5Y 4/4) moist; moderate medium prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine tubular pores; common faint clay films on faces of peds; 15 percent gravel; slightly alkaline (pH 7.4); gradual wavy boundary.

Bt3—27 to 48 inches; light olive brown (2.5Y 5/4) gravelly clay loam, olive brown (2.5Y 4/4) moist; weak medium and coarse prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common medium pores; few faint clay films on faces of peds; 25 percent gravel; slightly alkaline (pH 7.4); gradual irregular boundary.

BC—48 to 60 inches; light yellowish brown (2.5Y 6/4) gravelly loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine and fine tubular pores; 30 percent gravel; slightly alkaline (pH 7.4).

Monad Soil

Taxonomic Class: Fine-loamy, mixed, superactive Alfic Argicryolls

Typical Pedon

Monad loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 9 inches; very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; 15 percent cobbles and gravel; slightly acid (pH 6.2); clear wavy boundary.

A2—9 to 14 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine and fine and few medium roots; many very fine and fine and few medium pores; very thin continuous gray

(10YR 6/1) skeletans coating faces of peds; 15 percent channers; moderately acid (pH 5.8); gradual wavy boundary.

Bt/E—14 to 21 inches; Bt part (80 percent) brown (10YR 5/3) loam, brown (10YR 4/3) moist; E part (20 percent) gray (10YR 6/1) loam, dark gray (10YR 4/1) moist; weak medium prismatic structure parting to moderate fine subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; many very fine and fine and few medium pores; very thin continuous gray (10YR 6/1) skeletans coating continuous faint clay films on faces of peds; 10 percent sandstone channers; moderately acid (pH 5.7); clear wavy boundary.

Bt1—21 to 49 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate fine and medium blocky; extremely hard, firm, very sticky and moderately plastic; few very fine and fine roots; many very fine and fine and few medium pores; very thin gray (10YR 6/1) skeletans coating continuous distinct clay films on faces of peds; 10 percent sandstone channers; moderately acid (pH 5.8); gradual wavy boundary.

Bt2—49 to 74 inches; very pale brown (10YR 7/4) stony clay loam, brown (7.5YR 5/4) moist; strong fine and medium blocky structure; extremely hard, firm, very sticky and moderately plastic; many very fine and fine and few medium pores; continuous distinct clay films on faces of peds; 15 percent cobbles; 10 percent stones; slightly alkaline (pH 7.4).

Montez Soil

Taxonomic Class: Fine-loamy, mixed, superactive Ustic Palecryalfs

Typical Pedon

Montez sandy loam (Colors are for dry soil unless otherwise noted.)

O2 & O1—0 to 2 inches; undecomposed and partially decomposed pine needles, twigs, and grass.

A1—2 to 9 inches; dark grayish brown (10YR 4/2) sandy loam, very dark brown (10YR 2/2) moist; weak very fine granular structure; soft, very friable; neutral (pH 6.6); clear wavy boundary.

A2—9 to 24 inches; light brownish gray (10YR 6/2) loamy sand, brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; neutral (pH 7.0); clear wavy boundary.

A&B—24 to 30 inches; mixed light brownish gray (10YR 6/2) and strong brown (7.5YR 5/6) heavy sandy loam (composite texture), brown (10YR 4/3) and dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; 60 percent of material is similar to that of the overlying horizon; B material is in pockets surrounded by A material in the upper part of the horizon and the A material is in pockets surrounded by B material in the lower part; neutral (pH 7.0); clear wavy boundary.

B2t—30 to 38 inches; strong brown (7.5YR 5/6) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate subangular blocky structure; hard, friable, moderately sticky and moderately plastic; 20 percent gravel; neutral (pH 6.8); gradual wavy boundary.

B3t—38 to 43 inches; brownish yellow (10YR 6/6) gravelly sandy clay loam, yellowish brown (10YR 5/6) moist; moderate medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; 30 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

C—43 to 53 inches; brownish yellow (10YR 6/6) very gravelly loamy sand, yellowish brown (10YR 5/8) moist; massive; hard, friable, nonsticky and nonplastic; 50 percent gravel; slightly alkaline (pH 7.4).

R—53 inches; granite.

Mooseflat Soil

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls

Typical Pedon

Mooseflat loam (Colors are for moist soil unless otherwise noted.)

Oe—0 to 2 inches; black (10YR 2/1) moderately decomposed plant material, very dark grayish brown (10YR 3/2) dry; neutral (pH 6.8); clear smooth boundary.

A—2 to 10 inches; black (10YR 2/1) loam, gray (10YR 5/1) dry; many fine distinct yellowish brown (10YR 5/6) redox concentrations; moderate medium granular structure; slightly hard, friable, slightly sticky and moderately plastic; many very fine and fine roots; many very fine and fine pores; neutral (pH 7.2); clear smooth boundary.

Bg—10 to 18 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; common fine distinct dark yellowish brown (10YR 4/6) redox concentrations; weak thin platy structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine pores; neutral (pH 6.8); abrupt smooth boundary.

2BCg—18 to 22 inches; dark gray (10YR 4/1) loamy fine sand, light gray (10YR 7/1) dry; common fine distinct yellowish brown (10YR 5/4) redox concentrations; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine roots; 5 percent gravel; neutral (pH 6.8); abrupt smooth boundary.

2Cg—22 to 60 inches; gray (10YR 5/1) very cobbly loamy sand, gray (10YR 6/1) dry; single grain; loose, nonsticky and nonplastic; 35 percent cobbles; 25 percent gravel; neutral (pH 7.2).

Moosejaw Soil

Taxonomic Class: Coarse-loamy, mixed, superactive Cumulic Cryaquolls

Typical Pedon

Moosejaw mucky peat (Colors are for moist soil unless otherwise noted.)

Oe—0 to 5 inches; dark brown (10YR 3/3) mucky peat, brown (10YR 4/3) dry; moderately decomposed herbaceous material and trapped sediment; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; moderately acid (pH 5.8); clear smooth boundary.

Ag—5 to 24 inches; black (N 2.5/) silt loam, very dark gray (10YR 3/1) dry; moderate medium and coarse granular structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; few very fine and fine tubular pores; 2 percent subrounded gravel; slightly acid (pH 6.3); clear smooth boundary.

Cg—24 to 43 inches; black (5Y 2.5/1) stratified loam, silt loam and sandy loam, olive gray (5Y 5/2) dry; weak coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; 2 percent subrounded gravel; neutral (pH 6.6); abrupt smooth boundary.

2C—43 to 72 inches; olive (5Y 4/4) gravelly loamy coarse sand, light yellowish brown (2.5Y 6/4) dry; single grain; loose, nonsticky and nonplastic; few very fine roots; many interstitial pores; 30 percent subangular fine gravel; few medium distinct dark gray (5Y 4/1) redox depletions; neutral (pH 7.2).

Moran Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Humic Dystrocryepts

Typical Pedon

Moran very stony sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 6 inches; brown (10YR 5/3) very stony sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and nonplastic; 15 percent boulders and stones; 15 percent cobbles; 20 percent granite gravel; moderately acid (pH 6.0); clear wavy boundary.

Bw1—6 to 15 inches; brown (7.5YR 5/3) very stony sandy loam, dark brown (7.5YR 3/3) moist; moderate fine prismatic structure parting to moderate very fine and fine subangular blocky; soft, very friable, slightly sticky and nonplastic; 20 percent boulders and stones; 20 percent cobbles; 20 percent granite gravel; moderately acid (pH 6.0); clear wavy boundary.

Bw2—15 to 60 inches; light brown (7.5YR 6/3) very stony sandy loam, brown (7.5YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; 20 percent boulders and stones; 20 percent cobbles; 20 percent granite gravel; moderately acid (pH 6.0).

Musselshell Soil

Taxonomic Class: Coarse-loamy, carbonatic, frigid Aridic Calciustepts

Typical Pedon

Musselshell loam (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk1—3 to 13 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine roots and pores; few fine threads of lime; violently effervescent; moderately alkaline (pH 8.3); gradual wavy boundary.

Bk2—13 to 29 inches; very pale brown (10YR 7/3) loam, pale brown (10YR 6/3) moist; massive; hard, firm, slightly sticky and slightly plastic; common very fine roots; many very fine pores; 5 percent limestone gravel with pendants of lime; few threads of lime; violently effervescent; moderately alkaline (pH 8.3); abrupt wavy boundary.

2C—29 to 60 inches; pale brown (10YR 6/3) very gravelly fine sandy loam, brown (10YR 5/3) moist; massive; few very fine roots; 50 percent gravel; violently effervescent; moderately alkaline (pH 8.3).

Mussigbrod Soil

Taxonomic Class: Fine-loamy, mixed, superactive Cumulic Haplocryolls

Typical Pedon

Mussigbrod loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak fine and medium platy structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine and common medium roots; many very fine and fine interstitial pores; 5 percent gravel; neutral (pH 7.0); clear smooth boundary.

A2—3 to 8 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine and few medium roots; many very fine and fine tubular pores; 5 percent gravel; very slightly effervescent; neutral (pH 7.2); clear wavy boundary.

A3—8 to 17 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine and few medium roots; many very fine and fine tubular pores; 5 percent gravel; slightly effervescent; slightly alkaline (pH 7.5); gradual wavy boundary.

Bk—17 to 27 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine, fine, and medium roots; common medium pores; many soft masses and coats of lime on rock fragments; 10 percent gravel; strongly effervescent; slightly alkaline (pH 7.8); gradual wavy boundary.

Ab—27 to 38 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate fine and medium granular; soft, very friable, slightly sticky and nonplastic; few very fine roots; many very fine tubular pores; 5 percent gravel; slightly effervescent; slightly alkaline (pH 7.6); gradual wavy boundary.

Bwb—38 to 49 inches; light yellowish brown (10YR 6/4) loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; 5 percent gravel; slightly alkaline (pH 7.6); gradual wavy boundary.

2C—49 to 60 inches; very pale brown (10YR 7/4) extremely gravelly sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; 65 percent gravel; neutral (pH 7.1).

Nathale Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Typical Pedon

Nathale gravelly fine sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; brown (10YR 4/3) gravelly fine sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine and common medium roots; slightly effervescent; carbonates disseminated; 30 percent coarse gravel; moderately alkaline (pH 8.0); clear smooth boundary.

Bt—4 to 11 inches; brown (10YR 5/3) very cobbly very fine sandy loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic;

common fine and medium roots; common moderately thick clay films on faces of peds; strongly effervescent; carbonates disseminated; 25 percent small angular cobbles; 15 percent coarse gravel; moderately alkaline (pH 8.2); clear smooth boundary.

Bk1—11 to 17 inches; pale brown (10YR 6/3) very cobbly very fine sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine and medium roots; strongly effervescent; carbonates disseminated and as pendants on rock fragments; 25 percent cobbles; 15 percent coarse gravel; moderately alkaline (pH 8.4); clear smooth boundary.

Bk2—17 to 24 inches; pale brown (10YR 6/3) very cobbly fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; violently effervescent; carbonates disseminated and as pendants on rock fragments; 40 percent small cobbles; 20 percent coarse gravel; moderately alkaline (pH 8.4); abrupt irregular boundary.

R—24 inches; hard, fractured limestone; fractures widely spaced.

Nieman Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Argicryolls

Typical Pedon

Nieman very cobbly loam, very stony (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; brown (10YR 4/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 20 percent cobbles; 25 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt1—4 to 8 inches; dark grayish brown (10YR 4/2) very cobbly 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 and fine roots; many very fine and fine interstitial pores; common faint brown (10YR 4/3) clay films on faces of peds; 25 percent cobbles; 30 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt2—8 to 13 inches; dark grayish brown (10YR 4/2) extremely cobbly loam, dark grayish brown (10YR 4/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and common very fine roots; many very fine and fine interstitial pores; common distinct clay films on faces of peds; 35 percent cobbles; 35 percent gravel; neutral (pH 7.0).

R—13 inches; hard fine-grained igneous bedrock.

Nuley Soil

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Calcidic Argiustolls

Typical Pedon

Nuley clay loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 7 inches; grayish brown (10YR 5/2) clay loam, dark brown (10YR 3/3) moist; weak or moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many fine roots; many fine tubular and few fine interstitial pores; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bt—7 to 11 inches; brown (10YR 4/3) clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many fine roots; common fine tubular pores; many and common distinct clay films on faces of peds; slightly alkaline (pH 7.4); clear wavy boundary.

Bk1—11 to 15 inches; light gray (10YR 7/1) sandy clay loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many and common fine roots; common, moderately few, and few fine interstitial and few fine tubular pores; 5 percent gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bk2—15 to 24 inches; white (10YR 8/1) sandy loam, light gray (10YR 7/2) moist; massive; slightly hard, friable, nonsticky and nonplastic; many and common fine roots; common fine tubular pores; 5 percent gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

2C—24 to 50 inches; grayish brown (2.5Y 5/2) gravelly coarse sand, dark grayish brown (2.5Y 4/2) moist; single grain; loose, nonsticky and nonplastic; very few very fine roots; common fine and medium interstitial pores; 25 percent gravel; moderately effervescent; moderately alkaline (pH 8.2); gradual irregular boundary.

R—50 inches; granitic gneiss bedrock.

Oro Fino Soil

Taxonomic Class: Fine-loamy, mixed, superactive Calcic Argicryolls

Typical Pedon

Oro Fino gravelly loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak medium platy structure parting to weak fine granular; soft, very friable, nonsticky and slightly plastic; many fine roots; many fine vesicular and tubular pores; 20 percent gravel; neutral (pH 6.8); clear smooth boundary.

A2—4 to 10 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate very coarse prismatic structure parting to weak medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common fine roots; common fine irregular and few fine vesicular and tubular pores; 15 percent gravel; neutral (pH 6.8); clear smooth boundary.

Bt—10 to 22 inches; brown (10YR 5/3) gravelly sandy clay loam, brown (10YR 4/3) moist; strong very coarse prismatic structure parting to moderate fine subangular blocky; hard, firm, slightly sticky and moderately plastic; common fine roots; common fine irregular and few fine vesicular and tubular pores; common faint clay skins as bridges between sand grains; 15 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bk1—22 to 34 inches; light gray (10YR 7/2) gravelly loam, light brownish gray (10YR 6/2) moist; massive; slightly hard, friable, nonsticky and nonplastic; common fine roots; 30 percent gravel; many soft masses of lime; violently effervescent; moderately alkaline (pH 7.9); abrupt wavy boundary.

Bk2—34 to 42 inches; brown (10YR 5/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; loose, nonsticky and nonplastic; few fine roots; common fine irregular pores; 40 percent gravel; common soft masses of lime; strongly effervescent; slightly alkaline (pH 7.6); clear wavy boundary.

Bk3—42 to 60 inches; brown (10YR 5/3) very gravelly loamy sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few fine roots in cracks; few fine irregular pores; 60 percent gravel; common soft masses of lime; strongly effervescent; slightly alkaline (pH 7.6).

Ovando Soil

Taxonomic Class: Sandy-skeletal, mixed Lamellic Cryorthents

Typical Pedon

Ovando gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.

E1—2 to 8 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; moderate very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; common very fine and fine pores; 20 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

E2—8 to 27 inches; light gray (10YR 7/2) very gravelly loamy coarse sand, grayish brown (10YR 5/2) moist; weak fine granular structure; loose, nonsticky and nonplastic; common very fine, fine, medium, and coarse roots; common very fine and fine pores; 40 percent gravel; moderately acid (pH 5.8); clear wavy boundary.

E and Bt—27 to 51 inches; E part (80 percent) is very pale brown (10YR 7/4) very gravelly loamy coarse sand, yellowish brown (10YR 5/4) moist; B part (20 percent) is brown (10YR 5/3) sandy loam lamellae 1/8- to 1/2-inch thick, dark yellowish brown (10YR 4/4) moist; texture mixed is very gravelly loamy coarse sand; single grain; loose, nonsticky and nonplastic; common very fine, fine, medium, and coarse roots; 5 percent cobbles; 45 percent gravel; moderately acid (pH 5.8); gradual smooth boundary.

C—51 to 60 inches; pale brown (10YR 6/3) extremely gravelly loamy coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; 20 percent cobbles; 55 percent gravel; moderately acid (pH 5.8).

Patouza Soil

Taxonomic Class: Fine, smectitic, frigid Torrertic Argiustolls

Typical Pedon

Patouza clay (Colors are for dry soil unless otherwise noted.)

Ap—0 to 4 inches; grayish brown (10YR 5/2) clay, very dark grayish brown (10YR 3/2) moist; strong fine granular structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine and fine and common medium roots; neutral (pH 7.2); clear wavy boundary.

Bt1—4 to 11 inches; grayish brown (10YR 5/2) clay, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine and few medium roots; common distinct clay films on faces of peds and lining pores; few slickensides; neutral (pH 7.2); clear wavy boundary.

Bt2—11 to 16 inches; pale brown (10YR 6/3) clay, grayish brown (10YR 5/2) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; slightly hard, friable, moderately sticky and moderately plastic; few very fine, fine, and medium roots; common distinct clay films on faces of peds and lining pores; few slickensides; slightly effervescent; moderately alkaline (pH 8.3); clear wavy boundary.

Btk—16 to 24 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine, fine, and medium roots; few distinct

clay films on faces of peds and lining pores; common fine masses and seams of lime; strongly effervescent; moderately alkaline (pH 8.3); clear wavy boundary.

Bk—24 to 60 inches; pale brown (10YR 6/3) stratified silty clay loam and fine sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few fine masses and seams of lime; strongly effervescent; moderately alkaline (pH 8.3).

Peeler Soil

Taxonomic Class: Fine-loamy, mixed, superactive Ustic Glossocryalfs

Typical Pedon

Peeler gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed organic material consisting mainly of needles, bark, and twigs.

Oe—2 to 3 inches; partially decomposed organic material like that of the horizon above.

E—3 to 11 inches; light brownish gray (10YR 6/2) gravelly coarse sandy loam, grayish brown (10YR 5/2) moist; weak thin platy structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; 15 percent gravel, mostly fine angular granite fragments; slightly acid (pH 6.2); gradual wavy boundary.

E/B—11 to 19 inches; E part is light brownish gray (10YR 6/2) gravelly coarse sandy loam, grayish brown (10YR 5/2) moist; B part is brown (7.5YR 5/4) gravelly coarse sandy clay loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure parting to weak medium granular; slightly hard, very friable, nonsticky and nonplastic; clay films on some faces of peds and in some root channels and pores; the horizon consists of seams and nodules of material like that of the underlying horizon embedded in a lighter-colored matrix like that of the overlying horizon; 15 percent fine angular granite gravel; slightly acid (pH 6.4); gradual wavy boundary.

Bt—19 to 35 inches; brown (7.5YR 5/4) gravelly coarse sandy clay loam, brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; nearly continuous clay films on faces of peds and fillings in root channels and pores; 25 percent fine angular gravel; slightly acid (pH 6.4); gradual wavy boundary.

BCt—35 to 43 inches; brown (7.5YR 5/4) gravelly coarse sandy loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; extremely hard, very friable, slightly sticky and slightly plastic; few faint clay films on some faces of peds and in some root channels and pores; 25 percent fine angular granite gravel; slightly acid (pH 6.4); gradual wavy boundary.

C—43 to 63 inches; light brown (7.5YR 6/4) gravelly coarse sandy loam, brown (7.5YR 5/4) moist; massive; extremely hard, very friable, nonsticky and nonplastic; 25 percent angular granite gravel; neutral (pH 6.6).

Pensore Soil

Taxonomic Class: Loamy-skeletal, carbonatic, frigid Lithic Calciustepts

Typical Pedon

Pensore gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; 20 percent angular gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk—4 to 15 inches; light gray (10YR 7/2) very gravelly loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular and interstitial pores; 15 percent angular cobbles; 45 percent angular gravel; disseminated lime; continuous faint lime coats on top sides of coarse fragments; continuous prominent lime casts on undersides of coarse fragments; violently effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

R—15 inches; hard limestone bedrock with a few fractures; few very fine roots in fractures.

Perma Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Typical Pedon

Perma gravelly loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 6 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine pores; 20 percent gravel; neutral (pH 7.0); clear wavy boundary.

A2—6 to 12 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine pores; 30 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bw1—12 to 22 inches; brown (10YR 5/3) very gravelly loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine pores; 15 percent cobbles; 35 percent gravel; neutral (pH 7.2); gradual wavy boundary.

Bw2—22 to 36 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine pores; 15 percent cobbles; 40 percent gravel; slightly alkaline (pH 7.4); gradual wavy boundary.

BC—36 to 60 inches; very pale brown (10YR 7/3) extremely gravelly loamy sand, grayish brown (10YR 5/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; 20 percent cobbles; 50 percent gravel; slightly alkaline (pH 7.4).

Petty Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts

Typical Pedon

Petty gravelly ashy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 3 inches; undecomposed and slightly decomposed forest litter.

Bw—3 to 15 inches; light yellowish brown (10YR 6/4) gravelly ashy loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; soft, very friable,

nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine and fine pores; 20 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

2E—15 to 27 inches; very pale brown (10YR 7/4) very gravelly coarse sandy loam, yellowish brown (10YR 5/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; many very fine and fine pores; 5 percent cobbles; 35 percent gravel; moderately acid (pH 6.0); gradual wavy boundary.

2E and Bt—27 to 39 inches; E part (70 percent) is very pale brown (10YR 7/4) very gravelly coarse sandy loam, yellowish brown (10YR 5/4) moist; B part (30 percent) is strong brown (7.5YR 5/6) fine sandy loam lamellae 1/8- to 1/2-inch thick, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; common very fine and fine pores; 10 percent cobbles; 45 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

2C—39 to 60 inches; very pale brown (10YR 7/4) extremely gravelly coarse sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine pores; 15 percent cobbles; 50 percent gravel; slightly acid (pH 6.4).

Philipsburg Soil

Taxonomic Class: Fine-loamy, mixed, superactive Calcic Argicryolls

Typical Pedon

Philipsburg silt loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 10 percent gravel; neutral (pH 6.8); clear wavy boundary.

A2—5 to 14 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate fine and medium granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 10 percent gravel; neutral (pH 6.7); clear wavy boundary.

Bt1—14 to 20 inches; brown (10YR 5/3), silty clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and moderately plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; many distinct patchy clay films on faces of peds; 10 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt2—20 to 32 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; strong medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; common distinct patchy clay films on faces of peds; 10 percent gravel; neutral (pH 6.8); gradual wavy boundary.

Bk1—32 to 43 inches; very pale brown (10YR 8/4), gravelly loam, very pale brown (10YR 7/4) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine irregular pores; 25 percent gravel; disseminated lime; common fine and medium soft masses of lime; many distinct

continuous lime coats on rock fragments; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk2—43 to 60 inches; very pale brown (10YR 8/3), very gravelly sandy loam, very pale brown (10YR 7/3) moist; weak very fine and fine granular structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; common very fine irregular pores; 15 percent cobbles; 35 percent gravel; disseminated lime; common fine and medium soft masses of lime; many distinct continuous lime coats on rock fragments; violently effervescent; moderately alkaline (pH 8.0).

Phillcher Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts

Typical Pedon

Phillcher ashy silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.

Bw1—2 to 12 inches; yellowish brown (10YR 5/4) ashy silt loam, dark yellowish brown (10YR 4/4) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; 10 percent gravel; moderately acid (pH 6.0); clear wavy boundary.

2Bw2—12 to 26 inches; light gray (2.5Y 7/2) very gravelly sandy loam, grayish brown (2.5Y 5/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; 5 percent cobbles; 45 percent gravel; moderately acid (pH 6.0); gradual wavy boundary.

2C—26 to 60 inches; light gray (2.5Y 7/2) extremely gravelly sandy loam, grayish brown (2.5Y 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; 10 percent cobbles; 55 percent gravel; moderately acid (pH 6.0).

Plimpton Soil

Taxonomic Class: Fine-loamy, mixed, superactive Oxyaquic Argicryolls

Typical Pedon

Plimpton silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; undecomposed and partially decomposed matted roots; abrupt smooth boundary.

A1—1 to 9 inches; very dark gray (10YR 3/1) silt loam, black (10YR 2/1) moist; few fine faint dark brown (7.5YR 3/3) moist, redox concentrations due to prolonged saturation from flood irrigation; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine dendritic tubular pores; 5 percent gravel; slightly alkaline (pH 7.6); gradual wavy boundary.

A2—9 to 19 inches; grayish brown (10YR 5/2) loam, very dark brown (10YR 2/2) moist; few fine faint dark brown (7.5YR 3/3) moist, redox concentrations due to prolonged saturation from flood irrigation; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine dendritic tubular pores; 10 percent gravel; neutral (pH 6.8); gradual wavy boundary.

Bt—19 to 38 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 4/3) moist; few fine faint brown (7.5YR 4/3) moist, redox concentrations due to prolonged

saturation from flood irrigation; moderate medium prismatic structure; hard, firm, moderately sticky and moderately plastic; common very fine and fine roots; many very fine and fine dendritic tubular pores; common distinct continuous clay films on faces of peds and common faint patchy clay films between sand grains; 10 percent gravel; neutral (pH 6.8); gradual wavy boundary.

BC—38 to 60 inches; very pale brown (10YR 8/2) gravelly sandy clay loam, light brownish gray (10YR 6/2) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine dendritic tubular pores; 20 percent gravel; neutral (pH 6.8).

Poin Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Typical Pedon

Poin very flaggy sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 5 inches; grayish brown (10YR 5/2) very flaggy sandy loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine tubular pores; 15 percent flagstones; 25 percent flat angular gravel; neutral (pH 7.2); abrupt wavy boundary.

Bw1—5 to 12 inches; brown (10YR 5/3) very channery sandy loam, brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine tubular pores; 15 percent flagstones; 45 percent flat angular gravel; neutral (pH 7.2); clear smooth boundary.

Bw2—12 to 19 inches; pale brown (10YR 6/3) extremely channery sandy loam, brown (10YR 5/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; 20 percent flat angular cobbles; 60 percent flagstones; neutral (pH 7.3); gradual irregular boundary.

R—19 inches; fractured gneiss-schist bedrock; few fine roots in some cracks.

Priestlake Soil

Taxonomic Class: Sandy-skeletal, mixed Typic Dystrocryepts

Typical Pedon

Priestlake gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 0.5 inch; undecomposed and partially decomposed needles, leaves, twigs, and moss.

Oe—0.5 to 1.5 inches; decomposed organic matter mixed with discontinuous light gray (10YR 7/1) volcanic ash.

A1—1.5 to 8 inches; light yellowish brown (10YR 6/4), gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure parting to strong fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; many very fine and common fine tubular pores; 20 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

A2—8 to 13 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; moderate medium and coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine

and fine and few medium and coarse roots; many very fine and common fine tubular pores; 25 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bw—13 to 24 inches; very pale brown (10YR 7/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium and coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine and few medium and coarse roots; many very fine and common fine tubular pores; 35 percent gravel; slightly acid (pH 6.2); abrupt wavy boundary.

2Bt1—24 to 33 inches; very pale brown (10YR 7/3) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; many very fine and common fine tubular and interstitial pores; 45 percent gravel; few faint clay films bridging mineral grains; moderately acid (pH 6.0); clear wavy boundary.

2Bt2—33 to 44 inches; very pale brown (10YR 8/3) extremely cobbly loamy sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; many very fine and common fine tubular and interstitial pores; 10 percent stones; 30 percent cobbles; 40 percent gravel; few fine manganese stains on faces of peds; common faint clay films bridging mineral grains; moderately acid (pH 6.0); clear wavy boundary.

2Bt3—44 to 53 inches; very pale brown (10YR 8/2) very gravelly loamy sand, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine and fine and few medium roots; many very fine and common fine interstitial pores; common faint clay films bridging mineral grains; 20 percent cobbles; 35 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

2Bt4—53 to 60 inches; very pale brown (10YR 8/3) very gravelly loamy sand, light yellowish brown (10YR 6/4) moist; massive; hard, firm, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 15 percent cobbles; 35 percent gravel; common faint clay films bridging mineral grains; slightly acid (pH 6.2).

Proposal Soil

Taxonomic Class: Fine-loamy, mixed, superactive Oxyaquic Haplocryolls

Typical Pedon

Proposal silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and partially decomposed matted roots; abrupt smooth boundary.

A1—2 to 8 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; few fine faint brownish yellow (10YR 6/6) moist, redox concentrations due to prolonged saturation from flood irrigation; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine dendritic tubular pores; neutral (pH 6.8); clear smooth boundary.

A2—8 to 16 inches; grayish brown (10YR 5/2) silt loam, dark brown (10YR 3/3) moist; few fine faint brownish yellow (10YR 6/6) moist, redox concentrations due to prolonged saturation from flood irrigation; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine dendritic tubular pores; neutral (pH 7.0); clear wavy boundary.

Bw1—16 to 28 inches; pale brown (10YR 6/3) silt loam, dark yellowish brown (10YR 4/4) moist; common fine faint yellowish brown (10YR 5/6) moist, redox concentrations due to prolonged saturation from flood irrigation; moderate coarse subangular blocky structure; very hard, friable, moderately sticky and moderately

plastic; common very fine and fine roots; common very fine and few fine dendritic tubular pores; 5 percent gravel; slightly alkaline (pH 7.4); clear wavy boundary.

Bw2—28 to 45 inches; light brownish gray (10YR 6/2) silt loam, brown (10YR 4/3) moist; few fine faint yellowish brown (10YR 5/6) moist, redox concentrations due to prolonged saturation from flood irrigation; moderate coarse subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; common very fine and few fine dendritic tubular pores; 5 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

Bk—45 to 60 inches; light gray (10YR 7/2) loam, pale brown (10YR 6/3) moist; moderate medium subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; few very fine roots; 10 percent gravel; disseminated lime; many fine and medium patchy soft masses and threads of lime; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Prudy Soil

Taxonomic Class: Fine-loamy, mixed, superactive Calcic Haplocryolls

Typical Pedon

Prudy loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and common very fine and fine tubular pores; 5 percent gravel; slightly alkaline (pH 7.6); clear smooth boundary.

A2—3 to 10 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; many very fine and fine tubular pores; 5 percent gravel; slightly alkaline (pH 7.6); gradual smooth boundary.

BAk—10 to 14 inches; brown (10YR 4/3) 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 and fine roots; common very fine and fine tubular pores; 10 percent gravel; strongly effervescent (15 to 25 percent calcium carbonate); slightly alkaline (pH 7.8); clear smooth boundary.

Bk1—14 to 21 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; many very fine and fine and few medium roots; common very fine and fine tubular pores; 10 percent gravel; violently effervescent (25 to 40 percent calcium carbonate); moderately alkaline (pH 8.2); gradual smooth boundary.

Bk2—21 to 25 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; 30 percent gravel; violently effervescent (25 to 40 percent calcium carbonate); moderately alkaline (pH 8.4); gradual wavy boundary.

Bk3—25 to 50 inches; very pale brown (10YR 7/3) gravelly loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots; few very fine and fine tubular pores; 10 percent cobbles; 20 percent gravel; violently effervescent (25 to 40 percent calcium carbonate); strongly alkaline (pH 8.6); abrupt smooth boundary.

2R—50 inches; fractured calcareous quartzite bedrock.

Quigg Soil

Taxonomic Class: Fine, mixed, superactive Abruptic Argicryolls

Typical Pedon

Quigg loam (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine interstitial pores; slightly acid (pH 6.4); clear smooth boundary.

E/Bt—7 to 17 inches; E part (85 percent): light gray (10YR 7/2) sandy loam, grayish brown (10YR 5/2) moist; Bt part (15 percent): light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine and fine roots; common fine interstitial pores; slightly acid (pH 6.4); abrupt wavy boundary.

Bt—17 to 29 inches; light yellowish brown (10YR 6/4) sandy clay, yellowish brown (10YR 5/4) moist; strong very coarse columnar structure; extremely hard, very firm, moderately sticky and moderately plastic; common very fine and fine roots; common tongues of light gray (2.5Y 7/2) and light brownish gray (2.5Y 6/2) moist albic material on upper vertical faces of peds; continuous prominent yellowish brown (10YR 5/4) and dark brown (10YR 3/3) moist, clay films on faces of peds; slightly acid (pH 6.2); gradual wavy boundary.

BC—29 to 38 inches; brown (10YR 5/3) silty clay, brown (10YR 4/3) moist; moderate thick platy structure; extremely hard, very firm, moderately sticky and moderately plastic; few very fine roots; few very fine interstitial pores; slightly acid (pH 6.2); gradual wavy boundary.

C1—38 to 45 inches; light gray (10YR 7/2) silty clay, light brownish gray (10YR 6/2) moist; strong thick platy structure; extremely hard, very firm, moderately sticky and moderately plastic; few very fine roots; few very fine pores; slightly acid (pH 6.2); gradual wavy boundary.

C2—45 to 60 inches; light gray (10YR 7/2) silty clay, light brownish gray (10YR 6/2) moist; strong thick platy structure; extremely hard, very firm, moderately sticky and moderately plastic; few very fine interstitial pores; slightly acid (pH 6.2).

Quincreek Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Quincreek channery loam (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; brown (7.5YR 5/2) channery loam, dark brown (7.5YR 3/2) moist; moderate medium granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine interstitial pores; 20 percent channers; neutral (pH 7.3); clear wavy boundary.

Bt—3 to 9 inches; brown (7.5YR 4/2) channery clay loam, dark brown (7.5YR 3/2) moist; strong medium prismatic structure parting to moderate medium subangular blocky; hard, firm, moderately sticky and slightly plastic; many very fine and fine roots; common very fine and fine interstitial and tubular pores; common distinct brown (7.5YR 4/2) clay films on faces of peds; 20 percent channers; slightly alkaline (pH 7.4); gradual wavy boundary.

Bk1—9 to 19 inches; pinkish gray (7.5YR 6/2) very channery loam, brown (7.5YR 5/2) moist; moderate medium and coarse prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine interstitial and tubular pores; 40 percent channers; disseminated lime; common fine masses and threads of lime; common distinct lime coats on rock fragments; violently effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

Bk2—19 to 27 inches; brown (7.5YR 5/2) very channery loam, brown (7.5YR 4/2) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; common very fine interstitial and tubular pores; 55 percent channers; disseminated lime; common fine masses of lime; common faint lime coats on rock fragments; violently effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

R—27 inches; hard fractured shale.

Ratiopeak Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Typical Pedon

Ratiopeak gravelly loam, bouldery (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; very dark grayish brown (10YR 3/2) gravelly loam, black (10YR 2/1) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 20 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

A2—3 to 10 inches; very dark grayish brown (10YR 3/2) gravelly loam, very dark brown (10YR 2/2) moist; strong medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; 25 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bt1—10 to 15 inches; brown (10YR 4/3) very gravelly clay loam, dark brown (10YR 3/3) moist; strong medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine and few medium pores; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; 40 percent gravel; neutral (pH 7.0); gradual wavy boundary.

Bt2—15 to 26 inches; pale brown (10YR 6/3) very gravelly clay loam, brown (10YR 5/3) moist; strong medium prismatic structure parting to moderate medium subangular

blocky; hard, firm, moderately sticky and moderately plastic; many very fine and fine and few medium roots; many very fine and fine interstitial and tubular pores; common distinct grayish brown (10YR 5/2) clay films on faces of peds; 40 percent gravel; neutral (pH 7.2); gradual wavy boundary.

Bt3—26 to 35 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; moderate coarse prismatic structure; hard, firm, moderately sticky and moderately plastic; common very fine and fine roots; common very fine and fine and few medium pores; few distinct clay films on faces of peds; 45 percent gravel; slightly alkaline (pH 7.8); gradual smooth boundary.

Bk—35 to 60 inches; very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine interstitial and tubular pores; 5 percent cobbles; 50 percent gravel; common fine masses and threads of lime; common distinct lime casts on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.3).

Raynesford Soil

Taxonomic Class: Fine-loamy, carbonatic Calcic Haplocryolls

Typical Pedon

Raynesford loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 12 inches, very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; strong fine and medium granular structure; slightly hard, very friable, slightly sticky and nonplastic; many fine roots; many fine and medium interstitial pores; 5 percent limestone gravel; slightly alkaline (pH 7.4); clear wavy boundary.

A2—12 to 16 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and common fine tubular pores; 5 percent limestone gravel; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bk1—16 to 28 inches, very pale brown (10YR 8/2) clay loam, light brownish gray (10YR 6/2) moist; weak fine subangular blocky structure; hard, very friable, moderately sticky and slightly plastic; many very fine and fine roots; many very fine and fine and few medium interstitial and tubular pores; 5 percent limestone gravel; many medium masses of lime; many prominent lime crusts on gravel; violently effervescent; moderately alkaline (pH 8.3); diffuse wavy boundary.

Bk2—28 to 50 inches, very pale brown (10YR 8/3) gravelly clay loam, light brownish gray (10YR 6/2) moist; massive; very hard, very friable, moderately sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; 25 percent limestone gravel; many fine, medium, or coarse masses of lime; 3 prominent lime crusts on gravel; violently effervescent; moderately alkaline (pH 8 3); diffuse wavy boundary.

Bk3—50 to 66 inches, very pale brown (10YR 7/3) gravelly clay loam, brown (10YR 5/3) moist; massive; hard, very friable, slightly sticky and nonplastic; 30 percent limestone gravel; common distinct lime crusts on gravel; violently effervescent; moderately alkaline (pH 8.3).

Redchief Soil

Taxonomic Class: Clayey-skeletal, smectitic Ustic Argicryolls

Typical Pedon

Redchief gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 10 inches; very dark grayish brown (10YR 3/2) gravelly loam, very dark brown (10YR 2/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine interstitial pores; 5 percent cobbles; 20 percent gravel; moderately acid (pH 5.6); clear wavy boundary.

Bt1—10 to 18 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and moderately plastic; common very fine and fine and few medium and coarse roots; many very fine, fine, and medium interstitial pores; many faint clay films of faces of peds; 15 percent cobbles; 35 percent gravel; slightly acid (pH 6.1); clear wavy boundary.

Bt2—18 to 28 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; common very fine and fine interstitial pores; many faint clay films on faces of peds; 20 percent cobbles; 35 percent gravel; neutral (pH 6.6); gradual wavy boundary.

Bt3—28 to 60 inches; pale brown (10YR 6/3) extremely gravelly clay loam; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; few very fine and fine interstitial pores; many faint clay films on faces of peds; 20 percent cobbles; 45 percent gravel; neutral (pH 6.6).

Redfish Soil

Taxonomic Class: Sandy-skeletal, mixed Typic Cryaquolls

Typical Pedon

Redfish mucky peat (Colors are for dry soil unless otherwise noted.)

Oe—0 to 3 inches; mucky peat.

A—3 to 7 inches; grayish brown (10YR 5/2) gravelly sandy loam, very dark grayish brown (2.5Y 3/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; 25 percent gravel; moderately acid (pH 5.8); clear smooth boundary.

Ag1—7 to 11 inches; grayish brown (2.5Y 5/2) very gravelly sandy loam, very dark grayish brown (2.5Y 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; few fine prominent brown (10YR 5/3) iron masses; 45 percent fine gravel; moderately acid (pH 5.8); clear smooth boundary.

Ag2—11 to 18 inches; grayish brown (2.5Y 5/2) very gravelly sandy loam, very dark grayish brown (2.5Y 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; common fine prominent strong brown (7.5YR 5/6) and reddish yellow (7.5YR 6/6) iron masses; 50 percent fine gravel; moderately acid (pH 6.0); gradual smooth boundary.

Ag3—18 to 25 inches; grayish brown (2.5Y 5/2) very gravelly sandy loam, dark grayish brown (2.5Y 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; 5 percent cobbles; 50 percent fine gravel; moderately acid (pH 6.0); gradual wavy boundary.

2Cg—25 to 63 inches; grayish brown (2.5Y 5/2) extremely gravelly coarse sand, dark grayish brown (2.5Y 4/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; common fine irregular pores; 15 percent cobbles; 55 percent gravel; moderately acid (pH 6.0).

Reedpoint Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Aridic Lithic Haplustolls

Typical Pedon

Reedpoint very channery loam (Colors are for dry soil unless otherwise noted.)

A—0 to 5 inches; brown (10YR 5/3) very channery loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many fine pores; 38 percent sandstone channers; neutral (pH 7.2); abrupt smooth boundary.

R—5 inches; hard, noncalcareous sandstone.

Relyea Soil

Taxonomic Class: Clayey-skeletal, mixed, superactive Eutric Glossocryalfs

Typical Pedon

Relyea gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; slightly decomposed forest litter.

E—2 to 5 inches; light reddish brown (5YR 6/3) gravelly loam, reddish brown (5YR 4/3) moist; weak fine subangular blocky structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium and coarse roots; many very fine and fine discontinuous irregular and few very fine discontinuous tubular pores; 5 percent cobbles; 25 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

Bt/E—5 to 8 inches; Bt part (80 percent) is reddish brown (5YR 4/4) very gravelly clay loam, dark reddish gray (5YR 4/2) moist; E part (20 percent) is light reddish brown (5YR 6/3) very gravelly loam, reddish brown (5YR 4/3) moist tongues; texture mixed is very gravelly clay loam; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and moderately plastic; many very fine and fine and common medium and coarse roots; many very fine and fine discontinuous irregular and many very fine discontinuous tubular pores; common faint clay films on faces of peds; 5 percent cobbles; 35 percent gravel; neutral (pH 6.6); clear smooth boundary.

Bt—8 to 17 inches; reddish brown (5YR 4/4) very gravelly clay loam, dark reddish gray (5YR 4/2) moist; moderate fine subangular blocky structure; very hard, very firm, slightly sticky and moderately plastic; many medium and common very fine, fine, and coarse roots; many very fine and fine discontinuous irregular and many very fine discontinuous tubular pores; many distinct clay films on faces of peds; 10 percent cobbles; 30 percent gravel; neutral (pH 6.8); clear wavy boundary.

Btk—17 to 30 inches; brown (7.5YR 5/4) very gravelly clay loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly

sticky and moderately plastic; common very fine, fine, and medium and few coarse roots; many very fine and fine discontinuous irregular pores; few faint clay films on faces of peds; 15 percent cobbles; 35 percent gravel; disseminated lime; continuous faint and distinct lime casts on undersides of coarse fragments; strongly effervescent; moderately alkaline (pH 7.9); gradual wavy boundary.

Bk1—30 to 38 inches; pinkish gray (7.5YR 7/2) very gravelly loam, light brown (7.5YR 6/4) moist; weak medium subangular blocky structure parting to weak medium granular; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; few very fine discontinuous irregular pores; 20 percent cobbles; 40 percent gravel; disseminated lime; continuous faint and distinct lime casts covering coarse fragments; violently effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.

Bk2—38 to 60 inches; pinkish gray (7.5YR 7/2) extremely cobbly loam, light brown (7.5YR 6/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine discontinuous irregular pores; 30 percent cobbles; 40 percent gravel; disseminated lime; continuous faint and distinct lime casts covering coarse fragments; violently effervescent; moderately alkaline (pH 8.0).

Rencot Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Calciustepts

Typical Pedon

Rencot channery loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; pale brown (10YR 6/3) channery loam, brown (10YR 5/3) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots and pores; 20 percent channers; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk1—4 to 14 inches; pale yellow (2.5Y 8/2) very channery loam, light brownish gray (2.5Y 6/2) moist; weak coarse blocky structure; hard, very friable, slightly sticky and slightly plastic; common fine roots and pores; 40 percent channers; common soft masses of calcium carbonate and lime casts on undersides of rock fragments; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

Bk2—14 to 18 inches; pale yellow (2.5Y 7/4) very channery loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; 60 percent channers; violently effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

R—18 inches; fractured hard argillite bedrock.

Rentsac Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Calciustepts

Typical Pedon

Rentsac channery loam (Colors are for dry soil unless otherwise noted.)

A—0 to 2 inches; grayish brown (10YR 5/2) channery loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and nonplastic; many fine and medium roots; 15 percent sandstone channers; slightly effervescent; slightly alkaline (pH 7.6); clear wavy boundary.

Bk1—2 to 7 inches; light brownish gray (10YR 6/2) channery loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, very

friable, slightly sticky and slightly plastic; many fine and medium roots; many very fine and fine pores; 30 percent sandstone channers; disseminated lime; continuous distinct lime casts coating channers; strongly effervescent; slightly alkaline (pH 7.8); gradual wavy boundary.

Bk2—7 to 18 inches; light brownish gray (2.5Y 6/2) extremely channery loam, dark grayish brown (2.5Y 4/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine and fine and few medium pores; 10 percent cobbles; 20 percent flagstones; 40 percent channers; disseminated lime; continuous distinct lime casts coating channers; strongly effervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.

R—18 inches; calcareous sandstone.

Rivra Soil

Taxonomic Class: Sandy-skeletal, mixed, frigid Aridic Ustifluvents

Typical Pedon

Rivra gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 8 inches, light brownish gray (2.5Y 6/2) gravelly sandy loam, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; 20 percent gravel; disseminated lime; slightly effervescent; slightly alkaline (pH 7.4); clear wavy boundary.

C1—8 to 32 inches, grayish brown (2.5Y 5/2) very gravelly loamy coarse sand, dark grayish brown (2.5Y 4/2) moist; single grain; loose, nonsticky and nonplastic; common, decreasing with increasing depth to few very fine and fine roots; 10 percent stones and cobbles; 50 percent gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0).

C2—32 to 60 inches, grayish brown (2.5Y 5/2) extremely gravelly sand, with strata of loamy-sand; dark grayish brown (2.5Y 4/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; 15 percent cobbles; 55 percent gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0).

Rochester Soil

Taxonomic Class: Sandy-skeletal, mixed, frigid Typic Ustorthents

Typical Pedon

Rochester very stony loamy sand (Colors are for dry soil unless otherwise noted.)

O—0 to 2 inches; undecomposed and slightly decomposed forest litter.

A—2 to 5 inches; dark grayish brown (10YR 4/2) very stony loamy sand, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and nonplastic; common fine, medium, and coarse roots; many fine pores; 10 percent stones; 15 percent cobbles; 30 percent gravel; neutral (pH 7.2); abrupt smooth boundary.

C1—5 to 16 inches; pale brown (10YR 6/3) very stony loamy sand, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and medium and few coarse roots; many fine pores; 15 percent stones; 15 percent cobbles; 30 percent gravel; neutral (pH 6.9); clear smooth boundary.

C2—16 to 60 inches; light brownish gray (2.5Y 6/2) very stony loamy sand, dark grayish brown (2.5Y 4/2) moist; single grain; loose, nonsticky and nonplastic;

few fine, medium, and coarse roots; 15 percent stones; 15 percent cobbles; 30 percent gravel; neutral (pH 7.1).

Rogert Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Typical Pedon

Rogert very gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches; dark gray (7.5YR 4/1) very gravelly sandy loam, very dark gray (7.5YR 3/1) moist; strong fine crumb structure; soft, very friable, nonsticky and nonplastic; 40 percent gravel, mostly very fine and fine angular granite fragments; neutral (pH 6.6); clear smooth boundary.

A2—4 to 14 inches; brown (7.5YR 4/2) very gravelly coarse sandy loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; hard, very friable, nonsticky and nonplastic; 50 percent gravel, mostly very fine and fine angular granite fragments; neutral (pH 6.8); abrupt wavy boundary.

R—14 inches; granite.

Roman Soil

Taxonomic Class: Sandy-skeletal, mixed Andic Dystrocryepts

Typical Pedon

Roman extremely bouldery medial loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 0.5 inch; moss, needles, leaves, and twigs mixed with wood ash, Mt. St. Helen's volcanic ash, and charcoal.

Oe—0.5 to 1 inch; decomposed organic matter mixed with Mt. St. Helen's volcanic ash.

A—1 to 3 inches; grayish brown (10YR 5/2) medial loam, very dark grayish brown (10YR 3/2) moist; weak very fine subangular blocky structure parting to weak very fine granular; soft, very friable, nonsticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 5 percent gravel; slightly acid (pH 6.4); abrupt wavy boundary.

Bw1—3 to 6 inches; yellowish brown (10YR 5/4) cobbly medial loam, dark yellowish brown (10YR 3/4) moist; weak very fine and fine subangular blocky structure parting to weak very fine granular; soft, very friable, nonsticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 10 percent cobbles; 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bw2—6 to 12 inches; light yellowish brown (10YR 6/4) cobbly medial loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 5 percent stones; 15 percent cobbles; 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

2Bw3—12 to 25 inches; yellow (2.5Y 7/6) very cobbly sandy loam, light olive brown (2.5Y 5/6) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and few fine and medium roots; many very fine and few fine irregular pores; few fine faint iron stains that are dark yellowish brown (10YR 4/6) moist; few fine mica flakes; 15 percent stones; 30 percent cobbles; 10 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

2BC—25 to 31 inches; pale yellow (2.5Y 7/4) very cobbly loamy sand, light olive brown (2.5Y 5/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine, fine, and medium roots; common very fine irregular pores; many very fine mica flakes; 5 percent stones; 10 percent cobbles; 20 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

2C1—31 to 44 inches; mixed light gray (2.5Y 7/2) and pale yellow (2.5Y 7/3) very cobbly loamy sand, mixed grayish brown (2.5Y 5/2) and light olive brown (2.5Y 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; common very fine irregular pores; many very fine mica flakes; 5 percent stones; 10 percent cobbles; 25 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

2C2—44 to 60 inches; mixed light gray (2.5Y 7/2) and yellow (2.5Y 7/6) very cobbly sand, mixed grayish brown (2.5Y 5/2) and light olive brown (2.5Y 5/6) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine irregular pores; few fine faint iron stains that are yellowish brown (10YR 5/6) moist; many very fine mica flakes; 30 percent cobbles; 30 percent gravel; moderately acid (pH 6.0).

Rooset Soil

Taxonomic Class: Clayey-skeletal, smectitic Ustic Argicryolls

Typical Pedon

Rooset gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; strong fine granular and crumb structure; soft, very friable, slightly sticky and slightly plastic; 15 percent gravel; neutral (pH 6.7); clear smooth boundary.

BA—7 to 11 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; hard, very friable, slightly sticky and moderately plastic; 15 percent gravel; few faint clay films on faces of peds; neutral (pH 6.7); clear smooth boundary.

Bt—11 to 24 inches; brown (7.5YR 5/3) very gravelly clay loam, brown (7.5YR 4/3) moist; strong fine angular blocky structure; extremely hard, very friable, slightly sticky and moderately plastic; 50 percent gravel; continuous distinct clay films on faces of peds, coarse fragments, and fillings in root channels and pores; neutral (pH 6.8); clear wavy boundary.

Btk—24 to 30 inches; brown (7.5YR 5/3) very gravelly clay loam, brown (7.5YR 4/3) moist; moderate medium subangular blocky structure; very hard, very friable, slightly sticky and moderately plastic; 75 percent gravel; faint clay films on faces of peds and in root channels; visible secondary calcium carbonate as concretions, in thin seams and streaks, and as coats on gravel fragments; calcareous; moderately alkaline (pH 8.2); gradual wavy boundary.

BCk—30 to 60 inches; light brown (7.5YR 6/4) very gravelly light clay loam, brown (7.5YR 5/4) moist; massive; hard, very friable, slightly sticky and slightly plastic; 75 percent gravel; visible secondary calcium carbonate occurring as concretions, in thin seams and streaks, and as coats on gravel fragments; calcareous; moderately alkaline (pH 8.2).

Rubick Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Typical Pedon

Rubick cobbly coarse sandy loam, very stony (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; forest litter of partially decomposed needles, twigs, and moss-covered roots.

E1—2 to 5 inches; light brownish gray (10YR 6/2) cobbly coarse sandy loam, brown (10YR 4/3) moist; moderate very fine granular structure; slightly hard, very friable, nonsticky and slightly plastic; 5 percent stones; 10 percent cobbles; 10 percent gravel; many very fine, fine, medium, and coarse roots; many very fine, fine, and medium pores; slightly acid (pH 6.4); abrupt wavy boundary.

E2—5 to 10 inches; light brownish gray (10YR 6/2) very cobbly coarse sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; 5 percent stones; 20 percent cobbles; 15 percent gravel; many very fine, fine, and medium and common coarse roots; many very fine, fine, and medium pores; neutral (pH 7.0); clear wavy boundary.

Bw—10 to 29 inches; pale brown (10YR 6/3) very stony coarse sandy loam, brown (10YR 5/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; 20 percent stones; 10 percent cobbles; 20 percent gravel; many very fine, fine, and medium and common coarse roots; many very fine, fine, and medium pores; neutral (pH 7.2); gradual wavy boundary.

BC—29 to 60 inches; light gray (10YR 7/2) extremely stony loamy coarse sand, pale brown (10YR 6/3) moist, single grain; loose, nonsticky and nonplastic; 30 percent stones; 15 percent cobbles; 25 percent gravel; few fine, medium, and coarse roots; many very fine, fine, and medium pores; neutral (pH 7.0).

Rubycreek Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Dystrocryepts

Typical Pedon

Rubycreek very bouldery medial silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 0.5 inch; leaves, twigs, grass, moss, and bark.

A—0.5 to 2 inches; grayish brown (10YR 5/2) medial silt loam, very dark grayish brown (10YR 3/2) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 5 percent gravel; strongly acid (pH 5.5); abrupt smooth boundary.

Bw1—2 to 7 inches; yellowish brown (10YR 5/6) medial silt loam, dark yellowish brown (10YR 3/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 5 percent gravel; moderately acid (pH 6.0); clear wavy boundary.

Bw2—7 to 11 inches; light yellowish brown (10YR 6/4) medial silt loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; few very fine roots; many very fine tubular pores; 5 percent cobbles; 5 percent gravel; slightly acid (pH 6.5); clear wavy boundary.

2Bw3—11 to 19 inches; light yellowish brown (10YR 6/4) very stony loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky

structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; 20 percent stones; 10 percent cobbles; 10 percent gravel; slightly acid (pH 6.5); clear wavy boundary.

2Bt—19 to 28 inches; pale yellow (2.5Y 7/4) very cobbly loam, light olive brown (2.5Y 5/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; very few faint clay films on faces of peds; common faint and few distinct silica coats on faces of peds that are light brownish gray (10YR 6/2) moist; 30 percent cobbles; 10 percent gravel; slightly acid (pH 6.3); clear wavy boundary.

2C—28 to 60 inches; mixed pale yellow (2.5Y 7/4) and pale yellow (2.5Y 7/3) very cobbly sandy loam, light olive brown (2.5Y 5/4) and light olive brown (2.5Y 5/3) moist; massive; slightly hard, friable, nonsticky and slightly plastic; common very fine tubular and irregular pores; few faint clay films on gravel that are dark yellowish brown (10YR 4/6) moist; small part of horizon is discontinuous weakly cemented by silica that is gray (10YR 6/1) moist; 30 percent cobbles; 25 percent gravel; slightly acid (pH 6.1).

Ryell Soil

Taxonomic Class: Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, calcareous, frigid Aridic Ustifluvents

Typical Pedon

Ryell loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 8 inches, light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate very fine and fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

C1—8 to 28 inches, light brownish gray (10YR 6/2) very fine sandy loam with thin strata of silt loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine pores; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

2C2—28 to 60 inches, light brownish gray (10YR 6/2) extremely gravelly loamy sand, dark grayish brown (10YR 4/2) moist; single grain; loose; 65 percent gravel; strongly effervescent; moderately alkaline (pH 8.4).

Sappington Soil

Taxonomic Class: Coarse-loamy, mixed, superactive, frigid Calcidic Argiustolls

Typical Pedon

Sappington loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 4 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; 1 percent gravel; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bt—4 to 6 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate fine angular blocky; hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; many very fine tubular and interstitial pores; continuous faint clay films on faces of peds; 1 percent gravel; slightly alkaline (pH 7.5); abrupt smooth boundary.

Btk—6 to 9 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; moderate medium prismatic structure; hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; many very fine and fine tubular and interstitial pores; few faint clay films on faces of peds; 1 percent gravel; common distinct coats of white lime on faces of peds; strongly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

Bk1—9 to 20 inches; very pale brown (10YR 8/2) loam, very pale brown (10YR 7/3) moist; weak coarse prismatic structure; hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular and interstitial pores; 1 percent gravel; many distinct coats of lime on faces of peds; violently effervescent; moderately alkaline (pH 8.3); gradual smooth boundary.

Bk2—20 to 34 inches; very pale brown (10YR 8/3) loam, pale brown (10YR 6/3) moist; weak coarse angular blocky structure; hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular and interstitial pores; 2 percent gravel; disseminated lime; few fine masses of lime; few distinct coats of lime on faces of peds; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

Bk3—34 to 72 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; massive; hard, very friable, slightly sticky and slightly plastic; few fine roots; few very fine and fine tubular and interstitial pores; 2 percent gravel; disseminated lime; few fine masses of lime; violently effervescent; moderately alkaline (pH 8.4).

Scravo Soil

Taxonomic Class: Sandy-skeletal, mixed, frigid Aridic Calciustepts

Typical Pedon

Scravo gravelly loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 6 inches; light brownish gray (10YR 6/2) gravelly loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; 20 percent gravel; disseminated lime; continuous prominent lime casts on undersides of gravel; strongly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.

Bk—6 to 17 inches; light gray (10YR 7/2) extremely gravelly sandy loam, grayish brown (10YR 5/2) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine roots; 65 percent gravel; many fine masses of lime; disseminated lime; continuous prominent lime casts on undersides of gravel; violently effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

2Bk—17 to 60 inches; light brownish gray (10YR 6/2) extremely gravelly loamy sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; 65 percent gravel; disseminated lime; common prominent lime and silica casts on undersides of gravel; strongly effervescent; moderately alkaline.

Sebud Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Typical Pedon

Sebud very stony loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) very stony loam, very dark brown (10YR 2/2) moist; weak granular structure parting to fine crumb structure;

soft, friable, nonsticky and nonplastic; many very fine and fine roots; occasional boulder; 3 percent stone surface cover; 10 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—4 to 10 inches; dark grayish brown (10YR 4/2) very stony clay loam, very dark grayish brown (10YR 3/2) moist; very dark brown (10YR 2/2) moist coats; moderate fine and medium blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine roots and pores; 1 percent boulders; 40 percent stones; 10 percent gravel; slightly alkaline (pH 7.5); clear wavy boundary.

Bw1—10 to 22 inches; yellowish brown (10YR 5/4) very stony clay loam, dark brown (10YR 3/3) moist; dark yellowish brown (10YR 3/4) moist coats; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots and pores; 1 percent boulders; 40 percent stones; 10 percent cobbles and gravel; slightly alkaline (pH 7.4); clear wavy boundary.

Bw2—22 to 28 inches; light yellowish brown (10YR 6/4) very stony coarse sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly moderately sticky and slightly plastic; few very fine roots and pores; 1 percent boulders; 40 percent stones; 5 percent gravel; slightly alkaline (pH 7.6); gradual wavy boundary.

Bw3—28 to 49 inches; very pale brown (10YR 7/3) very stony coarse sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; few very fine roots; 1 percent boulders; 40 percent stones; 5 percent weathered granitic gravel; many clear quartz sand grains; slightly alkaline (pH 7.8); gradual wavy boundary.

Bw4—49 to 62 inches; very pale brown (10YR 7/3) very stony clay loam, yellowish brown (10YR 5/4) moist; moderate coarse subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few very fine tubular pores; 1 percent boulders; 40 percent stones; 5 percent gravel; slightly alkaline (pH 7.8).

Shadow Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Typical Pedon

Shadow very channery sandy loam (Colors are for dry soil unless otherwise noted.)

Oe—0 to 1 inch; mostly decomposed forest litter.

A—1 to 4 inches; brown (10YR 5/3) very channery sandy loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many fine, medium, and coarse roots; many fine pores; 15 percent flagstones; 45 percent channers; slightly acid (pH 6.2); clear wavy boundary.

E—4 to 18 inches; pale brown (10YR 6/3) very channery sandy loam, brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common fine, medium, and coarse roots; common fine pores; 50 percent channers; slightly acid (pH 6.4); clear wavy boundary.

Bw—18 to 31 inches; brown (10YR 5/3) extremely channery sandy loam, brown (10YR 4/3) moist; weak fine blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; common fine pores; 65 percent channers; neutral (pH 6.7); gradual smooth boundary.

BC—31 to 60 inches; pale brown (10YR 6/3) extremely channery sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; 70 percent channers; neutral (pH 6.8).

Shedhorn Soil

Taxonomic Class: Fine, mixed, superactive Typic Haplocryolls

Typical Pedon

Shedhorn clay loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common coarse roots; many very fine interstitial pores; 5 percent angular sandstone gravel; slightly acid (pH 6.2); abrupt smooth boundary.

A2—4 to 12 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; hard, friable, moderately sticky and moderately plastic; many very fine and common coarse roots; many very fine interstitial pores; 5 percent angular shale and sandstone gravel; slightly acid (pH 6.2); clear smooth boundary.

Bw—12 to 40 inches; light brownish gray (2.5Y 6/2) light clay, grayish brown (2.5Y 5/2) moist; moderate fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and fine and few coarse roots; common very fine and fine interstitial pores; thin very dark grayish brown (2.5Y 3/2) moist organic coats on faces of peds; 10 percent angular shale and sandstone gravel; slightly acid (pH 6.5); clear smooth boundary.

BC—40 to 60 inches; dark grayish brown (2.5Y 4/2) clay loam, very dark grayish brown (2.5Y 3/2) moist; weak fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few very fine, fine, medium, and coarse roots; common very fine and fine interstitial pores; 30 percent angular shale gravel.

Shewag Soil

Taxonomic Class: Sandy-skeletal, mixed Oxyaquic Haplocryolls

Typical Pedon

Shewag very gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 3 inches; undecomposed and partially decomposed matted roots; abrupt smooth boundary.

A—3 to 9 inches; dark gray (10YR 4/1) very gravelly loam, black (10YR 2/1) moist; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 5 percent cobbles; 35 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bw—9 to 18 inches; grayish brown (10YR 5/2) extremely gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; few fine faint yellowish brown (10YR 5/6) moist, redox concentrations due to prolonged saturation from flood irrigation; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine roots; many very fine and common fine dendritic tubular pores; 15 percent cobbles; 50 percent gravel; neutral (pH 7.0); clear wavy boundary.

2C—18 to 60 inches; light brownish gray (10YR 6/2) extremely gravelly sand, grayish brown (10YR 5/2) moist; single grain; loose, nonsticky and nonplastic; 20 percent cobbles; 50 percent gravel; neutral (pH 7.0).

Shurley Soil

Taxonomic Class: Sandy-skeletal, mixed, frigid Aridic Haplustepts

Typical Pedon

Shurley very flaggy coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; grayish brown (10YR 5/2) very flaggy coarse sandy loam, dark grayish brown (10YR 4/2) moist; weak very fine granular structure; loose, nonsticky and nonplastic; many very fine and fine roots; 20 percent flagstones; 20 percent channers; slightly alkaline (pH 7.8); clear smooth boundary.

Bw—4 to 10 inches; pale brown (10YR 6/3) very flaggy coarse sandy loam, brown (10YR 4/3) moist; weak medium angular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; 20 percent flagstones; 20 percent channers; slightly alkaline (pH 7.8); clear irregular boundary.

Bk—10 to 29 inches; light gray (10YR 7/2) very flaggy loamy coarse sand, grayish brown (10YR 5/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; 20 percent flagstones; 20 percent channers; common faint lime coats on rock fragments; strongly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

BC—29 to 60 inches; very pale brown (10YR 7/3) very flaggy loamy sand, light yellowish brown (10YR 6/4) moist; single grain; loose, very friable, nonsticky and nonplastic; few very fine and fine roots; 20 percent flagstones; 40 percent channers; disseminated lime; strongly effervescent; slightly alkaline (pH 7.8).

Sig Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Dystrocryepts

Typical Pedon

Sig gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; organic layer of needles, leaves, and roots.

A—2 to 9 inches; light reddish brown (5YR 6/3) gravelly loam, reddish brown (5YR 4/3) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; 1 percent stones; 5 percent cobbles; 25 percent gravel; moderately acid (pH 5.6); gradual wavy boundary.

Bw—9 to 16 inches; reddish brown (5YR 5/4) very gravelly loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; 2 percent stones; 15 percent cobbles; 30 percent gravel; moderately acid (pH 5.6); abrupt wavy boundary.

R—16 inches; hard granite bedrock, fractured in upper few inches.

Sigbird Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts

Typical Pedon

Sigbird very channery loam, very bouldery (Colors are for dry soil unless otherwise noted.)

A—0 to 5 inches; brown (10YR 5/3) very channery loam, dark brown (10YR 3/3) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial

pores; 10 percent flagstones; 50 percent channers; neutral (pH 7.2); clear wavy boundary.

Bw—5 to 14 inches; pale brown (10YR 6/3) extremely channery loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; 15 percent flagstones; 60 percent channers; slightly alkaline (pH 7.4); clear smooth boundary.

R—14 inches; fractured hard shale.

Silas Soil

Taxonomic Class: Fine-loamy, mixed, superactive Cumulic Haplocryolls

Typical Pedon

Silas loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; weak very fine crumb structure; soft, very friable, slightly sticky and nonplastic; many very fine, medium, and coarse roots; few cobbles and gravel; neutral (pH 6.8); abrupt smooth boundary.

A2—3 to 22 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist with thin lenses of black (10YR 2/1) and very dark gray (10YR 3/1); massive; soft, very friable, slightly sticky and nonplastic; many very fine and medium coarse roots; few cobbles and gravel; neutral (pH 6.9); abrupt wavy boundary.

C—22 to 60 inches; brown (10YR 5/3) loam stratified with thin lenses of very fine sandy loam, silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; 5 percent cobbles; 10 percent gravel; neutral (pH 7.0).

Sixbeacon Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Aridic Haplustolls

Typical Pedon

Sixbeacon gravelly loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; many fine irregular pores; 15 percent gravel; neutral (pH 6.8); abrupt smooth boundary.

Bw—4 to 10 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many fine roots; many very fine and fine tubular pores; 5 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bk1—10 to 12 inches; light brownish gray (10YR 6/2) loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; many very fine and fine pores; 10 percent gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

2Bk2—12 to 24 inches; very pale brown (10YR 8/2) very gravelly sandy loam, light gray (10YR 7/2) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; many very fine and fine

tubular pores; 50 percent gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

3Bk3—24 to 60 inches; light gray (10YR 7/2) extremely gravelly loamy sand, pale brown (10YR 6/3) moist; single grain; loose, nonsticky and nonplastic; few fine roots; many fine irregular pores; 10 percent cobbles; 60 percent gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.4).

Skaggs Soil

Taxonomic Class: Loamy-skeletal, carbonatic Calcic Haplocryolls

Typical Pedon

Skaggs loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches, very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; strong very fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; few limestone fragments; neutral; clear wavy boundary.

A2—4 to 10 inches, very dark gray (10YR 3/1) heavy loam, black (10YR 2/1) moist; weak medium blocky structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine pores; 10 percent limestone fragments; slightly effervescent; slightly alkaline; clear wavy boundary.

Bk1—10 to 21 inches, light brownish gray (10YR 6/2) gravelly clay loam, dark grayish brown (10YR 4/2) moist; strong very fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; many very fine and fine pores; 10 percent limestone cobbles; 30 percent limestone gravel; strongly effervescent; moderately alkaline; clear wavy boundary.

Bk2—21 to 32 inches, light gray (2.5Y 7/2) very stony clay loam, grayish brown (2.5Y 5/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; many very fine and fine pores; 20 percent stones; 25 percent gravel; strongly effervescent; moderately alkaline; gradual wavy boundary.

R—32 inches, interbedded limestone and shale; strongly effervescent; moderately alkaline.

Slagamelt Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Aquic Haplocryolls

Typical Pedon

Slagamelt cobbly silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; undecomposed and partially decomposed matted roots, leaves, and twigs; abrupt smooth boundary.

A—1 to 7 inches; very dark grayish brown (10YR 3/2) cobbly silt loam, very dark brown (10YR 2/2) moist; few distinct brownish yellow (10YR 6/6) dry relict mottles; weak coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; few very fine and fine dendritic tubular pores; 15 percent cobbles; 10 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

Bw1—7 to 16 inches; brown (10YR 4/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine

and fine dendritic tubular pores; 25 percent cobbles; 25 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

Bw2—16 to 27 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; moderate fine subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine dendritic tubular pores; 10 percent cobbles; 35 percent gravel; neutral (pH 7.0); clear smooth boundary.

C—27 to 34 inches; light gray (10YR 7/2) very gravelly sandy loam, pale brown (10YR 6/3) moist; common distinct brownish yellow (10YR 6/6) dry redox concentrations; massive; soft, friable, nonsticky and nonplastic; 15 percent cobbles; 40 percent gravel; neutral (pH 7.2); gradual wavy boundary.

2C—34 to 60 inches; light gray (10YR 7/2) extremely gravelly sand, pale brown (10YR 6/3) moist; many distinct brownish yellow (10YR 6/6) dry redox concentrations; single grain; loose, nonsticky and nonplastic; 15 percent cobbles; 55 percent gravel; neutral (pH 7.2).

Spudbar Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Aridic Calciustolls

Typical Pedon

Spudbar very cobbly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 6 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; many very fine interstitial pores; 20 percent cobbles; 20 percent gravel; disseminated lime; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.

Bk1—6 to 18 inches; very pale brown (10YR 8/3) very gravelly loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common fine interstitial pores; 15 percent cobbles; 40 percent gravel; many distinct carbonate coats on rock fragments; common irregular fine masses of lime; violently effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk2—18 to 22 inches; very pale brown (10YR 8/2) extremely gravelly sandy loam, pale brown (10YR 6/3) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; few very fine interstitial pores; 15 percent cobbles; 60 percent gravel; many distinct carbonate coats on rock fragments; common irregular masses of lime; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

R—22 inches; slightly weathered igneous rock.

Starley Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Typical Pedon

Starley very cobbly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 9 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; strong fine granular structure; soft, very friable, moderately sticky and slightly plastic; 40 percent angular limestone fragments 3 to 10 inches in diameter; neutral (pH 6.8); gradual wavy boundary.

Bk—9 to 15 inches; pale brown (10YR 6/3) extremely cobbly loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, moderately sticky and slightly plastic; strongly effervescent; calcium carbonate disseminated and as inconsistent common soft masses and as thin pendants on some rock fragments; 65 percent angular limestone fragments mainly 3 to 10 inches in diameter; moderately alkaline (pH 8.0); abrupt wavy boundary.

R—15 inches; hard limestone.

Stecum Soil

Taxonomic Class: Sandy-skeletal, mixed Typic Cryorthents

Typical Pedon

Stecum coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 5 inches; light brownish gray (10YR 6/2) coarse sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to weak coarse granular; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine pores; 10 percent gravel; neutral (pH 7.3); clear smooth boundary.

A2—5 to 12 inches; pale brown (10YR 6/3) loamy coarse sand, brown (10YR 4/3) moist; weak fine subangular blocky structure parting to weak coarse granular; slightly hard, very friable, nonsticky and nonplastic; few fine roots; few fine pores; 5 percent cobbles; 10 percent gravel; neutral (pH 7.3); clear wavy boundary.

C—12 to 28 inches; light gray (2.5Y 7/2) gravelly coarse sand, pale brown (10YR 6/3) moist; massive; loose, very friable, nonsticky and nonplastic; few fine roots; 5 percent stones; 5 percent cobbles; 35 percent gravel; neutral (pH 7.3); abrupt smooth boundary.

Cr—28 inches; fractured and partly weathered micaceous granite and gneiss.

Surdal Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Typical Pedon

Surdal cobbly loam, stony (Colors are for dry soil unless otherwise noted.)

A1—0 to 7 inches; dark grayish brown (10YR 4/2) cobbly loam, very dark brown (10YR 2/2) moist; moderate fine and medium granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 10 percent cobbles; 10 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

A2—7 to 13 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 15 percent cobbles; 25 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bw1—13 to 23 inches; grayish brown (10YR 5/2) very cobbly loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 15 percent cobbles; 30 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

Bw2—23 to 31 inches; brown (10YR 5/3) very cobbly loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, very friable, nonsticky and

nonplastic; common very fine and fine and few medium roots; common very fine and fine interstitial pores; 30 percent cobbles; 30 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

R—31 inches; hard, slightly fractured, fine-grained igneous bedrock.

Swifton Soil

Taxonomic Class: Fine-loamy, mixed, superactive Typic Palecryalfs

Typical Pedon

Swifton gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; undecomposed needles and matted dark-colored organic material.

E1—1 to 4 inches; light gray (10YR 7/2) gravelly sandy loam, grayish brown (10YR 5/2) moist; weak very thin platy structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; common fine and few medium tubular pores; 20 percent gravel; very strongly acid (pH 4.5); clear irregular boundary.

E2—4 to 16 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak very fine and fine blocky structure; slightly hard, very friable, nonsticky and nonplastic; many fine and medium roots; few fine tubular pores; 20 percent gravel; very strongly acid (pH 4.5); clear smooth boundary.

E3—16 to 23 inches; light gray (10YR 7/2), pale brown (10YR 6/3) crushed, gravelly loam, dark grayish brown (10YR 4/2) moist; weak fine and medium blocky structure; hard, friable, slightly sticky and slightly plastic; common fine and medium roots; few fine tubular pores; 20 percent gravel; very strongly acid (pH 4.5); clear smooth boundary.

E/B—23 to 38 inches; light gray (10YR 7/2) and grayish brown (10YR 5/2) gravelly sandy clay loam, dark grayish brown (10YR 4/2) and brown (10YR 4/3) moist; (about 40 percent of the mass is in a very fine mixed color pattern having skeletans of light gray clean silt and sand about 1-mm thick on outer walls of peds); moderate medium blocky structure; hard, friable, slightly sticky and slightly plastic; common fine and medium roots; common fine tubular pores; 25 percent gravel; strongly acid (pH 5.5); gradual smooth boundary.

B/E—38 to 53 inches; light gray (10YR 7/2) gravelly sandy clay loam, dark grayish brown (10YR 4/2) moist; the E horizon material dominates the color, but there are common medium distinct mottles of yellowish brown (10YR 5/4) and skeletans of light gray clean silt and sand about 1-mm thick on outer walls of peds; moderate medium blocky structure; very hard, friable, moderately sticky and moderately plastic; few fine roots; few fine and coarse tubular pores; 30 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

Bt—53 to 73 inches; yellowish brown (10YR 5/4) sandy clay loam, dark grayish brown (10YR 4/2) moist; moderate fine and medium blocky structure; very hard, friable, moderately sticky and moderately plastic; few fine roots; few fine and coarse tubular pores; 40 percent coarse fragments; distinct clay films on coarse fragments, in pores, and along root channels; slightly alkaline (pH 7.5).

Tampico Soil

Taxonomic Class: Fine-loamy, mixed, superactive Ustic Haplocryolls

Typical Pedon

Tampico loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inches; needles, leaves, and twigs in various stages of decomposition.

A1— 1 to 7 inches; brown (7.5YR 4/2) loam, dark brown (7.5YR 3/2) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common fine roots; few fine pores; slightly acid; clear smooth boundary.

A2—7 to 12 inches; brown (7.5YR 5/2) gravelly loam, dark brown (7.5YR 3/2) moist; weak and moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine and medium roots; few fine pores; highly micaceous; neutral; clear smooth boundary.

BA—12 to 18 inches; reddish brown (5YR 5/3) gravelly loam, reddish brown (5YR 4/3) moist; weak and moderate fine subangular blocky structure; very hard, firm, slightly sticky and slightly plastic; common fine and medium roots; few fine pores; slightly acid; clear smooth boundary.

Bw—18 to 31 inches; reddish brown (2.5YR 4/4) gravelly clay loam, dark reddish brown (2.5YR 3/4) moist; moderate fine subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; few medium roots; many fine pores; slightly acid; gradual smooth boundary.

BC—31 to 61 inches; reddish brown (2.5YR 5/4) gravelly loam, reddish brown (2.5YR 4/4) moist; weak fine subangular blocky structure; very hard, firm, slightly sticky and slightly plastic; few fine pores; neutral.

Targhee Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts

Typical Pedon

Targhee loam (Colors are for dry soil unless otherwise noted.)

A—0 to 5 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; strong fine granular structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine and common medium roots; common very fine discontinuous random vesicular pores; moderately acid (pH 5.6); gradual smooth boundary.

Bw—5 to 14 inches; light gray (10YR 7/2) gravelly sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; common very fine discontinuous random vesicular pores; 25 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

C1—14 to 30 inches; white (10YR 8/1) very gravelly sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine and common medium roots; few very fine oblique random vesicular pores; 35 percent gravel; moderately acid (pH 6.0); gradual wavy boundary.

2C2—30 to 36 inches; white (10YR 8/1) extremely cobbly sand, light brownish gray (10YR 6/2) moist; single grain; loose; 50 percent cobbles; 40 percent gravel; moderately acid (pH 6.0); abrupt wavy boundary.

2R—36 inches; rhyolitic tuff.

Tenrag Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Palecryalfs

Typical Pedon

Tenrag loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; fresh litter and duff.

E1—1 to 3 inches; pinkish gray (7.5YR 7/2) loam, reddish gray (5YR 5/2) moist; weak fine crumb structure; soft, very friable, nonsticky and nonplastic; many fine and medium and few coarse roots; 10 percent cobbles and gravel; clear smooth boundary.

E2—3 to 22 inches; pinkish gray (5YR 7/2) gravelly loam, light reddish brown (5YR 6/3) moist; weak medium and coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and medium and few coarse roots; many very fine and fine tubular pores; sand and silt grains clear and unstained; a few cobbles and 15 to 20 percent gravel; gradual irregular boundary.

E/B—22 to 39 inches; pink (5YR 7/3) cobbly light clay loam, reddish brown (5YR 5/3) moist; weak coarse angular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few medium roots; many very fine and fine tubular pores; patches of reddish yellow (7.5YR 6/6) clay films on vertical faces of coarse blocks; clay and clear silt bridging sand on vertical and horizontal faces; 20 to 30 percent cobbles; 5 percent gravel; gradual wavy boundary.

Bt—39 to 54 inches; mixed light reddish brown (5YR 6/4) and pink (5YR 7/3) very cobbly clay loam, reddish brown (5YR 5/4) and light reddish brown (5YR 6/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many fine and common medium tubular pores; patches of light reddish brown clay film on vertical faces of blocks and clay and pink silt bridging sand on all other surfaces and in interior of blocks; 50 percent cobbles; 10 percent gravel; abrupt smooth boundary.

R—54 inches; red argillite and quartzite bedrock mixed with 10 percent fine earth and having large patches of clay films on rock fragments and on peds of included soil.

Tepecreek Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs

Typical Pedon

Tepecreek very gravelly sandy clay loam, very bouldery (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inches; partially decomposed needles, twigs, and leaves.

A—1 to 3 inches; grayish brown (10YR 5/2) very gravelly sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine and few medium pores; 35 percent gravel; slightly acid (pH 6.3); clear smooth boundary.

E—3 to 9 inches; brown (10YR 5/3) very gravelly sandy clay loam, dark grayish brown (10YR 4/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine and few medium pores; 40 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

Bt—9 to 19 inches; yellowish brown (10YR 5/4) very gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few

fine and medium roots; many very fine and few fine interstitial and tubular pores; many faint clay films bridging sand grains; 40 percent gravel; slightly acid (pH 6.1); clear wavy boundary.

BC—19 to 36 inches; olive brown (2.5Y 4/4) very gravelly sandy loam, very dark grayish brown (2.5Y 3/2) moist; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; many very fine and few fine roots; many very fine and few fine interstitial and tubular pores; 55 percent gravel; neutral (pH 6.6); clear wavy boundary.

Cr—36 to 53 inches; light olive brown (2.5Y 5/4) decomposed granite bedrock (grus) that crushes to very gravelly loamy coarse sand; slightly acid (pH 6.4); gradual wavy boundary.

R—53 inches; hard granite bedrock.

Tepete Soil

Taxonomic Class: Loamy, mixed, euic Terric Cryohemists

Typical Pedon

Tepete mucky peat (Colors are for moist soil unless otherwise noted.)

Oe1—0 to 7 inches; very dark brown (10YR 2/2), broken face mucky peat; about 40 percent fiber and 35 percent rubbed; many very fine and fine and common medium roots; massive; fibers are primarily brown (10YR 4/3) and very dark brown (10YR 2/2) dry sedges and rushes; moderately acid (pH 5.6); clear smooth boundary.

Oe2—7 to 14 inches; black (10YR 2/1) broken face mucky peat; about 40 percent fiber and 35 percent rubbed; many very fine and common fine and medium roots; massive; fibers are primarily sedges and rushes; moderately acid (pH 5.6); clear smooth boundary.

Oe3—14 to 25 inches; black (10YR 2/1) broken face mucky peat, black (10YR 2/1) dry; about 75 percent fiber and 60 percent rubbed; fibrous or massive; extremely hard and wets very slowly; very friable; few very fine and fine roots; fibers are primarily sedges and rushes; neutral (pH 6.8); clear smooth boundary.

Oe4—25 to 29 inches; black (10YR 2/1) broken face mucky peat, black (10YR 2/1) dry; few thin layers of very dark gray (N 3/) silty clay loam, dark gray (N 4/) dry; about 75 percent fiber and 60 percent rubbed; massive; extremely hard, very friable, slightly sticky and slightly plastic; fibers are primarily sedges and rushes; neutral (pH 6.8); clear smooth boundary.

A—29 to 34 inches; black (N 2/) silty clay loam, dark gray (2.5Y 4/1) dry; massive; extremely hard, firm, moderately sticky and moderately plastic; common very fine tubular pores; contains common partially decomposed plant remains; neutral (pH 6.8); clear smooth boundary.

Cg1—34 to 43 inches; dark gray (5Y 4/1) silty clay loam, gray (5Y 6/1) dry; massive; very hard, friable, moderately sticky and moderately plastic; few very fine tubular pores; common fine prominent black (10YR 2/1) and few fine distinct very dark grayish brown (10YR 3/2) irregularly shaped iron masses around roots and on surfaces along pores; the lower 8 to 15 cm of this horizon contains pockets of very fine sand and silt having common coarse prominent yellowish brown (10YR 5/6) irregularly shaped iron masses, brownish yellow (10YR 6/6) dry; contains common partially decomposed plant remains; slightly alkaline (pH 7.6); clear wavy boundary.

2Cg2—43 to 58 inches; grayish brown (2.5Y 5/2) gravelly loamy sand, light brownish gray (2.5Y 6/2) dry; single grain; loose, nonsticky and nonplastic; 30 percent gravel, dominantly granite and some sandstone, quartzite, and limestone; moderately alkaline (pH 8.0).

2Cg3—58 to 60 inches; very gravelly sand; single grain; loose, nonsticky and nonplastic; 50 percent gravel; moderately alkaline (pH 8.0).

Thess Soil

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Aridic Calciustepts

Typical Pedon

Thess loam (Colors are for dry soil unless otherwise noted.)

A—0 to 5 inches; pinkish gray (7.5YR 6/2) loam, brown (7.5YR 4/2) moist; strong thin platy structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; common fine pores; disseminated lime; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk1—5 to 22 inches; light gray (10YR 7/2) loam, brown (10YR 5/3) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; common fine pores; 5 percent cobbles; 5 percent gravel; disseminated lime; continuous distinct lime coats on surfaces of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

Bk2—22 to 34 inches; very pale brown (10YR 7/3) loam, consisting of thin strata of silt loam and sandy loam brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few fine roots; 5 percent cobbles; 5 percent gravel; disseminated lime; continuous distinct lime coats on surfaces of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

2Bk3—34 to 60 inches; very gravelly sand; variegated colors; single grain; loose, nonsticky and nonplastic; 20 percent cobbles; 50 percent gravel; disseminated lime; continuous faint lime casts on undersides of rock fragments; slightly effervescent; moderately alkaline (pH 8.4).

Threeriv Soil

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, calcareous, frigid Typic Fluvaquents

Typical Pedon

Threeriv loam (Colors are for moist soil unless otherwise noted.)

Oe—0 to 4 inches; partially decomposed sedges, rushes, and grasses; slightly alkaline (pH 7.8); clear smooth boundary.

Ag—4 to 9 inches; dark gray (10YR 4/1) loam, gray (10YR 5/1) dry; few fine prominent brown (7.5YR 4/4) redox concentrations; weak medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; common medium and few very fine and fine roots; 10 percent gravel; strongly effervescent; moderately alkaline (pH 8.0).

Cg—9 to 29 inches; light brownish gray (10YR 6/2) sandy clay loam consisting of strata of sandy clay loam and sandy loam, light gray (10YR 7/2) dry; common fine prominent dark yellowish brown (10YR 4/6) redox concentrations; massive; hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; 10 percent gravel; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

2C—29 to 60 inches; variegated extremely gravelly loamy sand; single grain; loose, nonsticky and nonplastic; 15 percent cobbles; 60 percent gravel; moderately alkaline (pH 8.0).

Tiban Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Typical Pedon

Tiban stony clay loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; brown (7.5YR 4/2) stony clay loam, dark brown (10YR 3/3) moist; very dark grayish brown (10YR 3/2) moist coats; weak medium subangular blocky structure parting to fine granular; slightly hard, friable, nonsticky and nonplastic; many very fine roots and pores; 35 percent subangular stones, cobbles, and gravel; neutral; clear smooth boundary.

Bw—4 to 13 inches; grayish brown (10YR 5/2) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine roots and pores; 35 percent cobbles and gravel; many clear silt and fine sand grains; slightly alkaline; clear wavy boundary.

Bk—13 to 23 inches; brown (10YR 5/3) very gravelly clay loam, brown (10YR 4/3) moist; brown (10YR 4/3) moist coats; weak medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; few very fine roots and pores; roots matted around rocks; 45 percent gravel; common distinct lime coats with incrustation on undersides of gravel; common fine masses of lime; strongly effervescent; moderately alkaline; clear wavy boundary.

C—23 to 60 inches; light reddish brown (2.5YR 6/4) very gravelly clay loam, red (2.5YR 4/6) moist; massive; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots and pores; 50 percent stones, cobbles, and gravel of limestone, quartzite, and sandstone; rock fragments are all subangular and lime coated on the undersides; strongly effervescent; moderately alkaline.

Tibkey Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Fluvaquentic Haplocryolls

Typical Pedon

Tibkey mucky silt loam, bouldery (Colors are for dry soil unless otherwise noted.)

A1—0 to 2 inches; very dark grayish brown (10YR 3/2) mucky silt loam, very dark brown (10YR 2/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; 10 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

A2—2 to 8 inches; very dark gray (10YR 3/1) mucky silt loam, black (10YR 2/1) moist; strong medium prismatic structure parting to moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; 10 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bw1—8 to 13 inches; grayish brown (10YR 5/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 40 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bw2—13 to 25 inches; light brownish gray (10YR 6/2) very gravelly loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 5 percent cobbles; 30 percent gravel; neutral (pH 6.8); gradual wavy boundary.

Bw3—25 to 32 inches; light gray (10YR 7/2) very gravelly loam, brown (10YR 5/3) moist; few fine distinct yellowish brown (10YR 5/6) redox concentrations; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 5 percent cobbles; 30 percent gravel; neutral (pH 6.8); gradual irregular boundary.

BC—32 to 60 inches; very pale brown (10YR 7/3) very gravelly loam, pale brown (10YR 6/3) moist; common fine prominent strong brown (7.5YR 5/6) redox concentrations; massive; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine interstitial pores; 5 percent cobbles; 40 percent gravel; slightly alkaline (pH 7.4).

Tibson Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Calcic Haplocryolls

Typical Pedon

Tibson cobbly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; very dark grayish brown (10YR 3/2) cobbly loam, black (10YR 2/1) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine irregular pores; 10 percent cobbles; 10 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

Bw—4 to 8 inches; dark brown (10YR 3/3) cobbly loam, very dark brown (10YR 2/2) moist; moderate fine prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine irregular pores; 10 percent cobbles; 10 percent gravel; slightly effervescent; slightly alkaline (pH 7.8); gradual wavy boundary.

Bk1—8 to 14 inches; pale brown (10YR 6/3) very cobbly clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, slightly sticky and moderately plastic; common very fine and fine roots; common fine tubular pores with lime coats and masses filling pores; many medium masses of lime; 15 percent cobbles; 20 percent gravel; violently effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.

Bk2—14 to 60 inches; pale brown (10YR 6/3) very cobbly clay loam, brown (10YR 5/3) moist; weak coarse prismatic structure; very hard, firm, slightly sticky and moderately plastic; common very fine roots to 42 inches and few very fine roots below this depth; common medium masses of lime; 20 percent cobbles; 30 percent gravel; violently effervescent; moderately alkaline (pH 8.2).

Tigeron Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Typical Pedon

Tigeron flaggy sandy loam (Colors are for dry soil unless otherwise noted.)

O—1 inch to 0; forest litter of undecomposed and decomposed needles, twigs, and cones.

E1—0 to 3 inches; light brownish gray (10YR 6/2) flaggy sandy loam, very dark grayish brown (10YR 3/2) moist; strong thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; continuous coats of sand

grains on surface of plates; 10 percent flagstones; 5 percent channers; strongly acid (pH 5.4); clear wavy boundary.

E2—3 to 7 inches; light gray (10YR 7/2) flaggy sandy loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; continuous coats of sand grains on plates; 20 percent flagstones; 10 percent channers; strongly acid (pH 5.4); clear wavy boundary.

E and Bt—7 to 13 inches; E part (75 percent) light gray (10YR 7/2) flaggy sandy loam, grayish brown (10YR 5/2) moist; Bt part (25 percent) pale brown (10YR 6/3) sandy clay loam, brown (10YR 4/3) moist; 1/16- to 3/8-inch thick lamellae; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine and few medium pores in the E horizon and lamellae; thin clay films in root channels; 20 percent flagstones; 10 percent channers; strongly acid (pH 5.4); clear wavy boundary.

Bt and E—13 to 24 inches; Bt part (60 percent) pale brown (10YR 6/3) very flaggy sandy clay loam, brown (10YR 4/3) moist; 1/16- to 1/2-inch thick lamellae; E part (40 percent) light gray (10YR 7/2) sandy loam, dark grayish brown (10YR 4/2) moist; strong very fine and fine blocky structure; very hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; many very fine and fine and few medium pores; continuous faint clay films on faces of peds and on undersides of rock fragments and in root channels; 30 percent flagstones; 15 percent channers; strongly acid (pH 5.4); gradual wavy boundary.

Bt—24 to 61 inches; pale brown (10YR 6/3) extremely flaggy sandy clay loam, brown (10YR 4/3) moist; strong fine and medium blocky structure; extremely hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; many very fine and fine and few medium pores; continuous prominent clay films on all faces of peds and in root channels; continuous prominent clay films on all surfaces of smaller rock fragments and on undersides of larger rock fragments; common faint coats of sand grains on faces of peds and on surface of rock fragments; 30 percent flagstones; 30 percent channers; strongly acid (pH 5.4); gradual wavy boundary.

2C—61 to 67 inches; gray (10YR 6/1) very flaggy loam, dark gray (10YR 4/1) moist; massive; extremely hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; common very fine and fine pores; 30 percent flagstones; 20 percent channers.

Torpy Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts

Typical Pedon

Torpy gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inches; forest litter of partially decomposed needles and twigs.

A—1 to 4 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; common very fine and fine pores; 15 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

E—4 to 9 inches; light brownish gray (10YR 6/2) loam, grayish brown (10YR 5/2) moist; weak medium granular structure; soft, very friable, slightly sticky and moderately plastic; common very fine and fine roots; common very fine and fine pores; 10 percent gravel; slightly acid (pH 6.2); gradual smooth boundary.

Bw—9 to 35 inches; light gray (10YR 7/2) very cobbly loam, grayish brown (10YR 5/2) moist; moderate medium angular blocky structure; soft, very friable, slightly sticky and moderately plastic; common very fine and few fine roots; common very

fine and fine pores; 20 percent cobbles; 25 percent gravel; slightly acid (pH 6.4); gradual smooth boundary.

BC—35 to 60 inches; light gray (10YR 7/1) very cobbly loam, gray (10YR 5/1) moist; single grain; loose, slightly sticky and slightly plastic; 25 percent cobbles; 25 percent gravel; few coarse roots; slightly acid (pH 6.5).

Trimad Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Aridic Calciustolls

Typical Pedon

Trimad cobbly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 2 inches; dark grayish brown (10YR 4/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine irregular pores; 10 percent cobbles; 10 percent gravel; neutral (pH 7.1); clear smooth boundary.

Bw—2 to 6 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to fine strong subangular blocky; hard, friable, moderately sticky and moderately plastic; many fine roots; many very fine irregular and tubular pores; 10 percent cobbles; 15 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bk1—6 to 9 inches; light gray (10YR 7/2) gravelly loam, grayish brown (10YR 5/2) moist; weak medium prismatic structure parting to moderate fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common very fine irregular and tubular pores; 5 percent cobbles; 15 percent gravel; lime coats on cobbles and gravel; disseminated lime; strongly effervescent; slightly alkaline (pH 7.7); clear smooth boundary.

Bk2—9 to 18 inches; light gray (10YR 7/2) very gravelly loam, light brownish gray (10YR 6/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; common fine vesicular pores and few very fine tubular pores; 10 percent cobbles; 30 percent gravel; lime coats on cobbles and gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Bk3—18 to 60 inches; light brownish gray (10YR 6/2) extremely gravelly sandy loam, grayish brown (10YR 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; many fine irregular pores; 20 percent cobbles; 50 percent gravel; lime coats on cobbles and gravel; disseminated lime; strongly effervescent; slightly alkaline (pH 7.6).

Tropal Soil

Taxonomic Class: Loamy-skeletal, carbonatic Lithic Eutrocryepts

Typical Pedon

Tropal gravelly loam, bouldery (Colors are for dry soil unless otherwise noted.)

Oi—0 to 0.5 inch; partially decomposed needles, twigs, and leaves.

A—0.5 to 4 inches; brown (10YR 5/3) very gravelly loam, dark grayish brown (10YR 4/2) moist; moderate medium granular structure, slightly hard, very friable, nonsticky and nonplastic; many fine roots; common very fine and fine pores; 5 percent cobbles; 40 percent gravel; continuous distinct lime coats on undersides

of rock fragments; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bk—4 to 16 inches; light gray (10YR 7/2) very gravelly loam, grayish brown (10YR 5/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; common very fine and fine pores; 10 percent cobbles; 50 percent gravel; continuous prominent lime casts on rock fragments; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

R—16 inches; hard limestone.

Trout Creek Soil

Taxonomic Class: Fine, smectitic Typic Argicryolls

Typical Pedon

Trout Creek clay loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches; brown (7.5YR 4/2) clay loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; noncalcareous; slightly alkaline (pH 7.4); clear smooth boundary.

B1—4 to 7 inches; variegated grayish brown (2.5Y 5/2) and olive gray (5Y 5/2) heavy clay loam, very dark grayish brown (2.5Y 3/2) and dark reddish brown (5YR 3/3) moist; strong fine angular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; very hard, firm peds; thin glossy patches on some faces of peds and discontinuous glossy coats on the inside of root channels and pores; 5 percent flat rock fragments and gravel; noncalcareous; slightly alkaline (pH 7.4); clear smooth boundary.

B2t—7 to 20 inches; variegated light olive brown (2.5Y 5/3) and reddish brown (2.5YR 5/3) light clay, olive brown (2.5Y 4/3) and reddish brown (2.5YR 4/3) moist; strong fine angular blocky structure; slightly hard, firm, moderately sticky and moderately plastic; thin continuous waxlike coats on some faces of peds and discontinuous waxlike coats and fillings on the inside of root channels and pores; noncalcareous; slightly alkaline (pH 7.6); clear smooth boundary.

B3ca—20 to 24 variegated grayish brown (2.5Y 5/2) and reddish brown (5YR 5/3) light clay, dark grayish brown (2.5Y 4/2) and reddish brown (5YR 4/3) moist; weak fine subangular and angular blocky structure; slightly hard, very friable, moderately sticky and moderately plastic; extremely hard, very firm peds; few thin glossy patches on some faces of peds and discontinuous glossy coats on the inside of root channels and pores; visible secondary calcium carbonate occurring as concretions and in thin seams and streaks; calcareous; moderately alkaline (pH 8.0); gradual smooth boundary.

C1ca—24 to 30 inches; variegated light gray (2.5Y 7/1) and reddish brown (5YR 5/3) clay loam, light brownish gray (2.5Y 6/2) and reddish brown (5YR 4/3) moist; massive; very hard, firm, moderately sticky and moderately plastic; visible secondary calcium carbonate occurring as soft concretions and in thin seams and streaks; calcareous; moderately alkaline (pH 8.2); gradual smooth boundary.

C2—30 to 50 inches; variegated red, yellow, and gray calcareous Pennsylvanian shales.

Twinadams Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Calcidic Haplustalfs

Typical Pedon

Twinadams very channery loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; light olive brown (2.5Y 5/3) very channery loam, dark olive brown (2.5Y 3/3) moist; weak fine and medium subangular blocky structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; 15 percent flagstones; 40 percent channers; neutral (pH 6.8); clear smooth boundary.

Bt—4 to 9 inches; light olive brown (2.5Y 5/4) very channery clay loam, olive brown (2.5Y 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and few fine roots; many distinct clay films on faces of peds and on surface of rock fragments; 50 percent channers; neutral (pH 6.8); clear smooth boundary.

Bk1—9 to 17 inches; light gray (2.5Y 7/2) very channery sandy loam, light yellowish brown (2.5Y 6/3) moist; weak fine and medium subangular blocky structure parting to weak fine granular; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; 40 percent channers; violently effervescent; common soft masses of lime; moderately alkaline (pH 8.0); clear smooth boundary.

Bk2—17 to 28 inches; light yellowish brown (2.5Y 6/3) very channery sandy loam, light olive brown (2.5Y 5/3) moist; weak fine and medium subangular blocky structure parting to weak fine granular; soft, very friable, slightly sticky and nonplastic; few fine roots; 55 percent channers; disseminated lime; common soft masses of lime; violently effervescent; moderately alkaline (pH 8.3); clear smooth boundary.

Cr—28 to 36 inches; pale yellow (5Y 7/3) semiconsolidated sedimentary beds that crush to sandy loam, olive (5Y 5/4) moist; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

R—36 inches; hard sedimentary rock.

Upsata Soil

Taxonomic Class: Sandy-skeletal, mixed Andic Eutrocryepts

Typical Pedon

Upsata gravelly ashy fine sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.

E—2 to 4 inches; pinkish gray (7.5YR 7/2) ashy loam, brown (7.5YR 4/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine pores; 10 percent gravel; moderately acid (pH 6.0); clear wavy boundary.

Bw—4 to 15 inches; light yellowish brown (10YR 6/4) gravelly ashy fine sandy loam, brown (7.5YR 4/4) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine pores; 20 percent gravel; moderately acid (pH 5.7); clear wavy boundary.

2C1—15 to 42 inches; pinkish gray (7.5YR 6/2) extremely gravelly loamy coarse sand, brown (7.5YR 5/2) moist; single grain; loose, nonsticky and nonplastic; many very fine, fine, and medium roots; 20 percent cobbles; 50 percent gravel; moderately acid (pH 5.8); gradual smooth boundary.

2C2—42 to 60 inches; pink (5YR 7/3) extremely gravelly loamy coarse sand, reddish gray (5YR 5/2) moist; single grain; loose, nonsticky and nonplastic; few very fine, fine, and medium roots; many very fine and fine pores; 20 percent cobbles; 50 percent gravel; moderately acid (pH 5.9).

Varney Soil

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Calcidic Argiustolls

Typical Pedon

Varney clay loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 5 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate 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 interstitial pores; 5 percent gravel; neutral (pH 6.6); clear smooth boundary.

Bt—5 to 16 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine and fine roots; common fine tubular pores; continuous faint clay films on faces of peds; 10 percent gravel; neutral (pH 7.3); clear irregular boundary.

Bk1—16 to 28 inches; light gray (10YR 7/2) gravelly sandy clay loam, pale brown (10YR 6/3) moist; weak coarse prismatic structure; slightly hard, friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine pores; 5 percent cobbles; 15 percent gravel; common fine masses of lime; violently effervescent; moderately alkaline (pH 7.9); gradual smooth boundary.

Bk2—28 to 48 inches; very pale brown (10YR 7/3) gravelly sandy loam, pale brown (10YR 6/3) moist; weak coarse prismatic structure; soft, friable, slightly sticky and nonplastic; few fine roots; few fine pores; 5 percent cobbles; 15 percent gravel; disseminated lime; few fine masses of lime; strongly effervescent; moderately alkaline (pH 7.9); clear smooth boundary.

BC—48 to 60 inches; light brown (7.5YR 6/4) stratified gravelly sandy loam and gravelly loamy sand, brown (7.5YR 5/4) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few fine roots; few fine pores; 5 percent cobbles; 20 percent gravel; slightly effervescent; moderately alkaline (pH 8.4).

Vitroff Soil

Taxonomic Class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Typical Pedon

Vitroff ashy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; forest litter of slightly decomposed needles, twigs, and roots.

E1—1 to 3 inches; light brownish gray (10YR 6/2) ashy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; common very fine tubular pores; 2 percent angular gravel; slightly acid (pH 6.2); clear smooth boundary.

E2—3 to 8 inches; very pale brown (10YR 7/3) ashy loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; common very fine tubular pores; 10 percent angular gravel; neutral (pH 6.6); clear smooth boundary.

Bt and E—8 to 15 inches; Bt part (65 percent) is brown (10YR 4/3) gravelly ashy clay loam lamellae 1/2- to 5/8-inches thick, very dark grayish brown (2.5Y 3/2) moist; E part (35 percent) is very pale brown (10YR 7/3) ashy sandy clay loam, dark grayish brown (2.5Y 4/2) moist; weak medium subangular blocky structure; Bt part is hard, firm, moderately sticky and moderately plastic; E part is slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium and

few coarse roots; common very fine and few fine tubular pores; 5 percent angular cobbles; 20 percent gravel; neutral (pH 6.8); gradual wavy boundary.

Bt—15 to 33 inches; pale brown (10YR 6/3) gravelly ashy clay loam, dark grayish brown (2.5Y 4/2) moist; weak medium subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; common very fine and few fine and medium roots; common very fine and few fine tubular pores; common faint clay films on faces of peds; 10 percent angular cobbles; 20 percent gravel; neutral (pH 7.2); diffuse wavy boundary.

BC—33 to 60 inches; light gray (10YR 7/2) extremely gravelly ashy coarse sandy loam, olive brown (2.5Y 4/3) moist; massive; loose, nonsticky and nonplastic; few very fine and fine roots in the upper 2 feet; 20 percent angular cobbles; 50 percent gravel; slightly alkaline (pH 7.4).

Waldbillig Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts

Typical Pedon

Waldbillig gravelly ashy silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.

Bw—2 to 12 inches; light brown (7.5YR 6/4) gravelly ashy silt loam, brown (7.5YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine, medium, and coarse roots; many fine pores; 25 percent gravel; moderately acid (pH 5.6); clear wavy boundary.

2E—12 to 28 inches; pink (5YR 7/3) very gravelly fine sandy loam, reddish brown (5YR 5/3) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine and medium roots; many fine pores; 10 percent cobbles; 30 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

2E and Bt—28 to 60 inches; E part (75 percent) is light reddish brown (5YR 6/3) very gravelly fine sandy loam, reddish brown (5YR 5/4) moist; B part (25 percent) is reddish brown (5YR 5/4) very fine sandy loam lamellae 1/4- to 1/2-inch thick, dark reddish brown (5YR 3/4) moist; texture mixed is very gravelly fine sandy loam; weak medium subangular blocky structure; very hard, very friable, nonsticky and nonplastic; few fine roots; many fine pores; 15 percent cobbles; 35 percent gravel; neutral (pH 6.9).

Wander Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Argicryolls

Typical Pedon

Wander very cobbly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 14 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many fine pores; 10 percent stones; 15 percent cobbles; 15 percent gravel; slightly acid (pH 6.1); gradual smooth boundary.

Bt1—14 to 27 inches; brown (7.5YR 5/3) very cobbly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few distinct clay films on faces of peds; few very fine

and fine roots; few fine pores; 10 percent stones; 20 percent cobbles; 15 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

Bt2—27 to 40 inches; brown (7.5YR 5/3) very cobbly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few faint clay films on faces of peds; few fine roots; 10 percent stones; 25 percent cobbles; 15 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

C—40 to 60 inches; light brown (7.5YR 6/3) and reddish brown (5YR 5/3) very cobbly clay loam and brown (7.5YR 4/3) and dark reddish gray (5YR 4/2) moist; mixed materials due to variable parent materials; massive; hard, firm, moderately sticky and moderately plastic; 15 percent stones; 25 percent cobbles; 15 percent gravel; slightly acid (pH 6.3).

Warwood Soil

Taxonomic Class: Fine-loamy, mixed, superactive Eutric Glossocryalfs

Typical Pedon

Warwood loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 3 inches; forest litter of slightly decomposed needles, twigs, and leaves.

A—3 to 7 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to moderate fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

E—7 to 13 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure parting to moderate fine granular; slightly hard, very friable, nonsticky and nonplastic; many very fine, common fine, and few medium and coarse roots; many very fine tubular pores; 10 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

E/Bt—13 to 18 inches; E part (80 percent) is light brownish gray (10YR 6/2) sandy loam, dark grayish brown (10YR 4/2) moist tongues; Bt part (20 percent) is grayish brown (10YR 5/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and common tubular pores; common faint clay films in pores and bridging sand grains of Bt part; 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt/E—18 to 23 inches; Bt part (60 percent) is grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; E part (40 percent) is light brownish gray (10YR 6/2) sandy loam, dark grayish brown (10YR 4/2) moist tongues; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and common fine tubular pores; common distinct clay films on faces of peds and in pores of Bt part; 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt1—23 to 48 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, firm, moderately sticky and moderately plastic; common very fine roots; many very fine tubular pores; many distinct clay films on faces of peds; 5 percent gravel; neutral (pH 7.0); gradual wavy boundary.

Bt2—48 to 60 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure; very hard, friable, moderately sticky and moderately plastic; few very fine roots; many very fine tubular pores; few faint clay films on faces of peds; 5 percent gravel; neutral (pH 7.0).

Wesdy Soil

Taxonomic Class: Clayey-skeletal, smectitic Typic Argicryolls

Typical Pedon

Wesdy cobbly loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 7 inches; dark grayish brown (10YR 4/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; 20 percent cobbles; 5 percent gravel; many fine and medium roots and pores; neutral (pH 6.6); clear wavy boundary.

A2—7 to 11 inches; dark grayish brown (10YR 4/2) very cobbly silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse granular structure; soft, friable, slightly sticky and slightly plastic; 10 percent stones; 25 percent cobbles; 5 percent gravel; many fine and medium roots and pores; slightly acid (pH 6.4); clear smooth boundary.

Bt1—11 to 18 inches; brown (7.5YR 5/4) very cobbly clay, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, very sticky and very plastic; common distinct clay films on faces of peds and lining pores; 5 percent stones; 30 percent cobbles; 10 percent gravel; few fine and medium roots and pores; slightly acid (pH 6.4); gradual wavy boundary.

Bt2—18 to 26 inches; brown (7.5YR 5/4) very cobbly clay, brown (7.5YR 4/4) moist; strong medium angular and subangular blocky structure; hard, very firm, very sticky and very plastic; common distinct clay films on faces of peds; 10 percent stones; 20 percent cobbles; 5 percent gravel; few very fine and fine roots; slightly acid (pH 6.2); gradual wavy boundary.

C—26 to 60 inches; variegated (7.5YR and 10YR) dry and moist; very cobbly clay; massive; hard, very firm, very sticky and very plastic; 10 percent stones; 30 percent cobbles; 10 percent gravel; slightly acid (pH 6.2).

Wetopa Soil

Taxonomic Class: Fine, smectitic Vertic Argicryolls

Typical Pedon

Wetopa clay loam (Colors are for dry soil unless otherwise noted.)

A—0 to 10 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; strong fine granular structure; soft, friable, slightly sticky and slightly plastic; slightly acid (pH 6.2); clear smooth boundary.

BA—10 to 18 inches; brown (7.5YR 4/2) clay loam, dark brown (7.5YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; 5 percent rock fragments; slightly acid (pH 6.4); clear smooth boundary.

Bt—18 to 34 inches; light reddish brown (5YR 6/4) clay, reddish brown (5YR 4/3) moist; strong medium angular blocky structure; hard, firm, moderately sticky and moderately plastic; 10 percent rock fragments; moderately acid (pH 6.0); clear wavy boundary.

BC—34 to 60 inches; light reddish brown (5YR 6/4) clay loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; moderately acid (pH 6.0).

Whitecow Soil

Taxonomic Class: Loamy-skeletal, carbonatic, frigid Typic Calciustepts

Typical Pedon

Whitecow gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; undecomposed forest litter of needles and twigs.

A—1 to 4 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; common fine and few medium roots; 25 percent subrounded gravel; slightly effervescent; moderately alkaline; clear smooth boundary.

Bk1—4 to 11 inches; grayish brown (10YR 5/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common fine roots and pores; 5 percent angular cobbles; 40 percent angular gravel; continuous faint lime crusts on undersides of rock fragments; disseminated lime; violently effervescent; moderately alkaline; clear smooth boundary.

Bk2—11 to 21 inches; light brownish gray (2.5Y 6/2) very gravelly loam, light olive brown (2.5Y 5/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common and few fine roots; common fine pores; 5 percent angular cobbles; 50 percent angular gravel; continuous distinct lime coats on rock fragments; disseminated lime; violently effervescent; moderately alkaline; gradual wavy boundary.

Bk3—21 to 31 inches; light brownish gray (2.5Y 6/2) extremely gravelly loam, light olive brown (2.5Y 5/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; few fine roots and pores; 5 percent angular cobbles; 70 percent angular gravel; continuous distinct lime coats on rock fragments; violently effervescent; moderately alkaline; gradual wavy boundary.

Bk4—31 to 60 inches; light brownish gray (2.5Y 6/2) extremely gravelly loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, friable, moderately sticky and slightly plastic; few fine roots and pores; 5 percent angular cobbles; 70 percent angular gravel; violently effervescent; moderately alkaline.

Whitlash Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustolls

Typical Pedon

Whitlash gravelly loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; 20 percent gravel; neutral (pH 6.8); clear smooth boundary.

A2—4 to 9 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to moderate fine and medium granular; slightly hard, very friable, slightly sticky and slightly plastic; 5 percent cobbles; 20 percent gravel; neutral (pH 6.8); clear smooth boundary.

Bw—9 to 16 inches; brown (10YR 5/3) very gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly

sticky and slightly plastic; 15 percent cobbles; 35 percent gravel; neutral (pH 7.0); abrupt smooth boundary.

R—16 inches; igneous bedrock.

Whitore Soil

Taxonomic Class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Typical Pedon

Whitore channery loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; decomposed and slightly decomposed forest litter.

A—2 to 5 inches; dark grayish brown (10YR 4/2) channery loam, very dark gray (10YR 3/1) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; common fine and medium pores; 25 percent channers; slightly alkaline (pH 7.4); clear irregular boundary.

Bw—5 to 14 inches; pale brown (10YR 6/3) channery loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; common very fine pores; 25 percent channers; disseminated lime; slightly effervescent; slightly alkaline (pH 7.4); gradual smooth boundary.

Bk1—14 to 25 inches; light gray (10YR 7/2) very channery loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few very fine, fine, medium, and coarse roots, some forming horizontal root mats on rock fragments; 50 percent channers; common distinct lime casts on surface and pendants on undersides of rock fragments; disseminated lime; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

Bk2—25 to 60 inches; very pale brown (10YR 8/2) extremely channery loam, light brownish gray (10YR 6/2) moist; massive; soft, friable, slightly sticky and slightly plastic; few very fine, fine, medium, and coarse roots, some forming horizontal root mats on rock fragments; 60 percent channers; many distinct lime casts on surface and pendants on undersides of rock fragments; disseminated lime; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

Wichup Soil

Taxonomic Class: Coarse-loamy, mixed, superactive Histic Cryaquolls

Typical Pedon

Wichup loam (Colors are for dry soil unless otherwise noted.)

O1—0 to 5 inches; brown, calcareous fibrous sedge-rush peat; effervescence in upper 2 inches; slightly alkaline (pH 7.8); gradual smooth boundary.

O2—5 to 10 inches; black, calcareous muck with some plant residue forms and some mineral matter; neutral (pH 6.8); gradual wavy boundary.

A1g—10 to 18 inches; gray (2.5Y 5/1) gravelly loam, black (2.5Y 2/1) moist; common medium distinct brown (7.5YR 4/4) moist, mottles; moderate fine granular structure; soft, very friable; slightly alkaline (pH 7.4); gradual wavy boundary.

B21g—18 to 24 inches; light brownish gray (2.5Y 6/2) very gravelly loam, dark grayish brown (2.5Y 4/2) moist; many large prominent brown (7.5YR 4/4) mottles; weak coarse subangular blocky structure; slightly hard, very friable; slightly alkaline (pH 7.4); gradual wavy boundary.

B22g—24 to 60 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; common medium distinct olive brown (2.5Y 4/3) and brown (10YR 4/3) mottles; massive; slightly hard, very friable; 10 percent gravel; slightly alkaline (pH 7.4).

Wickes Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Wickes very gravelly loam, stony (Colors are for dry soil unless otherwise noted.)

A—0 to 8 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, moderately sticky and slightly plastic; many very fine and few fine roots; many very fine and fine interstitial pores; 10 percent cobbles; 30 percent gravel; neutral (pH 6.8); clear smooth boundary.

Bt1—8 to 15 inches; brown (10YR 5/3) very gravelly clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine and few fine roots; many very fine and fine interstitial and tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; 15 percent cobbles; 30 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt2—15 to 24 inches; light olive brown (2.5Y 5/4) very cobbly loam, olive brown (2.5Y 4/4) moist; weak very fine and fine subangular blocky structure; soft, very friable, moderately sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; 30 percent cobbles; 25 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

Bk—24 to 30 inches; light yellowish brown (2.5Y 6/4) extremely cobbly loam, olive brown (2.5Y 4/4) moist; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine and fine interstitial and tubular pores; 40 percent cobbles; 25 percent gravel; common fine masses of lime; common distinct lime coats on rock fragments; strongly effervescent; slightly alkaline (pH 7.6).

R—30 inches; hard fine-grained igneous bedrock.

Wisdom Soil

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Oxyaquic Haplocryolls

Typical Pedon

Wisdom silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and partially decomposed matted roots; abrupt smooth boundary.

A1—2 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine and fine dendritic tubular pores; neutral (pH 7.2); clear wavy boundary.

A2—7 to 14 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure parting to weak very

fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine and fine dendritic tubular pores; neutral (pH 6.7); clear wavy boundary.

Bw—14 to 27 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; common fine faint yellowish brown (10YR 5/6) moist; redox concentrations (due to prolonged saturation from flood irrigation); weak medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; 5 percent gravel; neutral (pH 6.7); clear wavy boundary.

2C—27 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; 20 percent cobbles; 45 percent gravel; neutral (pH 6.8).

Woodhall Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Typical Pedon

Woodhall stony loam (Colors are for dry soil unless otherwise noted.)

A—0 to 5 inches; dark grayish brown (10YR 4/2) stony loam, very dark brown (10YR 2/2) moist; strong fine granular and crumb structure; soft, very friable, slightly sticky and slightly plastic; 20 percent stones; neutral; clear smooth boundary.

BA—5 to 9 inches; brown (10YR 5/3) very stony loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure parting to strong fine granular; hard, friable, slightly sticky and slightly plastic; few faint clay films on faces of peds and in some root channels; 40 percent stones; neutral; gradual smooth boundary.

Bt—9 to 20 inches; brown (10YR 5/3) very stony clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; many distinct clay films on faces of peds, in root channels, and on surfaces of many rock fragments; 50 percent stones; neutral; gradual smooth boundary.

BC—20 to 24 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; 60 percent stones; neutral; gradual wavy boundary.

R—24 inches; rhyolite.

Woodhurst Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Pachic Argicryolls

Typical Pedon

Woodhurst stony loam (Colors are for dry soil unless otherwise noted.)

A—0 to 12 inches; very dark grayish brown (10YR 3/2) stony loam, very dark brown (10YR 2/2) moist; weak fine crumb structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many fine interstitial pores; 20 percent stones; noncalcareous; slightly alkaline (pH 7.6); clear smooth boundary.

Bt1—12 to 20 inches; dark grayish brown (10YR 4/2) very stony clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine blocky structure parting to very fine granular with weathered igneous rock fragments that crush easily in the hand; soft, friable, moderately sticky and moderately plastic; many very fine roots; many fine tubular pores; continuous distinct clay films on vertical faces and patchy clay films

on horizontal faces with organically stained glossy film on weathered rock fragments; 50 percent rock fragments; slightly alkaline (pH 7.8); clear smooth boundary.

Bt2—20 to 26 inches; brown (10YR 4/3) extremely stony clay loam, dark brown (10YR 3/3) moist; moderate fine and medium blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots; distinct continuous clay films on all faces of peds; moderately alkaline (pH 8.3); noncalcareous; 80 percent rock fragments; abrupt wavy boundary.

R—26 inches; light-colored hard quartz monzonite porphyry rock in situ. Weathered rock has organic stains, which give rise to a darker-colored appearance.

Worock Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Typical Pedon

Worock gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; partially decomposed forest litter.

E—1 to 7 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine irregular pores; 5 percent stones; 5 percent cobbles; 15 percent gravel; moderately acid (pH 5.6); clear smooth boundary.

E/Bt—7 to 18 inches; E part (85 percent) very pale brown (10YR 7/4), Bt part (15 percent) yellowish brown (10YR 5/4) gravelly clay loam, yellowish brown 10YR 5/6) moist for both parts; weak medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine irregular pores; 5 percent stones; 5 percent cobbles; 25 percent gravel; moderately acid (pH 5.6); clear smooth boundary.

Bt—18 to 28 inches; yellowish brown (10YR 5/6) very gravelly clay loam, dark yellowish brown (10YR 4/6) moist; weak medium subangular blocky structure parting to weak medium granular; hard, firm, moderately sticky and moderately plastic; common very fine and fine roots; common very fine irregular pores; many distinct clay films on faces of peds; 5 percent stones; 10 percent cobbles; 30 percent gravel; moderately acid (pH 5.6); clear smooth boundary.

BC—28 to 62 inches; light yellowish brown (10YR 6/4) very gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; few very fine irregular pores; 5 percent stones; 15 percent cobbles; 35 percent gravel; moderately acid (pH 5.6).

Yellowmule Soil

Taxonomic Class: Fine, mixed, superactive Eutric Haplocryalfs

Typical Pedon

Yellowmule loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; slightly decomposed needles, twigs, and leaves.

E1—1 to 7 inches; light brownish gray (10YR 6/2) loam, brown (10YR 4/3) moist; weak fine angular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; many very fine,

common fine, and few medium pores; 10 percent channers; slightly acid (pH 6.2); clear wavy boundary.

E2—7 to 11 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, moderately sticky and moderately plastic; many very fine and fine and few medium and coarse roots; many very fine, common fine, and few medium pores; 10 percent channers; moderately acid (pH 6.0); clear wavy boundary.

Bt1—11 to 20 inches; light brownish gray (10YR 6/2) clay loam, brown (10YR 5/3) moist; strong medium subangular blocky structure; hard, friable, very sticky and very plastic; common very fine and fine and few medium roots; common very fine and few fine and medium pores; common distinct clay films on faces of peds and lining pores; 5 percent channers; moderately acid (pH 6.0); gradual wavy boundary.

Bt2—20 to 31 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; moderate medium prismatic structure; hard, friable, moderately sticky and moderately plastic; few very fine, fine, and medium roots; common very fine and few fine and medium pores; common distinct clay films on faces of peds and lining pores; 5 percent channers; 20 percent soft shale chips; neutral (pH 6.8); gradual wavy boundary.

Cr—31 to 60 inches; olive (5Y 5/3) semiconsolidated shale; neutral (pH 6.8).

Yetull Soil

Taxonomic Class: Mixed, frigid Aridic Ustipsamments

Typical Pedon

Yetull loamy sand (Colors are for dry soil unless otherwise noted.)

A—0 to 5 inches, grayish brown (10YR 5/2) loamy sand, very dark grayish brown (10YR 3/2) moist; single grain; loose, soft, nonsticky and nonplastic; many very fine and fine and common medium roots; slightly effervescent; slightly alkaline (pH 7.8); clear wavy boundary.

C1—5 to 15 inches, grayish brown (10YR 5/2) loamy coarse sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine and few medium roots; slightly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

C2—15 to 35 inches, grayish brown (10YR 5/2) sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; strongly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

C3—35 to 66 inches, light brownish gray (10YR 6/2) sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; common roots in upper part and few below 50 inches; violently effervescent; moderately alkaline (pH 8.2).

Zbart Soil

Taxonomic Class: Loamy-skeletal, mixed, superactive, nonacid, frigid Aridic Lithic Ustorthents

Typical Pedon

Zbart very channery loam (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; dark grayish brown (2.5Y 4/2) very channery loam, dark olive gray (5Y 3/2) moist (Colors are lithochromic.); moderate fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots;

common very fine and fine pores; 5 percent flagstones; 40 percent channers; slightly acid (pH 6.4); clear wavy boundary.

R—7 inches; hard fractured shale.

Zonite Soil

Taxonomic Class: Sandy-skeletal, mixed Lithic Cryorthents

Typical Pedon

Zonite very gravelly coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; brown (10YR 5/3) very gravelly coarse sandy loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and few fine and medium roots; many very fine interstitial pores; 35 percent, mainly fine, gravel; slightly acid (pH 6.4); clear wavy boundary.

BC—4 to 9 inches; yellowish brown (10YR 5/4) very gravelly loamy coarse sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; common very fine interstitial pores; 45 percent, mainly fine, gravel; neutral (pH 6.6); abrupt wavy boundary.

Cr—9 to 13 inches; soft, weathered granite bedrock.

R—13 inches; hard granite bedrock.

Formation of the Soils

Factors of Soil Formation

Soil is a natural, three-dimensional body on the earth's surface. Soil has properties that result from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over time.

Although there are many different soils, each soil is the result of the interaction of the same five factors. These factors are the effect of climate on the parent material, the kinds of plants and organisms living in the soil, the relief of the land, the physical and chemical composition of the parent material, and the length of time it took for the soil to form.

Within short distances, the combination of these factors varies, and, consequently, the soils that form differ in fertility, productivity, and physical and chemical characteristics. In the following paragraphs, the factors of soil formation are discussed as they relate to the soils in the survey area.

Parent Material

The soils in the survey area formed in alluvium, colluvium and till derived from mixed sources or from material weathered from bedrock. Types of this bedrock include limestone, sandstone, shale, quartzite, conglomerate, andesite, rhyolite, volcanic tuff, granite and gneiss.

Rock fragments, broken from bedrock by chemical weathering or frost shattering are abundant in many soils. Soils that developed in limestone tend to be alkaline and soils that developed in rhyolite, andesite and granite are typically more acidic.

Climate and Topography

Climate and topography are closely intertwined influences in soil formation. Microclimates result from changes in aspect, air drainage, elevation and slope. South facing slopes have more dynamic wet-dry and freeze-thaw cycles than north facing slopes. These cycles result in stronger horizon development and greater mixing of loess and rock fragments. Continuously shaded north facing slopes are more moist and cool than south facing slopes. Parent materials weather slowly in cool temperatures and moist conditions allow for greater leaching.

In the Beaverhead National Forest Area, winters are cold; springs are cool and moist; and summers are warm and dry. The mean annual precipitation is dominantly 12 to 55 inches, but ranges up to 75 inches in alpine areas. The mean annual temperature ranges from 36 to 43 degrees F.

Living Organisms

Biological activity plays a major role in profile differentiation. Organic matter accumulation, profile mixing, nutrient cycling, and structural stability are all enhanced by the activities of soil organisms and vegetation.

Time

Change taking place in soils over a long period is called soil genesis. As a result of these changes, distinct horizons, or layers, develop in the soils. The length of time that parent materials have been in place and exposed to climate and living organisms is generally reflected in the degree to which the soil profile has developed. The kind and arrangement of these horizons are called soil morphology. These layers are described in terms of chemistry, color, consistence, permeability, structure, texture, and thickness.

Soils are classified according to their approximate age, from young to mature. Age, or maturity, of a soil is generally indicated by the thickness and distinctness of subsurface horizons, content of organic matter and clay, depth to which soluble material is leached, and form and distribution of calcium carbonate and gypsum in the soil.

Soils are considered to be older if their horizons are more distinctly different in color, texture, reaction, structure, or other properties. Soils that have few or indistinct horizon differences are considered to be younger. Typically, young soils can be found on floodplains and where mass wasting occurs. The oldest soils on the Beaverhead National Forest are commonly found on pediment slopes and rounded mountain ridges.

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cooper, S.V, P. Lesica, and D. Page-Dumroese. 1997. Plant community classification for alpine vegetation on the Beaverhead National Forest, Montana. U.S. Department of Agriculture, Forest Service, Intermountain Research Station, General Technical Report INT-GTR-362.

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy, and D.K. Hinckley. 1995. Classification and management of Montana's riparian and wetland sites. Montana Riparian and Wetland Association, Montana Forest and Conservation Experiment Station, School of Forestry, The University of Montana, Missoula.

Hironaka, M., M.A. Fosberg, and A.H. Winward. 1983. Sagebrush-grass habitat types of southern Idaho. University of Idaho. Forest, Wildlife and Range Experiment Station Bulletin, Number 35.

Holdorf, H. and J. Donahue. 1990. Landforms for soil surveys in the northern Rockies. Miscellaneous Publication 51. Missoula, MT: University of Montana, Montana Forest and Conservation Experiment Station, School of Forestry.

Mueggler, W.F. and W.L. Stewart. 1980. Grassland and shrubland habitat types of western Montana. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station, General Technical Report INT-66.

Pfister, R.D., B.L. Kovalchik, S.F. Arno, and R.C. Presby. 1977. Forest habitat types of Montana. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station, General Technical Report INT-GTR-34.

Schoeneberger, P.J., D.A. Wysocki, E.C. Benham, and W.D. Broderson, editors. 2002. Field book for describing and sampling soils. Version 2.0. U.S. Department of Agriculture, Natural Resources Conservation Service. http://soils.usda.gov/technical/fieldbook

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://soils.usda.gov/technical/manual/

Soil Survey Staff. 2003. Keys to soil taxonomy. 9th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://soils.usda.gov/technical/classification/tax_keys/

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436. http://soils.usda.gov/technical/classification/taxonomy/

Steele, R., S.V. Cooper, D.M. Ondov, D.W. Roberts, and R.D. Pfister. 1983. Forest habitat types of eastern Idaho - western Wyoming. Forest Service, Intermountain Forest and Range Experiment Station, General Technical Report INT-144.

Svalberg, T., D. Tart, D. Fallon, M. Ferwerda, E. Lindquist, and H. Fisk. 1997. Bridger-East Ecological Unit Inventory. U.S. Department of Agriculture Forest Service, Intermountain Region, Bridger-Teton National Forest.

Tart. D.L. 1996. Big sagebrush plant associations of the Pinedale Ranger District. Pinedale, WY. U.S. Department of Agriculture, Forest Service, Bridger-Teton National Forest.

U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), 2007. Land capability classification. National Soil Survey Handbook, title 430-VI, part 622.02. [Online] Available: http://soils.usda.gov/technical/handbook/contents/part622.html#02

U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2006. National range and pasture handbook. [Online] Available: http://www.glti.nrcs.usda.gov/technical/publications/nrph.html

U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 1998. National forestry manual. [Online] Available: http://soils.usda.gov/technical/nfmanual/

Glossary

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

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. (See Sodic (alkali) soil.)

Alluvial fan. A body of alluvium, with overflow of water and debris flow deposits, whose surface forms a segment of a cone that radiates downslope from the point where the stream emerges from a narrow valley onto a less sloping surface. Source uplands range in relief and areal extent from mountains to gullied terrains on hillslopes.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

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 redox features.

Argillite. Weakly metamorphosed mudstone or shale.

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 3.75
Low	3.75 to 5.0
Moderate	5.0 to 7.5
High	more than 7.5

Avalanche chute. The track or path formed by an avalanche.

Backslope. The geomorphic component that forms the steepest inclined surface and principal element of many hillslopes. Backslopes in profile are commonly steep and linear and descend to a footslope. In terms of gradational process, backslopes are erosional forms produced mainly by mass wasting and running water.

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.

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

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 planes. Fine strata, less than 5-millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of gravel or cobbles. In some blowouts, the water table is exposed.

Board foot. A unit of measure of the wood in lumber, logs, or trees. The amount of wood in a board 1 foot wide, 1 foot long, and 1 inch thick before finishing.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Bouldery. Refers to a soil with 0.01 to 0.10 percent of the surface covered with boulders.

Bouldery soil material. Soil that is 15 to 35 percent, by volume, rock fragments that are dominated by fragments larger than 24 inches (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 reduce or eliminate competition from woody vegetation and thus to allow understory grasses and forbs to recover or to make conditions favorable for reseeding. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

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.)

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.

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.

Channeled. Refers to a drainage area in which natural meandering or repeated branching and convergence of a streambed have created deeply incised cuts, either active or abandoned, in alluvial material.

Channery soil material. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Cirque. A semicircular, concave, bowl-like area that has steep faces primarily resulting from erosive activity of a mountain glacier.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeters in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clayey soil. Silty clay, sandy clay, or clay.

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.

Clearcut. A method of forest harvesting that removes the entire stand of trees in one cutting. Reproduction is achieved artificially or by natural seeding from the adjacent stands.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Closed depression. A low area completely surrounded by higher ground and having no natural outlet.

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.

Codominant trees. Trees whose crowns form the general level of the forest canopy and that receive full light from above but comparatively little from the sides.

COLE (coefficient of linear extensibility). (See Linear extensibility.)

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Commercial forest. Forestland capable of producing 20 cubic feet or more per acre per year at the culmination of mean annual increment.

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.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conglomerate. A coarse-grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer-textured material. Conglomerate is the consolidated equivalent of gravel.

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" (Soil Survey Division Staff, 1993).

Consolidated sandstone. Sandstone that disperses within a few hours when fragments are placed in water. The fragments are extremely hard or very hard when dry, are not easily crushed, and cannot be textured by the usual field method.

Consolidated shale. Shale that disperses within a few hours when fragments are placed in water. The fragments are extremely hard or very hard when dry and are not easily crushed.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

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.

Deep soil. A soil that is 40 to 60 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

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.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Dominant trees. Trees whose crowns form the general level of the forest canopy and that receive full light from above and from the sides.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—These soils have very high and high hydraulic conductivity and a low water-holding capacity. They are not suited to crop production unless irrigated.

Somewhat excessively drained.—These soils have high hydraulic conductivity and a low water-holding capacity. Without irrigation, only a narrow range of crops can be grown, and yields are low.

Well drained.—These soils have an intermediate water-holding capacity. They retain optimum amounts of moisture, but they are not wet close enough to the surface or long enough during the growing season to adversely affect yields.

Moderately well drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or yields of some field crops are adversely affected unless a drainage system is installed. Moderately well-drained soils commonly have a layer with low hydraulic conductivity, a wet layer relatively high in the profile, additions of water by seepage, or some combination of these.
Somewhat poorly drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or crop growth is markedly restricted unless a drainage system is installed. Somewhat poorly drained soils commonly have a layer with low hydraulic conductivity, a wet layer high in the profile, additions of water through seepage, or a combination of these.
Poorly drained.—These soils commonly are so wet, at or near the surface, during a considerable part of the year that field crops cannot be grown under natural conditions. Poorly drained conditions are caused by a saturated zone, a layer with low hydraulic conductivity, seepage, or a combination of these.
Very poorly drained.—These soils are wet to the surface most of the time. The wetness prevents the growth of important crops (except rice) unless a drainage system is installed.

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. An area of ground at a lower elevation than the surrounding ground and in which water collects and is drained to a closed depression or lake or to a drainageway at a lower elevation. A drainageway may or may not have distinctly incised channels at its upper reaches or throughout its course.

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact glacial till. The longer axis is parallel to the path of the glacier and commonly has a blunt nose pointing in the direction from which the ice approached.

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.

Dune. A mound, ridge, or hill of loose, windblown granular material (generally sand), either bare or covered with vegetation.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological 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 ecological sites in kind and/or proportion of species or in total production.

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 fire, that exposes the surface.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

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.

Esker. A long, narrow, sinuous, steep-sided ridge composed of irregularly stratified sand and gravel that were deposited by a subsurface stream flowing between ice walls or through ice tunnels of a retreating glacier and that were left behind when the ice melted. Eskers range from less than a mile to more than 100 miles in length and from 10 to 100 feet in height.

Even aged. Refers to a stand of trees in which only small differences in age occur between individual trees. A range of 20 years is allowed.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well-preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

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 geomorphic component that forms the inner, gently inclined surface at the base of a hillslope. The surface profile is dominantly concave. In terms of gradational processes, a footslope is a transitional zone between an upslope site of erosion (backslope) and a downslope site of deposition (toeslope).

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.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glacial drift. Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till. Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciated uplands. Land areas that were previously covered by continental or alpine glaciers and that are at a higher elevation than the flood plain.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

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. Soil that is 15 to 35 percent, by volume, rounded or angular rock fragments up to 3 inches (7.6 centimeters) in diameter. Very gravelly soil is 35 to 60 percent gravel, and extremely gravelly soil is more than 60 percent gravel by volume.

Grazeable forestland. Land capable of sustaining livestock grazing by producing forage of sufficient quantity during one or more stages of secondary forest succession.

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.

Gypsum. A mineral consisting of hydrous calcium sulfate.

Habitat type. An aggregation of all land areas capable of producing similar climax plant communities.

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 slope (geomorphology). A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway, resulting in converging overland water flow (e.g., sheet wash); head slopes are dominated by colluvium and slope wash sediments (e.g., slope alluvium); contour lines form concave curves. Slope complexity (downslope shape) can range from simple to complex. Head slopes are comparatively moister portions of hillslopes and tend to accumulate sediments (e.g., cummulic profiles) where they are not directly contributing materials to channel flow.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

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 8 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" (Soil Survey Division Staff, 1993). 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 or E 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.—Sedimentary beds of consolidated sandstone and semiconsolidated and consolidated shale. Generally, roots can penetrate this horizon only along fracture planes.

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-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

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.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

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 capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

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.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

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.

Lateral moraine. A ridgelike moraine carried on and deposited at the side margin of a valley glacier. It is composed chiefly of rock fragments derived from the valley walls by glacial abrasion and plucking or by mass wasting.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

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.

Loamy soil. Coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, or silty clay loam.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

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 redox concentration.

Mean annual increment (MAI). The average annual increase in volume of a tree during its entire life.

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.

Merchantable trees. Trees that are of sufficient size to be economically processed into wood products.

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.

Microhigh. An area that is 2 to 12 inches higher than the adjacent microlow.

Microlow. An area that is 2 to 12 inches lower than the adjacent microhigh.

Mima mound. A term used for one of numerous low circular or oval domes composed of loose, unstratified, gravelly, silty, or sandy material. The basal diameter varies from 3 meters to more than 30 meters, and the height from 30 centimeters to about 2 meters. Compare to pimple mound, patterned ground, and shrub-coppice dune.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Miscellaneous water. A sewage lagoon, an industrial waste pit, a fish hatchery, or a similar water area.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately deep soil. A soil that is 20 to 40 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine. An accumulation of glacial drift in a topographic landform of its own, resulting chiefly from the direct action of glacial ice. Some types are lateral, recessional, and terminal.

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. Areas of color that differ from the matrix color. These colors are commonly attributes retained from the geologic parent material. (See Redox features for indications of poor aeration and impeded drainage.)

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.

Muck. Dark, finely divided, well-decomposed organic soil material. (See Sapric soil material.)

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

N**ose slope** (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside, resulting in predominantly divergent overland water flow (e.g., sheet wash); contour lines generally form convex curves. Nose slopes are dominated by colluvium and slope wash sediments (e.g., slope alluvium). Slope complexity (downslope shape) can range from simple to complex. Nose slopes are comparatively drier portions of hillslopes and tend to have thinner colluvial sediments and profiles.

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.

Observed rooting depth. Depth to which roots have been observed to penetrate.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash plain. An extensive area of glaciofluvial material that was deposited by meltwater streams.

Overstory. The trees in a forest that form the upper crown cover.

Oxbow. The horseshoe-shaped channel of a former meander, remaining after the stream formed a cutoff across a narrow meander neck.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward 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 to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit. The range of moisture content within which the soil remains plastic.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

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. The application of fire to land under such conditions of weather, soil moisture, and time of day as presumably will result in the intensity of heat and spread required to accomplish specific forest management, wildlife, grazing, or fire hazard reduction purposes.

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.

Quartzite, metamorphic. Rock consisting mainly of quartz that formed through recrystallization of quartz-rich sandstone or chert.

Quartzite, sedimentary. Very hard but unmetamorphosed sandstone consisting chiefly of quartz grains.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. (See Similarity index.)

Range site. (See Ecological site.)

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.

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:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Recessional moraine. A moraine formed during a temporary but significant halt in the retreat of a glacier.

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redox 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.

Redox 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.

Redox features. Redox concentrations, redox 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 redox feature.

Regeneration. The new growth of a natural plant community, developing from seed.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relict stream terrace. One of a series of platforms in or adjacent to a stream valley that formed prior to the current stream system.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Riser. The relatively short, steeply sloping area below a terrace tread that grades to a lower terrace tread or base level.

Riverwash. Unstable areas of sandy, silty, clayey, or gravelly sediments. These areas are flooded, washed, and reworked by rivers so frequently that they support little or no vegetation.

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, gravel, cobbles, stones, and boulders.

Rock outcrop. Exposures of bare bedrock other than lava flows and rock-lined pits.

Root zone. The part of the soil that can be penetrated by plant roots.

Rooting depth. Shallow root zone. The soil is shallow over a layer that restricts roots.

Rubble land. Areas that have more than 90 percent of the surface covered by stones or boulders. Voids contain no soil material and virtually no vegetation other than lichens. The areas commonly are at the base of mountain slopes, but some are on

mountain slopes as deposits of cobbles, stones, and boulders left by Pleistocene glaciation or by periglacial phenomena.

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.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Salinity. The electrical conductivity of a saline soil. It is expressed, in millimhos per centimeter, as follows:

Nonsaline	0 to 4
Slightly saline	4 to 8
Moderately saline	8 to 16
Strongly saline	more than 16

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.

Sandy soil. Sand or loamy sand.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

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.

Sawlogs. Logs of suitable size and quality for the production of lumber.

Scribner's log rule. A method of estimating the number of board feet that can be cut from a log of a given diameter and length.

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 soil. Seepage adversely affects the specified use.

Semiconsolidated sedimentary beds. Soft geologic sediments that disperse when fragments are placed in water. The fragments are hard or very hard when dry. Determining the texture by the usual field method is difficult.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike. All the soils of a given series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shallow soil. A soil that is 10 to 20 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shelterwood system. A forest management system requiring the removal of a stand in a series of cuts so that regeneration occurs under a partial canopy. After regeneration, a final cut removes the shelterwood and allows the stand to develop in the open as an even-aged stand. The system is well suited to sites where

shelter is needed for regeneration, and it can aid regeneration of the more intolerant tree species in a stand.

Shoulder. The uppermost inclined surface at the top of a hillside. It is the transitional zone from the backslope to the summit of a hill or mountain. 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.

Similarity index. A similarity index is the percentage of a specific vegetation state plant community that is presently on the site.

Site class. A grouping of site indexes into five to seven production capability levels. Each level can be represented by a site curve.

Site curve (50 year). A set of related curves on a graph that shows the average height of dominant or dominant and codominant trees for the range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant or dominant and codominant 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 or dominant and codominant trees for a range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant or 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 or dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Skid trails. Pathways along which logs are dragged to a common site for loading onto a logging truck.

Slash. The branches, bark, treetops, reject logs, and broken or uprooted trees left on the ground after logging.

Slickens. Accumulations of fine textured material, such as that separated in placer-mine and ore-mill operations. Slickens from ore mills commonly consist of freshly ground rock that has undergone chemical treatment during the milling process.

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.

Slickspot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is loamy or clayey, is slippery when wet, and is low in productivity.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a

slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, the following slope classes are recognized:

Nearly level	0 to 2 percent
Gently sloping	2 to 4 percent
Moderately sloping	4 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 45 percent
Very steep	more than 45 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in 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

Sodium adsorption ratio (SAR). A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

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 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 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.

Species. A single, distinct kind of plant or animal having certain distinguishing characteristics.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with tillage, or stones cover 0.01 to 0.1 percent of the surface. Very stony means that 0.1 to 3.0 percent of the surface is covered with stones. Extremely stony means that 3 to 15 percent of the surface is covered with stones.

Stony soil material. Soil that is 15 to 35 percent, by volume, rock fragments that are dominated by fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Strath terrace. A surface cut formed by the erosion of hard or semiconsolidated bedrock and thinly mantled with stream deposits.

Stream channel. The hollow bed where a natural stream of surface water flows or may flow; the deepest or central part of the bed, formed by the main current and covered more or less continuously by water.

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel. It originally formed near the level of the stream and is the dissected remnants of an abandoned flood plain, streambed, or valley floor that were produced during a former stage of erosion or deposition.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are *platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

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. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summit. A general term for the top, or highest level, of an upland feature, such as a hill or mountain. It commonly refers to a higher area that has a gentle slope and is flanked by steeper slopes.

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.”

Tailwater. The water directly downstream of a structure.

Talus. Rock fragments of any size or shape, commonly coarse and angular, derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose, broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Terracette. Small, irregular step-like forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may or may not be induced by trampling of livestock such as sheep or cattle.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer (in tables). A layer of otherwise suitable soil material that is too thin for the specified use.

Till plain. An extensive, nearly level to gently rolling or moderately sloping area that is underlain by or consists of till and that has a slope of 0 to 8 percent.
Toeslope. The outermost inclined surface at the base of a hill. Toeslopes are commonly gentle and linear in profile.
Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.
Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.
Trafficability. The degree to which a soil is capable of supporting vehicular traffic across a wide range in soil moisture conditions.
Tread. The relatively flat terrace surface that was cut or built by stream or wave action.
Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.
Understory. Any plants in a forest community that grow to a height of less than 5 feet.
Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.
Valley. An elongated depressional area primarily developed by stream action.
Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.
Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.
Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.
Very deep soil. A soil that is more than 60 inches deep over bedrock or to other material that restricts the penetration of plant roots.
Very shallow soil. A soil that is less than 10 inches deep over bedrock or to other material that restricts the penetration of plant roots.
Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.
Water-spreading. Diverting runoff from natural channels by means of a system of dams, dikes, or ditches and spreading it over relatively flat surfaces.
Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.
Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.
Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.
Windthrow. The action of uprooting and tipping over trees by the wind.

Tables

Freeze Dates in Spring and Fall 2043
Growing Season 2044
Temperature and Precipitation 2847

Freeze Dates in Spring and Fall

(Recorded in the period 1971 through 2000 at Wisdom)

Probability	Temperature		
	24 degrees F or lower	28 degrees F or lower	32 degrees F or lower
Last freezing temperature in spring: January-July			
1 year in 10 later than-----	June 29	July 27	August 2
2 years in 10 later than----	June 22	July 18	July 28
5 years in 10 later than----	June 8	July 1	July 19
First freezing temperature in fall: August-December			
1 year in 10 earlier than---	August 16	August 5	July 29
2 years in 10 earlier than--	August 21	August 10	July 31
5 years in 10 earlier than--	August 30	August 18	August 5

Growing Season

(Recorded in the period 1971 through 2000 at Wisdom)

Probability	Daily minimum temperature		
	Higher than 24 degrees F	Higher than 28 degrees F	Higher than 32 degrees F
	Days	*Days*	*Days*
9 years in 10----------	53	17	0
8 years in 10----------	63	27	5
5 years in 10----------	83	48	16
2 years in 10----------	102	68	27
1 year in 10----------	112	79	33

Temperature and Precipitation

(Recorded in the period 1971 through 2000 at Wisdom)

Month	Temperature (degrees F)					Precipitation (inches)					
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have— Maximum temperature more than	2 years in 10 will have— Minimum temperature less 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 or more	Average Total Snowfall
January-----	27.1	1.6	14.4	48	-40	0	0.62	0.28	0.97	1	7.0
February----	32.0	3.7	17.8	50	-38	0	0.51	0.19	0.84	1	5.5
March-------	40.1	12.8	26.4	57	-21	2	0.67	0.43	0.89	2	4.3
April-------	49.8	21.0	35.4	72	-1	38	0.98	0.49	1.45	3	2.5
May---------	59.7	28.6	44.2	79	12	164	1.70	0.85	2.46	5	1.0
June--------	69.0	35.7	52.4	86	22	371	1.77	0.95	2.58	5	0.0
July--------	77.9	37.4	57.6	90	26	546	1.28	0.48	2.11	3	0.0
August------	77.5	34.6	56.0	90	21	497	1.12	0.53	1.69	3	0.0
September---	67.5	27.1	47.3	85	9	238	0.99	0.23	1.76	3	0.2
October-----	55.2	20.1	37.7	76	-4	57	0.74	0.25	1.17	2	0.8
November----	36.9	12.0	24.5	60	-23	4	0.79	0.40	1.11	3	7.0
December----	27.5	2.7	15.1	47	-37	0	0.72	0.34	1.05	2	6.0
Yearly:											
Average----	51.7	19.8	35.7	——	——	——	——	——	——	——	——
Extreme----	94.0	-55.0	——	91	-47	——	——	——	——	——	——
Total------	——	——	——	——	——	1,917	11.89	9.43	14.33	33	34.1

Average # of days per year with at least 1 inch of snow on the ground: 37

* 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).

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