United States Department of Agriculture

Natural Resources Conservation Service

United States Department of the Interior

Bureau of Land Management

In cooperation with Wyoming and Utah Agricultural Experiment Stations

Soil Survey of Henrys Fork Area, Utah-Wyoming—

Parts of Daggett and Summit Counties, Utah and Sweetwater and Uinta Counties, Wyoming

How to Use This Soil Survey

General Soil Map

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

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

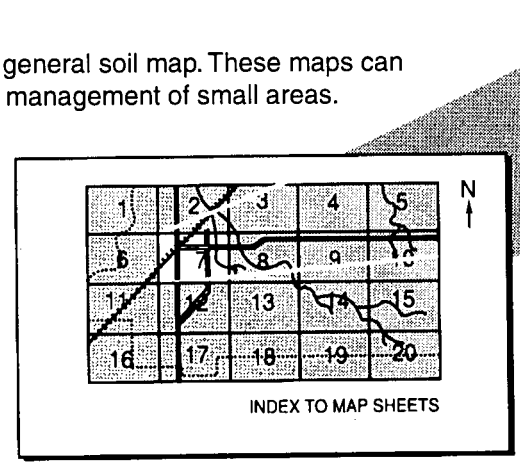
Detailed Soil Maps

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

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

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

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



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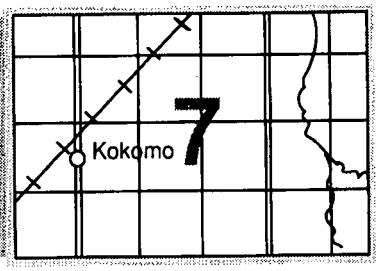

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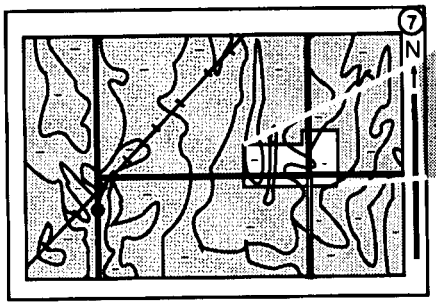

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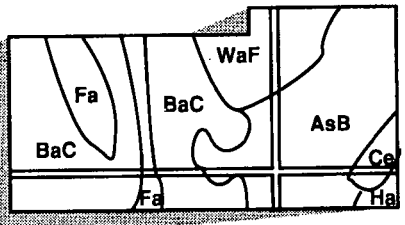

AREA OF INTEREST

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

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

Major fieldwork for this soil survey was completed in 1987. Soil names and descriptions were approved in 1988. Unless otherwise indicated, statements in this publication refer to conditions in the survey Area in 1988. This survey was made cooperatively by the Natural Resources Conservation Service, the Bureau of Land Management, the Utah Agricultural Experiment Station, and the Wyoming Agricultural Experiment Station. The survey is part of the technical assistance furnished to the Daggett County Natural Resources Conservation District, Utah; Big Sandy Conservation District, Wyoming; and Bridger Valley Conservation District, Wyoming.

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

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

Cover: View of Lucerne Valley. The irrigated areas in the survey Area are confined to the valleys where irrigation water can be diverted from streams and rivers. These irrigated valleys are vital to the success of the livestock industry.

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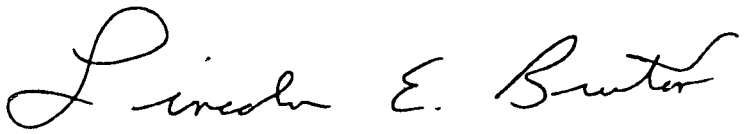
Foreword

This soil survey contains information that can be used in land-planning programs for ranching, farming, industry, and recreation in the Henrys Fork Area. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soils, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

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

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



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Soil Survey of
Henrys Fork Area, Utah-Wyoming

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United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
Utah Agricultural Experiment Station, and Wyoming Agricultural Experiment Station

General Nature of the Survey Area

This section provides general information about the survey Area. It describes history and development, natural resources and land use, geology, physiography and drainage, and climate.

Henrys Fork Survey Area encompasses about 240,000 acres, including portions of four counties in the northeastern corner of Utah and the southwestern corner of Wyoming (fig. 1). About 127,500 acres is in Daggett County, Utah; 26,000 acres is in Summit County, Utah; 49,000 acres is in Sweetwater County, Wyoming; and 37,500 acres is in Uinta County, Wyoming. Of the total acreage about 98,210 acres is private land, 36,080 acres is State land, and 105,710 acres is Federal land.

The only town in the Area is Manila with a population of about 300. Ranching and farming are the main enterprises. A small sawmill in Lucerne Valley utilizes timber from the adjoining National Forest. Oil and gas wells and an underground gas storage operation are in operation in eastern Daggett County, Utah. Oil and gas wells have also been drilled in the western part of the survey area in Uinta County, Wyoming. The number of summer homes is increasing, mainly in the area west of Flaming Gorge, Utah.

The Area is removed from main transportation routes, although several paved highways traverse the Area. Air strips are located at Manila, at Clay Basin, and at Dutch John, a small town outside the survey area.

Elevation ranges from 5,400 feet in the southeast corner of the Area where the Green River runs into Colorado, to 9,575 feet on Phil Pico Mountain.

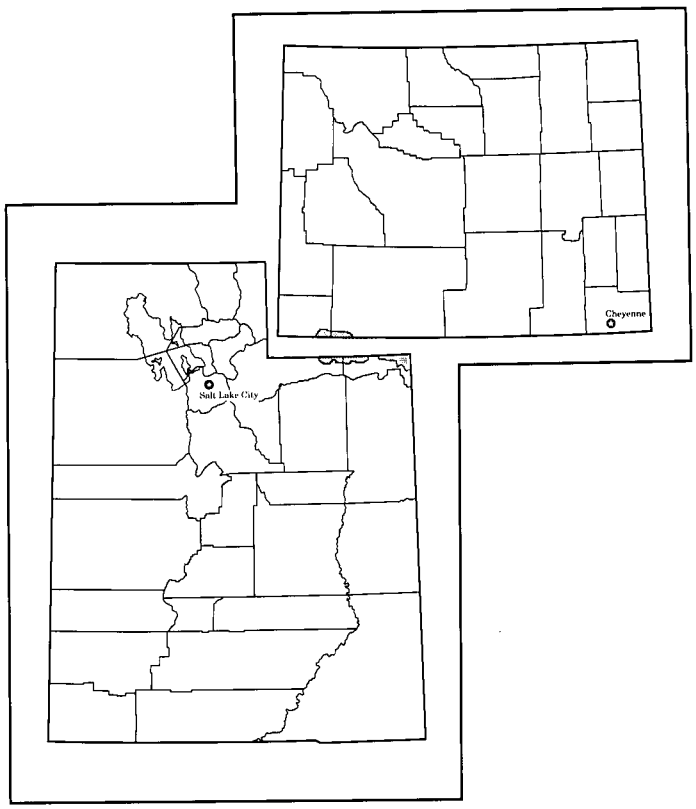

Figure 1.—(Location of the Henrys Fork Area, Utah-Wyoming—Parts of Daggett and Summit Counties, Utah and Sweetwater and Uinta Counties, Wyoming).

Precipitation ranges from about 7 inches in the southeastern corner to 24 inches at the higher elevations.

History and Development

The Area encompassed by the survey was originally hunted by Shoshone Indians. The first recorded intrusion of white men was a rendezvous of fur trappers. William Ashley selected a site on the Henrys Fork River, 20 miles upstream from where it empties into the Green River, for his gathering of trappers in the summer of 1825.

The land was ceded to the United States in 1848. Land was subsequently sold to early settlers by a "land development company" in the early 1890's. Manila, the largest community in the Area, received its name at the time Admiral Dewey won the historic naval battle at Manila Bay, Philippines.

There are several smaller community centers in the survey area. McKinnon was named after Archibald McKinnon, a Mormon official in Utah at the time. McKinnon has a post office and an elementary school. Lonetree was named for a lone majestic pine tree in the vicinity by Mr. and Mrs. Hoops when they arrived by ox team with a small herd of cattle in 1872. At one time the community had a school with 60 pupils. The school is now closed. The population in this Area decreased as ranches consolidated. Oil and gas wells, part of the "Overthrust Belt" development, have been recently drilled west of Lonetree.

To the east of Flaming Gorge Reservoir is Clay Basin, named for an early rancher. This Area has one community, the Mountain Fuel Supply Camp, established to house the personnel who operate the Clay Basin Gas Field. Natural gas has been produced from underground deposits since 1937. These underground strata have since been developed for natural gas storage. Gas is pumped into the porous sandstone during the summer and is then available for use during the winter. This facility, dedicated in 1978, is named the Kastler Station in honor of B.Z. Kastler, president of Mountain Fuel Supply Company. Clay Basin has one active ranch, the Frank Meir Ranch.

Browns Park has a colorful history. It was traversed by William Ashley in 1825. Baptiste Brown, a French Canadian, and his Indian wife resided in the Park in 1827. In 1837 three trappers built a crude structure in the eastern part of the Park. Fort Davy Crockett, also referred to as "Fort Misery," was established a year or two later in what is now the Colorado section of the Park. Explorer John Charles Fremont was in Brown's Hole, as Browns Park was referred to in those times, in 1844.

From the late 1860's to about 1903 Browns Park was a hide-out for rustlers, bank robbers, and other fugitives. The Powder Springs gang, Hole-in-the-Wall gang, Butch Cassidy's Wild Bunch, and others coexisted with local ranchers.

In the 1870's Mr. Jarvie settled in the western end of the Park on the north bank of the Green River, opened a store and post office, and operated a ferry. This is now a historical site operated by the Bureau of Land Management for public enjoyment.

Two ranches are at present operating within the Utah portion of Browns Park: the Allen Ranch on the north bank of Green River and the Alex Radosevich Ranch along lower Willow Creek. This area is increasingly being managed for wildlife by the Bureau of Land Management.

Flaming Gorge, although not within the boundaries of the survey area, lies between the two parts. It is the spectacular gorge eroded by the Green River over millions of years. James Wesley Powell traversed it in 1869 when he first explored the Green and Colorado Rivers. With the completion of Flaming Gorge Dam in 1963, the Area attracted more tourists, fishermen, and hunters.

The permanent community residents are mainly ranchers with cattle. To provide hay for winter feed, canals or ditches were dug to divert water from streams onto cropland. The largest of those canals, Interstate Canal, weaves across the Utah-Wyoming line south of McKinnon. Numerous smaller diversions occur along the Henrys Fork River and its tributaries. Beaver Meadows and Sheep Creek Reservoirs, south of McKinnon and within the boundary of the Wasatch National Forest, are the only water storage facilities for irrigation.

Lucerne Valley, in which Manila is located, received its name from early promotions heralding it as an ideal area for alfalfa production. Hay and small grain crops are produced; however, a few wet and salty areas have developed from seepage. Summer homes have been developed in Lucerne Valley, where a view of Flaming Gorge can be enjoyed, and on the northern toe slopes of Phil Pico Mountain south of Wyoming Highway 414.

Physiography, Drainage and Geology

The Henrys Fork Soil Survey Area is partly in the Uinta Mountain Section and partly in the Green River Basin Section of the Middle Rocky Mountains Physiographic Province. It consists of the northern foothills of the Uinta Mountains and the southern part of the Green River Basin.

Several tributaries drain all of the survey area into the Green River. The main river draining the western part of the survey area into the Green River is the Henrys Fork River, from which the name for the survey area was taken. Also in the western part, Birch Spring Draw drains Lucerne Valley and Sheep Creek; its tributary, Lodgepole Creek, drains Conner Basin. The area east of Green River is drained mainly by Red Creek and its tributaries. Spring Creek, Willow Creek, and Beaver Creek also drain small areas of the eastern part of the survey area.

Geologically the Green River Basin is composed of sedimentary rocks; most were laid down in an old extinct sea termed Gosiutex Lake. Alluvial deposits from the Uinta Mountains, such as the Bishop Conglomerate with its high content of cobbles and stones, occur as remnants on top of Hickey Mountain, Phil Pico Mountain, and Willow Creek Butte. Sedimentary rocks which were once formed from sea sediments tend to be higher in minerals and salts; examples are the Hilliard Shale and Mowry Shale in Lucerne Valley. The scenic escarpment, which closely follows the Utah-Wyoming state line just north of Manila, is part of the Wasatch formation. Other members of the Wasatch formation have weathered into fine textured material as is present on Willow Creek Butte. Weathering of the Bridger Formation and Green River Formation produced mainly loam, clay loam, and sandy loam soils in the Antelope Wash area northwest of Manila. The numerous Rock outcrops with associated shallow sandy soils in "The Reaves" southeast of Manila formed in the Dakota Sandstone Formation. From the Twin Creek Limestone Formation and Curtis Formation, also in "The Reaves," are shallow, very channery and flaggy soils. The Mesa Verde Formation is in the area of "The Glades." Other formations with less exposure occur.

The hard core part of the Uinta Mountains, the reddish metamorphic Red Creek Quartzite Formation, is exposed on the string of peaks from east to west known as 0-Wi-Yu-Kuts Mountain, Head of Cottonwood Mountain, Mount Home, Goslin Mountain, and Dutch John Mountain.

Landslides or mass earth movements are very common on the slopes of Hickey Mountain and Table Mountain. An older landslide is evident on the east toe slope of Phil Pico Mountain. The Bald Range terrain is the result of an old earth flow.

Glaciers flowed from the Uinta Mountains in the southwestern part of the survey area southwest of Lonetree, leaving several moraines.

Most of the survey area is mantled by alluvium, which is commonly a mixture of material from several geological formations. It occurs on alluvial fans, terraces, fan aprons, fan pediments, and flood plains.

Two faults occur in or close to the survey area. Henrys Fork Fault occurs in a wavy line from Flaming Gorge Reservoir, where it crosses the state line, to Phil Pico Mountain. The Uinta Fault is mainly south of the survey area and it occurs from Bear Mountain, east of Flaming Gorge, west into Summit County. It makes a slight arc into the survey area where it crosses Middle Fork Beaver Creek.

Climate

The climate of the survey area varies considerably as influenced by elevation and other topographic features. Most of the Area is semi-arid, but ranges from arid in the southeast corner in Browns Park to subhumid in the higher mountains. Precipitation and temperature data are given in tables 1a, 1b, and 1c for three stations: for Manila and for Allens Ranch, within the boundaries of the survey area; and for Flaming Gorge, outside the survey area and located between the two separate parts of the survey area. Information on the length of the growing season at these stations is given in tables 2a, 2b, and 2c.

The prevailing winds are from the west-northwest. Storms bring moisture from the Pacific Ocean. This means that much of the Area is in a "rain-shadow" of the Uinta Mountains which border the west side of the Area. Precipitation data from the station at Manila indicates the lowest precipitation months for the lower elevations are from November through March. The precipitation is otherwise fairly evenly distributed; no real "highs" occur. Precipitation effectiveness varies considerably in the higher mountains although the same amount falls: slopes with northerly aspects have a good forest cover, as opposed to slopes with southerly aspects which have a sparse grass and shrub vegetation.

Total annual precipitation ranges from an average of 7 inches in the southeastern corner to 24 inches at the higher elevations. Temperature varies about 45 degrees F between the average daily July temperature and the average daily January temperature, and 25 to 40 degrees between the average daily minimum and maximum. In the river valleys in the western part of the survey area, the average frost-free period is estimated at 30 to 60 days, but frost can occur at almost any time during the summer. In Browns Park the frost-free period is about to 90 to 110 days.

Relative humidity averages about 35 to 40 percent at the lower elevations in summer and 70 to 80 percent at the higher elevations in December. Sunshine is abundant at the lower elevations, where it is estimated at about 70 percent of possible in the summer. At the higher elevations in winter, it is estimated as about 40 percent of possible.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion

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

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

Individual soils on the landscape commonly 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 soils in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted 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 they could confirm data and assemble additional data based on experience and research.

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

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

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

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

General Soil Map Units

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

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

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

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

Soil Descriptions

Soils on Flood Plains

This group consists of two map units. It makes up about 7 percent of the survey Area. The topography is nearly level to gently sloping. Native vegetation is grasses, sedges, forbs, shrubs, and trees. Elevation is 6,000 to 8,400 feet. The average annual precipitation is 9 to 16 inches, the average annual air temperature is 38 to 45 degrees F, and the frost-free period is 50 to 90 days. The soils are very deep and well drained, moderately well drained, or poorly drained.

1 Cowestglen-Spicerton-Hagga

Very deep, poorly drained, moderately well drained or well drained, moderately coarse textured or medium textured soils on flood plains in the cool semidesert zone.

This unit occurs along the lower part of Henrys Fork River and along the portions of Sheep Creek and Red Creek. Slope is 0 to 3 percent. Native vegetation is grasses, sedges, forbs, shrubs, and cottonwood and willow trees. Elevation is 6,000 to 7,300 feet. The average annual precipitation is 9 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days.

This map unit makes up about 2 percent of the survey Area. It is 31 percent Cowestglen and similar soils, 21 percent Spicerton and similar soils, and 18 percent Hagga soils. The remaining 30 percent consists of minor components.

Cowestglen soils are moderately well drained with a seasonal water table at a depth of 3 to 5 feet. They typically have a surface layer of grayish brown fine sandy loam about 8 inches thick. The upper part of the underlying material is light brownish gray stratified fine sandy loam and loamy sand about 34 inches thick. The lower part is light brownish gray mottled gravelly sandy loam to 60 inches or more. Cowestglen soils have a rare hazard of flooding.

Spicerton soils are well drained. They typically have a surface layer of light brownish gray loam about 1 inch thick. The subsoil is grayish brown and pale olive very strongly alkaline clay loam about 10 inches thick. The substratum is pale olive clay loam to 60 inches or more.

Hagga soils are in depressions of flood plains and terraces. These soils are poorly drained with a seasonal water table above 12 inches in the spring and early summer. Typically they have asurface layer of very dark gray mottled loam about 8 inches thick, underlain by gray and light gray mottled stratified sandy clay loam, loam,

sandy loam, and gravelly sandy loam to 60 inches or more. Hagga soils have a rare hazard of flooding.

The minor components consist of the well drained Goslin, Hanly Family, Poposhia, and Roamett soils; and of Riverwash soils.

This unit is mostly irrigated hayland and pasture; some areas are rangeland.

This unit provides winter and year round habitat for moose, summer and year round habitat for antelope, and crucial winter and year round habitat for mule deer. Also included in this unit are habitat for species such as muskrat, mink, beaver, raccoon, dusky shrew, meadow vole, coyote, fox, and habitat for birds common to wetland shrubs and trees and riverine systems.

2 Turson-Menbar

Very deep, somewhat poorly drained, moderately fine textured soils on flood plains in the cold montane zone.

This unit occurs in the western part of the survey Area along the upper part of Henrys Fork River, Burntfork Creek, Beaver Creek, Poison Creek, and Spring Creek. Minor areas occur on Goslin Mountain. Slope is 0 to 2 percent. Native vegetation is grasses, sedges, forbs, shrubs, and trees including cottonwood and willow. Elevation is 7,300 to 8,400 feet. The average annual precipitation is 10 to 16 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 50 to 80 days.

This map unit makes up about 5 percent of the survey Area. It is 50 percent Turson soils and 25 percent Menbar soils. The remaining 25 percent consist of minor components.

Turson soils typically have a surface layer of dark grayish brown and grayish brown clay loam about 12 inches thick. The upper part of the underlying material is grayish brown clay loam about 20 inches thick. The lower part is brown very gravelly loamy sand to 60 inches or more. A seasonal water table is at a depth of 3 to 5 feet. These soils have an occasional hazard of flooding.

Menbar soils typically have a surface layer of very dark grayish brown clay loam about 9 inches thick. The next layer is brown distinctly mottled clay loam about 11 inches thick. The underlying material is brown faintly mottled stratified sandy loam, sandy clay loam, and clay loam to 60 inches or more. A seasonal water table is at a depth of 3 to 5 feet. These soils have a rare hazard of flooding.

Minor components consist of the very poorly drained Borofibrists soils, somewhat poorly drained Cryofluvents soils, and somewhat poorly drained to moderately well drained Henrysfork soils.

This unit is rangeland and irrigated hayland and pasture.

This unit provides winter and year round habitat for elk and moose, summer and year round habitat for antelope, and crucial winter and year round habitat for mule deer. Also included in this unit are habitat for species such as muskrat, mink, beaver, raccoon, dusky shrew, masked shrew, montane vole, long-tailed vole, coyote, and habitat for birds common to wetland shrubs, trees and riverine systems.

Soils on Alluvial Fans, Fan Piedmonts and Terraces

This group consists of three map units. It makes up about 36 percent of the survey Area. The topography is nearly level to moderately steep. Native vegetation is shrubs, forbs, and grasses with some areas of juniper. Elevation is 5,400 to 8,800 feet. The average annual precipitation is 7 to 14 inches, the average annual air temperature is 40 to 48 degrees F, and the frost free period is 50 to 110 days.

3 Luhon-Poposhia-Brownsto

Very deep, well drained, moderately coarse textured or medium textured soils on alluvial fans and fan terraces in the cool semidesert zone.

This unit occurs throughout most of the survey Area. Slope is 0 to 15 percent. Native vegetation is shrubs, forbs, and grasses with some small areas of juniper. Elevation is 6,200 to 8,000 feet. The average annual precipitation is 9 to 14 inches, the average annual air temperature is 38 to 45 degrees F, and the frost-free period is 60 to 90 days.

This unit makes up about 23 percent of the survey Area. It is 34 percent Luhon and similar soils, 26 percent Poposhia and similar soils, and 17 percent Brownsto and similar soils. The remaining 23 percent is made up of minor components.

Luhon soils typically have a surface layer of yellowish brown loam about 8 inches thick. The subsoil is light brown and pinkish white highly calcareous loam about 22 inches thick. The substratum is reddish yellow sandy loam to 60 inches or more.

Poposhia soils typically have a surface layer of light yellowish brown loam about 3 inches thick. The subsoil is light yellowish brown loam 24 inches thick. The substratum is light yellowish brown clay loam to 60 inches or more. (See figure 2.)

Brownsto soils typically have a surface layer of grayish brown gravelly sandy loam about 9 inches thick. The subsoil is pinkish gray highly calcareous very cobbly sandy loam about 23 inches thick. The substratum is light brown very cobbly sandy loam to 60 inches or more.

Minor components consist of Goslin, Rhoamett, Rock River, and Rogrube soils; Salt flats; and Rock outcrop.

This unit is used for irrigated hay and pasture and for rangeland. These soils are well suited to irrigated hay and pasture.

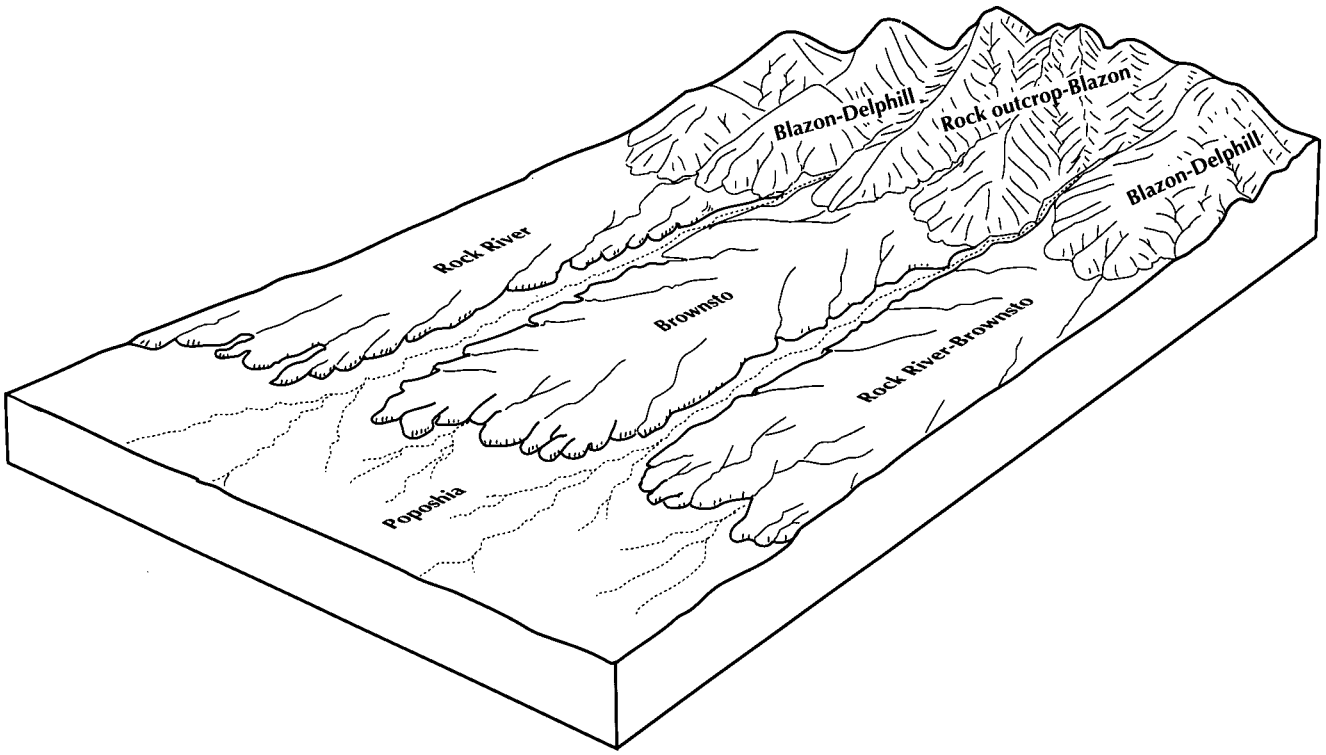

Figure 2.—(Diagram of soil-landscape relationships. The Poposhia soils are on alluvial fans of drainageways originating in the hillslopes of Rock outcrop, Blazon soils, and Delphill soils. The Rock River and Brownsto soils are on fan terraces.)

The area of this unit west of Flaming Gorge Reservoir provides winter habitat for moose and elk, year round habitat for antelope, and crucial winter and year round habitat for mule deer. The area of this unit east of Flaming Gorge Reservoir provides winter habitat for elk and crucial winter and year round habitat for antelope and mule deer. Also included in this unit are habitat for species such as thirteen-lined ground squirrel, desert cottontail rabbit, white-tailed jackrabbit, sagebrush vole, meadow vole, badger, coyote, red fox, and habitat for birds common to shrub-steppes and hay fields. (See figure 3.)

4 Dahlquist-Harpole

Very deep, well drained, very cobbly and very stony, moderately coarse textured soils on alluvial fans and fan terraces in the cool semidesert and montane zones.

This unit occurs in the western part of the survey Area. Slope is 1 to 5 percent. Native vegetation is shrubs, forbs, and grasses. Elevation is 7,500 to 8,800 feet. The average annual precipitation is 10 to 20 inches, the average annual air temperature is 36 to 42 degrees F, and the frost-free period is 50 to 90 days.

This unit makes up about 5 percent of the survey Area. It is 67 percent Dahlquist and similar soils and 23 percent Harpole and similar soils. The remaining 10 percent consists of minor components.

Dahlquist soils typically have a surface layer of brown very cobbly sandy loam about 2 inches thick. The upper 15 inches of the subsoil is reddish brown very cobbly clay loam. The lower part is reddish brown very cobbly sandy loam to 60 inches or more.

Harpole soils typically have a surface layer of brown very stony sandy loam about 8 inches thick. The subsoil is reddish brown very stony sandy clay loam about 22 inches thick. The substratum is reddish brown very stony sandy loam to 60 inches or more.

Minor components consist of Brownsto and Ledgefork soils.

This unit is used for rangeland and for irrigated hayland and pasture.

Figure 3.—(In the background is the general soil map unit ofTeeler-Condie-Lotex, which provides summer habitat for elk and mule deer. In the foreground, the general soil map unit of Luhon-Poposhia-Brownsto provides critical winter habitat for mule deer: sagebrush growing on this unit is their dominant source of food in winter).

This unit provides winter and year round habitat for moose and elk, summer habitat for antelope, and crucial winter and year round habitat for mule deer. Also included in this unit are habitat for species such as thirteen-lined ground squirrel, desert cottontail rabbit, white-tailed jackrabbit, sagebrush vole, meadow vole, coyote, red fox, and habitat for birds common to shrub-steppes and hay fields.

5 Strych-Gerst-Milok

Shallow and very deep, well drained, moderately coarse textured or medium textured soils on alluvial fans, fan terraces, piedmont slopes, and hillslopes in the warm semidesert zone.

This unit occurs in the southeastern part of the survey Area in Browns Park. Slope is 2 to 40 percent. Native vegetation is shrubs, forbs, and grasses with some scattered juniper. Elevation is 5,400 to 6,300 feet. The average annual precipitation is 8 to 12 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days.

This unit makes up about 9 percent of the survey Area. It is 35 percent Strych and similar soils, 24 percent Gerst and similar soils, and 17 percent Milok

and similar soils. The remaining 24 percent are minor components.

Strych soils are on alluvial fans, fan terraces, and hillslopes. These soils are very deep and they formed in alluvium. They typically have a surface layer of brown gravelly sandy loam about 9 inches thick. The subsoil is pinkish white to light brown, highly calcareous very gravelly sandy loam about 41 inches thick. The substratum is reddish brown extremely gravelly sandy loam to 60 inches or more. (See figure 4.)

Gerst soils are on hillslopes. These soils are shallow and they formed in residuum and alluvium. Typically they have a surface layer of very pale brown loam about 6 inches thick. The underlying material is light brownish gray and light gray channery loam about 12 inches thick. Shale is at a depth of about 18 inches.

Milok soils are on fan terraces. These soils are very deep. They formed in alluvium. These soils typically have a surface layer of reddish brown sandy loam about 2 inches thick. The upper 9 inches of the subsoil is reddish brown sandy loam. The lower part is pink highly calcareous gravelly sandy loam and gravelly loam 17 inches thick. The substratum is reddish brown gravelly loam to 60 inches or more.

Minor components consist of Flatnose, Henrieville, Bunkwater, Sedillo Family, and Yarts soils.

This unit is used for rangeland.

This unit provides crucial winter and year round habitat for antelope and mule deer. Also included in this unit are habitat for species such as thirteen-lined ground squirrel, desert cottontail rabbits, white-tailed jackrabbit, least chipmunk, white-tailed prairie dog, badger, coyote, red fox, and habitat for birds common to shrub-steppes.

Soils on Hills and Breaks

This group consists of two map units. It makes up about 26 percent of the survey Area. The topography is nearly level to steep. Native vegetation is shrubs, forbs, grasses, juniper, and pinyon pine. Elevation is 6,100 to 8,200 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days.

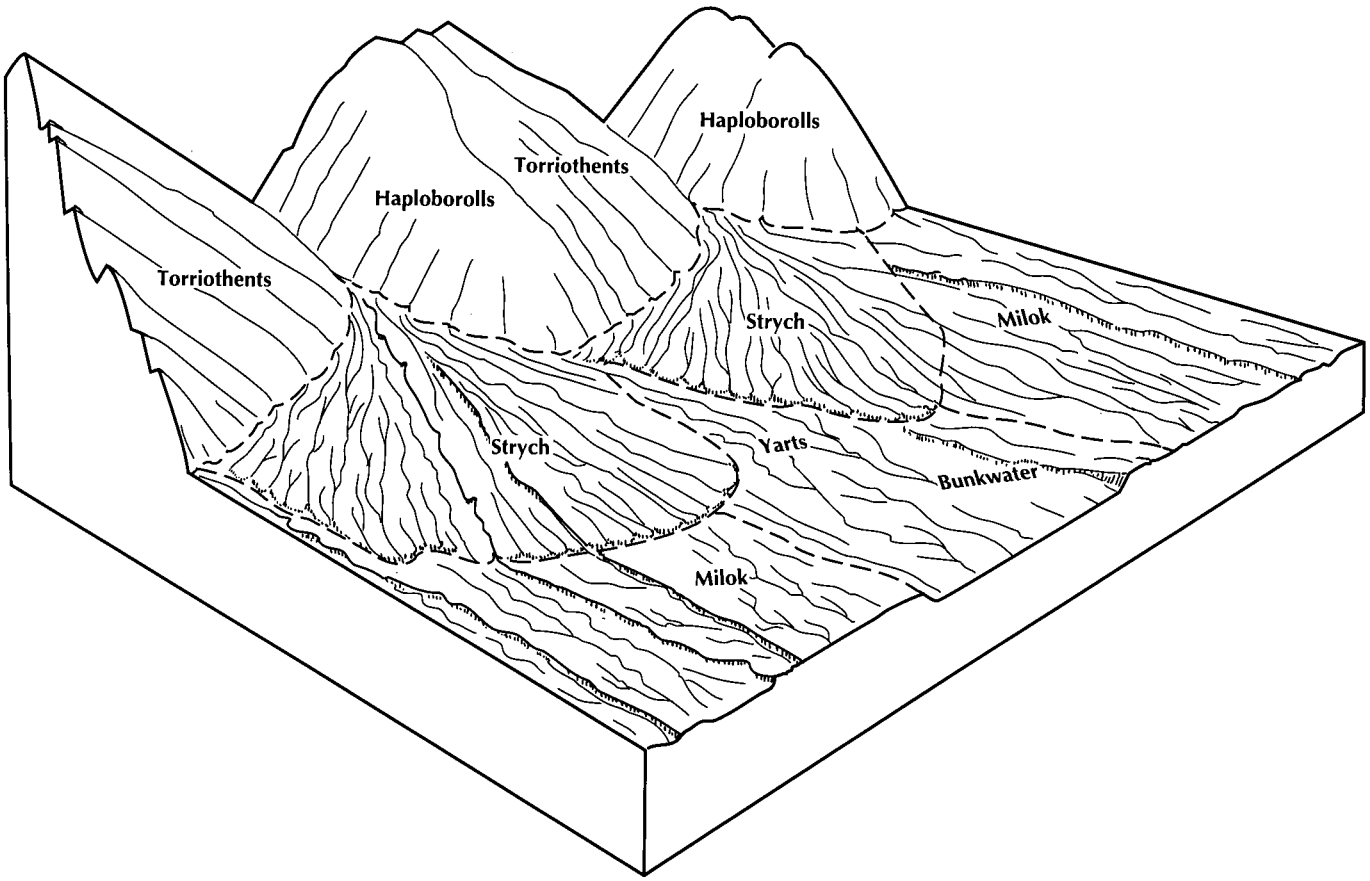

Figure 4.—(Diagram of the detailed soil map unit-landscape relationships in the southeast part of the survey Area. These soils formed in alluvium from areas similar to the mountain slopes of theTorriorthents and Haploborolls soils.)

6 Blazon-Rencot-Rockinchair

Very shallow to moderately deep, well drained, medium textured soils on hillslopes, breaks, and plains in the cool semidesert zone.

This unit occurs throughout most of the survey Area. Slope is 0 to 40 percent. Native vegetation is shrubs, forbs, and grasses. Elevation is 6,100 to 8,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days.

This unit makes up about 17 percent of the survey Area. It is 35 percent Blazon and similar soils, 20 percent Rencot and similar soils, and 15 percent Rockinchair and similar soils. The remaining 30 percent is made up of minor components.

Blazon soils are on south- and west-facing hillslopes and breaks. These soils are very shallow or shallow. They typically have a surface layer of pale brown and light yellowish brown loam about 7 inches thick. The underlying material is light yellowish brown channery loam about 6 inches thick. Shale is at a depth of about 13 inches.

Rencot soils are on ridges. These soils are shallow. They typically are pale brown very channery loam about 12 inches thick limestone.

Rockinchair soils are on plains and hillslopes. These soils are moderately deep. They typically have a surface layer of grayish brown and brown loam about 4 inches thick. The upper 7 inches of the subsoil is brown loam, very pale brown and white highly calcareous loam, and clay loam about 21 inches thick. Shale is at a depth of about 32 inches.

Minor components are the moderately deep Dollard soils, shallow Mayerson soils, deep Poposhia soils, Badlands, and Rock outcrop.

This unit is used for rangeland.

The area of this unit west of Flaming Gorge Reservoir provides winter habitat for moose, summer and year round habitat for antelope, and crucial winter and year round habitat for mule deer. The area of this unit west of Birch Creek provides winter habitat for elk. The area of this unit east of Flaming Gorge Reservoir provides winter and year round habitat for elk and crucial winter and year round habitat for antelope and mule deer. Also included in this unit are habitat for species such as thirteen-lined ground squirrel, desert cottontail rabbits, white-tailed jackrabbit, least chipmunk, white-tailed prairie dog, badger, coyote, red fox and habitat for birds common to shrub-steppes.

7 Rock Outcrop-Blackhall-Rentsac

Rock outcrop and very shallow or shallow and well drained, moderately coarse textured soils on breaks, dip slopes, hillslopes, and escarpments in the cool semidesert zone.

This unit occurs throughout much of the survey Area. Slope is 6 to 50 percent. Native vegetation is juniper, pinyon pine, shrubs, forbs, and grasses. Elevation is 6,100 to 8,200 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days.

This map unit makes up about 5 percent of the survey Area. It is 30 percent Rock outcrop, 22 percent Blackhall and similar soils, and 18 percent Rentsac and similar soils. The remaining 30 percent is made up of minor components.

Rock outcrop is gray and yellow sandstone occurring as vertical cliffs and as intermittent ledges on escarpments. Shale outcroppings also occur on foot slopes below the cliffs.

Blackhall soils are on breaks and hillsides. These soils are very shallow or shallow. They typically have a surface layer of brown fine sandy loam about 5 inches thick. The underlying material is light yellowish brown fine sandy loam about 5 inches thick. Sandstone is at a depth of about 10 inches.

Rentsac soils are on dip slopes and breaks. These soils are very shallow or shallow. They typically have a surface layer of yellowish brown very channery sandy loam about 2 inches thick. The subsoil is yellowish brown very channery sandy loam and extremely flaggy sandy loam about 8 inches thick. Limestone is at a depth of about 10 inches.

Minor components consist of Coyet and Grobutte Family soils.

This unit is used for rangeland.

This unit provides crucial winter and year round habitat for mule deer. It also provides winter and year round habitat for elk in those areas located east of Flaming Gorge Reservoir. Also included in this unit are habitat for species such as desert cottontail rabbits, least chipmunk, cliff chipmunk, bushy-tailed woodrat, coyote, and habitat for birds common to rock outcrops and juniper forests.

Soils on the Mountains

This group consists of three map units. It makes up about 31 percent of the survey Area. The topography is nearly level to very steep. Native vegetation is mostly shrubs, forbs, and grasses with interspersed forested areas. Elevation is 7,500 to 9,500 feet. The average annual precipitation is 10 to 22 inches, the average annual air temperature is 35 to 45 degrees F, and the frost-free period is 30 to 90 days.

8 Luhon-Hickey-Evanston

Very deep, well drained, medium textured or moderately fine textured soils on glacial moraines and hills in the cool semidesert and montane zones.

This unit occurs mainly in the western part of the survey Area. Slope is 0 to 40 percent. Landslides are common in these areas. Native vegetation is shrubs, forbs, and grasses. Elevation is 7,500 to 8,800 feet. The average annual precipitation is 10 to 18 inches, the average annual air temperature is 36 to 42 degrees F, and the frost-free period is 50 to 90 days.

This map unit makes up about 13 percent of the survey Area. It is 36 percent Luhon and similar soils, 21 percent Hickey and similar soils, and 20 percent Evanston and similar soils. The remaining 23 percent is made up of minor components.

Luhon soils are on nearly level to moderately steep glacial moraines and hills. They formed in alluvium and colluvium. They typically have a surface layer of brown gravelly loam about 6 inches thick. The upper 18 inches of the subsoil is very pale brown, highly calcareous gravelly loam. The lower part is light yellowish brown loam to 60 inches or more.

Hickey soils are on nearly level to moderately steep moraines. They formed in glacial till. Typically they have a surface layer of reddish brown gravelly sandy clay loam about 4 inches thick. The upper 4 inches of the subsoil is reddish brown clay loam. The next 22 inches is brown clay loam. The lower part of the subsoil is brown sandy clay loam to 60 inches or more.

Evanston and similar soils are on gently sloping to strongly sloping hills. They formed in alluvium and colluvium. They typically have a surface layer of brown loam about 3 inches thick. The upper 7 inches of the subsoil is brown loam. The next 5 inches is pale brown clay loam. The lower part of the subsoil is light yellowish brown and pink gravelly loam to 60 inches or more.

Minor components consist of Brownsto, Garlips, Kappes, Lail, Poposhia, Rencot, Rockinchair, and Tridell soils.

This unit is used for rangeland.

This unit provides winter and year round habitat for elk and mule deer. The area of this unit west of Flaming Gorge Reservoir also provides winter and year round habitat for moose. Also included in this unit are habitat for species such as dusky shrew, masked shrew, montane vole, red squirrel, ermine, snowshoe rabbit, coyote, and habitat for birds common to shrub-steppes, and conifer and aspen forests.

9 Teeler-Condie-Lotex

Very shallow, shallow, or very deep and well drained, moderately coarse textured or medium textured soils on mountain slopes and plateaus in the cold montane zone.

This unit occurs throughout the survey Area. Slope is 0 to 50 percent. Native vegetation is shrubs, forbs, and grasses with interspersed forested areas. Elevation is 7,900 to 9,500 feet. The average annual precipitation is 14 to 22 inches, The average annual air temperature is 35 to 40 degrees F, and the frost-free period is 30 to 80 days.

This map unit makes up about 8 percent of the survey Area. It is 40 percent Teeler and similar soils, 23 percent Condie and similar soils, and 20 percent Lotex and similar soils. The remaining 17 percent is made up of minor components.

Teeler soils are on gently sloping to moderately steep mountaintops. These soils are very deep and formed in alluvium and colluvium derived from conglomerate. They typically have a surface layer of dark reddish gray gravelly sandy loam about 3 inches thick. The upper 8 inches of the subsoil is dark reddish brown very gravelly clay loam. The next 6 inches is brown very gravelly sandy loam. The lower part of the subsoil and the substratum are pink, light brown, and reddish brown very cobbly sandy loam to 60 inches or more.

Condie soils are on moderately sloping to steep mountain slopes under forest vegetation. These soils are very deep and formed in colluvium derived from quartzite and sandstone. They typically have a thin layer of leaves and partially decomposed organic matter on the surface. The surface layer is reddish brown gravelly loam about 9 inches thick. The upper 10 inches of the subsurface layer is light brown gravelly sandy loam. The lower part is light reddish brown very cobbly sandy loam about 18 inches thick. The subsoil is reddish brown very cobbly sandy clay loam to 60 inches or more.

Lotex soils are on nearly level to gently sloping mountain plateaus. These soils are very shallow or shallow and formed in residuum derived from quartzite and sandstone. They typically have a surface layer of reddish brown sandy loam about 2 inches thick and a subsoil of reddish brown loam about 5 inches thick. Quartzite is at a depth of about 7 inches.

Minor components consist of Rock outcrop, Kappes soils, and Tridell soils.

This unit is used for rangeland. Small areas are used for timber production.

This unit provides summer habitat for elk, mule deer and antelope. Areas of this unit west of Flaming Gorge Reservoir also provide summer habitat for moose. Also included in this unit are habitat for species such as dusky shrew, masked shrew, montane vole, red squirrel, ermine, snowshoe rabbit, coyote, and habitat for birds common to shrub-steppes and conifer forests.

10 Haploborolls-Torriorthents-Tolman

Very deep to shallow and well drained, moderately coarse textured or medium textured soils on mountain slopes and plateaus in the cool semidesert zone.

This unit occurs on the mountains with lower elevations in the eastern part of the survey Area. Slope ranges from 3 to 70 percent. Native vegetation is juniper, pinyon pine, shrubs, forbs, and grasses. Elevation ranges from 6,000 to 8,200 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 45 degrees, and the frost-free period is 60 to 90 days.

This unit makes up about 12 percent of the survey Area. It is 40 percent Haploborolls and similar soils, 24 percent Torriorthents and similar soils and 13 percent Tolman and similar soils. The remaining 23 percent is made up of minor components.

Haploborolls soils are on north-facing mountain slopes. These soils are shallow to very deep and formed in residuum and colluvium derived from quartzite, sandstone, and other metamorphic and sedimentary rocks. They typically have a surface layer of reddish brown very stony sandy loam about 18 inches thick. The underlying material is weak red very stony sandy loam about 8 inches thick. Sandstone bedrock is at a depth of about 26 inches.

Torriorthents soils are on south-facing mountain slopes. These soils are shallow to very deep and formed in residuum and colluvium derived from quartzite, sandstone, and other metamorphic and sedimentary rocks. They typically have a surface layer of reddish brown very gravelly loam about 4 inches thick. The underlying material is light yellowish brown very gravelly sandy clay loam about 11 inches thick. Fractured weakly consolidated bedrock is at a depth of about 24 inches.

Tolman soils are on mountain plateaus. These soils are shallow. They formed in residuum derived from sandstone and quartzite. They typically have a surface layer of dark brown very flaggy fine sandy loam about 10 inches thick and a subsoil of brown extremely flaggy sandy clay loam about 4 inches thick. Sandstone is at a depth of about 14 inches.

Minor components consist of Boettcher, Garlips, Luhon, and Tally soils and Rock outcrop.

This unit is used for rangeland.

This unit provides winter and year round habitat for elk and crucial winter and year round habitat for antelope and mule deer. Also included in this unit are habitat for species such as desert cottontail rabbits, least chipmunk, cliff chipmunk, bushy-tailed woodrats, coyote, and habitat for birds common to shrub-steppes, Rock outcrops, and pinyon-juniper forests.

Detailed Soil Map Units

The map units delineated on the detailed maps at the back of 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. More information about each map unit is given under the heading "Use and Management of the Soils."

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

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

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

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

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

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

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

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Bab-Teeler complex, 5 to 35 percent slopes is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of

present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Hagga-Cowestglen association, nearly level is an example.

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

Table 3 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The "Glossary" defines many of the terms used in describing the soils or miscellaneous areas.

Soil Descriptions

100—Babb-Teeler complex, 5 to 35 percent slopes.

This map unit is on mountaintops and slopes of Phil Pico Mountain. Elevation is 7,900 to 9,400 feet. The average annual precipitation is about 12 to 18 inches, the average annual air temperature is 35 to 40 degrees F, and the average frost-free period is 50 to 80 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 45 percent Babb loam, 10 to 35 percent slopes and 35 percent Teeler gravelly sandy loam, 5 to 25 percent slopes. The Babb soils are on convex windswept knolls and ridges. The Teeler soils are mainly on planar and concave areas. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Evanston loam and Tridell gravelly loam on foot slopes. Also included are small areas of Rock outcrop and a shallow very channery loam soil on windswept ridges. These inclusions make up 20 percent of the total acreage.

The Babb soils are very deep and well drained. They formed in colluvium. Typically the surface layer is grayish brown and brown loam about 12 inches thick. The upper part of the subsoil is light brown and light yellowish brown gravelly loam about 14 inches thick. The lower part is very pale brown gravelly loam to 60 inches or more. In some areas the surface layer is gravelly loam.

Permeability of the Babb soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Teeler soils are very deep and well drained. They formed in residuum and alluvium derived from conglomerate. Typically the surface layer is dark grayish brown gravelly sandy loam about 3 inches thick. The subsoil is brown very gravelly clay loam about 4 inches thick. The substratum is pinkish gray very gravelly sandy loam to a depth of 60 inches or more. In some areas the surface is very cobbly sandy loam.

Permeability of the Teeler soils is moderate. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used for grazing.

The potential plant community on the Babb soils is mainly bluebunch wheatgrass, muttongrass, prairie junegrass, needleandthread, common stonecrop, rock goldenrod, black sagebrush, and fringed sagewort. If the vegetation deteriorates, Letterman needlegrass, rock goldenrod, cushion milkvetch, and gray horsebrush increase. Under further deterioration, annual and biennial forbs invade. The potential plant community produces 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 300 pounds in unfavorable years.

The potential plant community on the Teeler soils is mainly true mountainmahogany, Utah serviceberry, mountain big sagebrush, snowberry, bluegrass, fescue, and bluebunch wheatgrass. If the vegetation deteriorates, mountain big sagebrush, Oregongrape, and snowberry increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 800 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 5; and planting zone III. The Babb soils are in the Mountain Windswept Ridge (Black Sagebrush) range site and the Teeler soils are in the Mountain Very Steep Stony Loam (Browse) range site.

101—Badlands-Dollard complex, hilly.

This map unit is on hills north of the Henrys Fork River and in an area east of Flaming Gorge. Elevation is 7,100 to 7,500 feet. The average annual precipitation is 10 to 12 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation on the Dollard soils is shrubs, forbs, and grasses. The Badlands are bare of vegetation.

This unit is 50 percent Badlands and 30 percent Dollard clay. The components of this unit are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Poposhia loam and Rhoamett silty clay loam along drainageways; Moyerson clay on small tablelands; and a soil that is shallow and very strongly alkaline on slope shoulders and

hill crests. These inclusions are 20 percent of the total acreage.

The Badlands are sloping to steep areas that are barren of vegetation. Runoff is very rapid and geologic erosion is very active. These areas are very shallow to shale bedrock.

The Dollard soils are moderately deep and well drained. They formed in residuum and colluvium derived from shale. Typically the surface layer is light brownish gray clay about 2 inches thick. The subsoil is light brownish gray clay about 29 inches thick. Shale is at a depth of about 31 inches.

Permeability of the Dollard soils is slow. Available water capacity is low. Effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used for grazing.

The potential plant community on the Dollard soils is mainly western wheatgrass, bottlebrush squirreltail, Indian ricegrass, Gardner saltbush, and winterfat. If the vegetation deteriorates, winterfat becomes more dominant as bare spots increase. Under further deterioration, halogeton and annual weeds invade. The potential plant community produces 600 pounds of air-dry vegetation per acre in normal years. Production ranges from 750 pounds in favorable years to 400 pounds in unfavorable years.

The Badlands are in capability subclass VIIIe, nonirrigated; windbreak suitability group 10; and planting zone II. The Dollard soils are in capability subclass VIe, nonirrigated; windbreak suitability group 4C and planting zone II; and are in the Saline Upland 10-14 Foothills and Basins West range site.

102—Bitton-Tally complex, 5 to 15 percent slopes.

This map unit is on mountain plateaus. Elevation is 7,300 to 8,200 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 43 degrees F, and the average frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 65 percent Bitton very gravelly loam, 5 to 15 percent slopes and 20 percent Tally fine sandy loam, 5 to 10 percent slopes. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of shallow gravelly loam soils on mountain slopes. Also included are small areas of Rock outcrop on ridges. These inclusions make up 15 percent of the total acreage.

The Bitton soils are very deep and well drained. They formed in alluvium and residuum derived from sandstone and quartzite. Typically the surface layer is dark brown very gravelly loam about 4 inches thick. The upper part of the subsoil is dark brown very gravelly loam about 4 inches thick. The lower part is pinkish gray and pinkish white very gravelly loam about 20 inches thick. The substratum is pinkish gray very gravelly sandy loam to a depth of 60 inches or more.

Permeability of the Bitton soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

The Tally soils are very deep and well drained. They formed in alluvium and residuum derived from sandstone, quartzite, and shale. Typically the surface layer is dark brown fine sandy loam about 13 inches thick. The upper part of the subsoil is brown fine sandy loam about 16 inches thick. The lower part is light brown fine sandy loam to a depth of 60 inches or more.

Permeability of the Tally soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used for grazing.

The potential plant community on the Bitton soils is mainly bluebunch wheatgrass, muttongrass, prairie junegrass, needleandthread, common stonecrop, rock goldenrod, black sagebrush, and fringed sagewort. If the vegetation deteriorates, Letterman needlegrass, rock goldenrod, cushion milkvetch, and gray horsebrush increase. Under further deterioration, annual and biennial forbs invade. The potential plant community produces 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 300 pounds in unfavorable years.

The potential plant community on the Tally soils is mainly western wheatgrass, Columbia needlegrass, bluegrasses, and mountain big sagebrush. If the vegetation deteriorates, big sagebrush, low rabbitbrush, Letterman needlegrass, and lupine increase. Under further deterioration, thistles and biennial forbs invade. The potential plant community produces 1,500 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,000 pounds in favorable years to 1,000 pounds in unfavorable years.

The Bitton soils are in capability subclass VIs, nonirrigated; in windbreak suitability group 6G and planting zone II; and are in the Mountain Windswept Ridge (Black Sagebrush) range site. The Tally soils are in capability subclass VIe, nonirrigated; in windbreak suitability group 5 and planting zone II; and are in the Mountain Loam (Mountain Big Sagebrush) range site.

103—Blackhall-Kappes-Rentsac complex, 0 to 8 percent slopes.

This map unit is on plains. Elevation is 6,400 to 7,300 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, grasses, and a few juniper.

This unit is 30 percent Blackhall fine sandy loam, 3 to 8 percent slopes; 30 percent Kappes sandy loam, 0 to 8 percent slopes; and 30 percent Rentsac very channery fine sandy loam, 0 to 8 percent slopes. Included in this unit are small areas of Rock outcrop or soils that are on slopes greater than 8 percent. These soils make up 10 percent of the total acreage. The components of this unit are so intricately intermingled it was not practical to map them separately.

The Blackhall soils are very shallow or shallow and are well drained. They formed in residuum derived from sandstone. Typically the surface layer is brown fine sandy loam about 5 inches thick. The underlying material is light yellowish brown fine sandy loam about 5 inches thick. Sandstone bedrock is at a depth of 10 inches.

Permeability of the Blackhall soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 6 to 20 inches. Runoff is medium and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Kappes soils are moderately deep and well drained. They formed in residuum derived from sandstone. Typically the surface layer is brown sandy loam about 2 inches thick. The upper part of the subsoil is pale brown sandy loam about 15 inches thick. The lower part is highly calcareous very pale brown sandy loam about 11 inches thick. Sandstone is at a depth of about 28 inches.

Permeability of the Kappes soils is moderately rapid. Available water capacity is low. Effective rooting depth is 20 to 40 inches. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Rentsac soils are very shallow or shallow and are well drained. They formed in residuum derived from sandstone. Typically the surface layer is brown very channery fine sandy loam about 5 inches thick. The subsoil is yellowish brown extremely flaggy sandy loam about 6 inches thick. Hard sandstone is at a depth of about 11 inches.

Permeability of the Rentsac soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 4 to 20 inches. Runoff is medium and the hazard of water erosion is slight. The hazard of wind erosion is slight.

This unit is used for grazing.

The potential plant community on the Blackhall soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, needleleaf sedge, Sandberg bluegrass, and forbs increase. Under further deterioration, annual weeds invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Kappes soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Rentsac soils is mainly bluebunch wheatgrass, Indian ricegrass, bottlebrush squirreltail, juniper, and mountainmahogany. If the vegetation deteriorates, forbs and Sandberg bluegrass increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 350 pounds of air-dry vegetation per acre in normal years. Production ranges from 500 pounds in favorable years to 200 pounds in unfavorable years.

The Blackhall soils are in capability subclass VIIe, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Shallow Sandy 10-14 Foothills and Basins West range site. The Kappes soils are in capability subclass VIe, nonirrigated; windbreak suitability group 6R and planting zone II; and are in the Sandy 10-14 Foothills and Basins West range site. The Rentsac soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Very Shallow 10-14 Foothills and Basins West range site.

104—Blackhall-Rentsac complex, 6 to 25 percent slopes.

This map unit is on hillslopes. Elevation is 6,300 to 7,300 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. The native vegetation is shrubs, forbs, grasses, and a few juniper.

This unit is 60 percent Blackhall fine sandy loam and 30 percent Rentsac very channery sandy loam. The components of this unit are so intricately intermingled it was not practical to map them separately at the scale used.

Included in this unit are small areas of Rock outcrop on shoulders of slopes. Also included are small areas of

Kappes fine sandy loam on foot slopes and in draws. These inclusions make up 10 percent of the total acreage.

The Blackhall soils are very shallow or shallow and are well drained. They formed in residuum derived from sandstone. Typically the surface layer is light yellowish brown fine sandy loam about 4 inches thick. The underlying material is very pale brown fine sandy loam about 12 inches thick. Soft sandstone is at a depth of about 16 inches.

Permeability of the Blackhall soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 6 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Rentsac soils are shallow and well drained. They formed in residuum derived from sandstone. Typically they are brown very channery sandy loam about 10 inches deep over hard sandstone.

Permeability of the Rentsac soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used for grazing.

The potential plant community on the Blackhall soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, needleleaf sedge, Sandberg bluegrass, and forbs increase. Under further deterioration, annual weeds invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Rentsac soils is mainly bluebunch wheatgrass, Indian ricegrass, bottlebrush squirreltail, juniper, and mountainmahogany. If the vegetation deteriorates, forbs and Sandberg bluegrass increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 350 pounds of air-dry vegetation per acre in normal years. Production ranges from 500 pounds in favorable years to 200 pounds in unfavorable years.

The Blackhall soils are in capability subclass VIIe, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Shallow Sandy 10-14 Foothills and Basins West range site. The Rentsac soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Very Shallow 10-14 Foothills and Basins West range site.

105—Blazon thin solum-Blazon-Lilsnake complex, 2 to 40 percent slopes.

This map unit is on hillsides and plateaus. Elevation is 6,100 to 7,500 feet. The average annual precipitation is 10 to 11 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 30 percent Blazon thin solum, 6 to 40 percent slopes; 30 percent Blazon clay loam, 6 to 40 percent slopes; and 20 percent Lilsnake loam, 2 to 10 percent slopes. The Blazon thin solum soils are mainly on back slopes and shoulders. The Blazon clay loam soils are on back slopes and foot slopes. The Lilsnake soils are on plateaus and ridges. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Rock outcrop occurring as vertical cliffs and on ridges. Also included are small areas of Poposhia clay loam on foot slopes and in ravine bottoms; and a soil similar to Lilsnake, but which has a sandy loam texture, on plateaus. These inclusions make up 20 percent of the total acreage.

The Blazon thin solum soils are very shallow and well drained. They formed in residuum derived from shale. Typically the surface layer is pale brown and light yellowish brown loam about 4 inches thick. The next layer is light yellowish brown channery loam about 3 inches thick. Shale is at a depth of about 7 inches.

Permeability of the Blazon thin solum soils is moderate. Available water capacity is very low. Effective rooting depth is 4 to 10 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Blazon clay loam soils are shallow and well drained. They formed in residuum and colluvium derived from shale. Typically they have a surface layer of light yellowish brown clay loam about 4 inches thick. The next layer is brown clay loam about 11 inches thick and contains a few gypsum lenses. Shale is at a depth of about 15 inches.

Permeability of the Blazon soils is moderately slow. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Lilsnake soils are shallow and well drained. They formed in residuum derived from shale. Typically the surface layer is light yellowish brown loam about 3 inches thick. The subsoil is light yellowish brown highly calcareous loam about 10 inches thick. Hard shale is at a depth of about 13 inches.

Permeability of the Lilsnake soils is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used for grazing.

The potential plant community on the Blazon thin solum soils is mainly western wheatgrass, bottlebrush squirreltail, Indian ricegrass, princesplume, Gardner saltbush, and winterfat. If the vegetation deteriorates, green molly summercyprus increases. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 150 pounds in unfavorable years.

The potential plant communities on the Blazon clay loam and Lilsnake soils are mainly bluebunch wheatgrass, thickspike wheatgrass, Indian ricegrass, needleandthread, bottlebrush squirreltail, and big sagebrush. If the vegetation deteriorates, perennial forbs increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

Blazon thin solum soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Shale 10-14 Foothills and Basins West range site. The Blazon clay loam and Lilsnake soils are in capability subclass VIIe, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Shallow Loamy 10-14 Foothills and Basins West range site.

106—Blazon-Delphill complex, 6 to 30 percent slopes.

This map unit is on hills. Elevation is 6,200 to 7,500 feet. The average annual precipitation is about 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 50 percent Blazon clay loam and 30 percent Delphill loam. The Blazon soils occur mainly on the back slopes and ridges. The Delphill soils are mainly on the foot slopes and toe slopes. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Poposhia clay loam in draws and on foot slopes. Also included are small areas of Rock outcrop on ridges. Also included is 300 acres of silty clay and clay soils in the Antelope Flats area. These inclusions make up 20 percent of the total acreage.

The Blazon soils are very shallow or shallow and are well drained. They formed in residuum derived from shale. Typically the surface layer is yellowish brown clay loam about 1 inch thick. The underlying material is very pale brown clay loam about 11 inches thick. Shale is at a depth of about 12 inches.

Permeability of the Blazon soils is moderately slow. Available water capacity is very low. Effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Delphill soils are moderately deep and well drained. They formed in residuum and alluvium derived from shale. Typically the surface is light olive brown loam about 2 inches thick. The subsoil is light olive brown loam 3 inches thick. The substratum is light yellowish brown loam about 34 inches thick. Shale is at a depth of about 39 inches. Layers of fractured limestone 2 to 6 inches thick occur immediately above the shale in some areas.

Permeability of the Delphill soils is moderate. Available water capacity is moderate. Effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant community on the Blazon soils is mainly bluebunch wheatgrass, thickspike wheatgrass, Indian ricegrass, needleandthread, and big sagebrush. If the vegetation deteriorates, perennial forbs increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Delphill soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Blazon soils are in capability subclass VIIe, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Shallow Loamy 10-14 Foothills and Basins West range site. The Delphill soils are in capability subclass VIe, nonirrigated; windbreak

suitability group 6R and planting zone II; and are in the Loamy 10-14 Foothills and Basins West range site.

107—Bookcliff-Lail-Rabbitex complex, 10 to 25 percent slopes.

This map unit is on mountain slopes of Hickey Mountain and Table Mountain. This map unit has broken and rolling landscape characteristics which show its history of landslides (see figure 5). Elevation is 8,000 to 8,900 feet. The average annual precipitation is 15 to 19 inches, the average annual air temperature is 36 to 42 degrees F, and the frost-free period is 50 to 80 days. Native vegetation is trees, shrubs, forbs, and grasses.

This unit is 60 percent Bookcliff gravelly sandy loam, 20 percent Lail loam, and 10 percent Rabbitex gravelly loam. The Lail soils are mainly in concave snowdrift sites. The Rabbitex soils are on convex windswept knolls. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are areas of Parkay very cobbly sandy loam, 30 to 50 percent slopes; lyers clay loam in recent slide areas; and Davtone clay loam in concave sites. These inclusions make up 10 percent of the total acreage.

The Bookcliff soils are very deep and well drained. They formed in colluvium derived from sedimentary rocks. Typically the surface layer is dark reddish gray gravelly sandy loam about 5 inches thick. The upper part of the subsoil is dark reddish gray gravelly sandy clay loam about 6 inches thick. The next part is reddish brown gravelly sandy clay loam about 7 inches thick. The lower part of the subsoil is reddish brown gravelly sandy loam to a depth of 60 inches or more. About 30 percent of the surface is covered with rounded gravel.

Permeability of the Bookcliff soils is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Lail soils are very deep and well drained. They formed in colluvium derived from sedimentary rocks. Typically they have a layer of leaves, twigs and decomposed organic material 1 inch thick on the surface. The surface layer is very dark brown and very dark grayish brown loam about 2 inches thick. The subsurface layer is reddish gray sandy loam about 6 inches thick. The upper part of the subsoil is reddish brown clay and clay loam about 20 inches thick. The lower part is light reddish brown and reddish brown clay loam to 60 inches or more.

Permeability of the Lail soils is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Rabbitex soils are very deep and well drained. They formed in colluvium derived from sedimentary rocks. Typically the surface layer is brown gravelly loam about 9 inches thick. The subsoil is light brown clay loam about 21 inches thick. The substratum is brown clay loam to 60 inches or more.

Permeability of the Rabbitex soils is moderate. Available water capacity is high. Due to the windswept position of these soils in the landscape, low amounts of moisture infiltrate into these soils. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant community on the Bookcliff soils is mainly true mountainmahogany, Utah serviceberry, bluegrass, sedge, and bluebunch wheatgrass. If the vegetation deteriorates, mountain big sagebrush, Oregongrape, and snowberry increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 1,900 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,600 pounds in favorable years to 1,400 pounds in unfavorable years.

The potential plant community on the Lail soils is mainly Douglas-fir with an understory of mountain wheatgrasses, snowberry, Oregongrape, mountainlover, and elk sedge. In some areas, the present vegetation may also consist of quaking aspen and Letterman needlegrass. The potential plant community produces 200 pounds of air-dry vegetation per acre in normal years. Production ranges from 500 pounds in favorable years to 100 pounds in unfavorable years.

The potential plant community on the Rabbitex soils is mainly bluebunch wheatgrass, muttongrass, prairie junegrass, needleandthread, common stonecrop, rock goldenrod, black sagebrush, and fringed sagewort. If the vegetation deteriorates, Letterman needlegrass, rock goldenrod, cushion milkvetch, and gray horsebrush increase. Under further deterioration, annual and biennial forbs invade. The potential plant community produces 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 300 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; in windbreak suitability group 5K; and in planting zone III. The Bookcliff soils are in the Mountain Stony Loam (Browse) range site; the Lail soils are in the High Mountain Loam (Douglas-fir) woodland site; and the Rabbitex soils are in the Mountain Windswept Ridge (Black Sagebrush) range site.

Figure 5.—Bookcliff-Lail-Rabbitex complex, 10 to 25 percent slopes, on the southeast slopes ofTable Mountain.The broken and rolling terrain containing ponded depressions is characteristic of areas that have a history of landslides.

108—Brownsto gravelly sandy loam, 0 to 3 percent slopes.

These very deep, well drained soils are on fan terraces south of Henrys Fork River. They formed in alluvium. Elevation is 6,800 to 7,200 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Luhon gravelly loam, making up 10 percent of the total acreage.

The Brownsto soils typically have a surface layer of grayish brown gravelly sandy loam about 2 inches thick. The upper 7 inches of the subsoil is grayish brown gravelly sandy loam. The next 23 inches is pinkish gray very cobbly sandy loam. The lower part of the subsoil is light brown very cobbly sandy loam to 60 inches or more.

Permeability is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used for grazing and for irrigated hayland and pasture.

The potential plant community on the Brownsto soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, needleleaf sedge, Sandberg bluegrass, and forbs increase. Under further deterioration, annual weeds

invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The Brownsto soils are well suited to irrigated hay and pasture. Where practical, sprinkler application generally saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

This unit is in capability subclass VIs, nonirrigated, IVs, irrigated; irrigation design group 13; windbreak suitability group 6G; and in planting zone II. It is in the Shallow Sandy 10-14 Foothills and Basins West range site.

109—Brownsto gravelly sandy loam, 3 to 6 percent slopes.

These very deep, well drained soils are on fan terraces south of Henrys Fork River. They formed in alluvium. Elevation is 7,000 to 7,400 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Luhon gravelly loam and McFadden sandy loam, making up 10 percent of the total acreage.

The Brownsto soils typically have a surface layer of grayish brown gravelly sandy loam 3 inches thick. The upper part of the subsoil is brown gravelly sandy loam about 7 inches thick. The lower part is very pale brown very cobbly sandy loam to 60 inches or more.

Permeability is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight.

This unit is used for grazing and for irrigated hayland and pasture.

The potential plant community on the Brownsto soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, needleleaf sedge, Sandberg bluegrass, and forbs increase. Under further deterioration, annual weeds invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The Brownsto soils are well suited to irrigated hay and pasture. Where practical, sprinkler irrigation generally saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

This unit is in capability subclass VIs, nonirrigated, IVs, irrigated; irrigation design group 13; windbreak suitability group 6G; and in planting zone II. It is in the Shallow Sandy 10-14 Foothills and Basins West range site.

110—Brownsto-Luhon complex, 10 to 35 percent slopes.

This map unit is on terrace escarpments. Elevation is 6,800 to 7,600 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 44 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 50 percent Brownsto very gravelly sandy loam, 10 to 35 percent slopes and 30 percent Luhon gravelly loam, 10 to 20 percent slopes. The Brownsto soils occur mainly on the foot slopes and on shoulders. The Luhon soils occur on foot slopes and in draws. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Blackhall channery sandy loam, Rockinchair gravelly loam, and Rock outcrop. These inclusions occur on shoulders and ridges of terrace escarpments. They make up 20 percent of the total acreage.

The Brownsto soils are very deep and well drained. They formed in alluvium. Typically the surface layer is yellowish brown very gravelly sandy loam about 5 inches thick. The upper part of the subsoil is pale brown very gravelly sandy loam about 6 inches thick. The lower part is pale brown very cobbly sandy loam to 60 inches or more.

Permeability of the Brownsto soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Luhon soils are very deep and well drained. They formed in alluvium. Typically the surface layer is brown gravelly loam about 6 inches thick. The upper part of the subsoil is pale brown loam about 12 inches thick. The lower part is pale brown and light brown loam to 60 inches or more.

Permeability of the Luhon soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used mainly for grazing.

The potential plant community on the Brownsto soils is mainly bluebunch wheatgrass, Indian ricegrass, needleandthread, thickspike wheatgrass, black

sagebrush, and big sagebrush. If the vegetation deteriorates, forbs will become more dominant. Under further deterioration, cheatgrass, annual forbs, and ragweed invade the site. The potential plant community produces 450 pounds of air-dry vegetation per acre in normal years. Production ranges from 650 pounds in favorable years to 300 pounds in unfavorable years.

The potential plant community on the Luhon soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, Indian ricegrass, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

This map unit is in capability subclass VIe, nonirrigated. The Brownsto soils are in windbreak suitability group 6G and planting zone II, and are in the Gravelly 10-14 Foothills and Basins West range site. The Luhon soils are in windbreak suitability group 8 and planting zone II, and are in the Loamy 10-14 Foothills and Basins West range site.

111—Brownsto-Luhon-McFadden complex, 3 to 15 percent slopes.

These soils are on alluvial fan terraces. Elevation is 6,400 to 8,000 feet. The average annual precipitation is 10 to 14 inches. The average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is mainly shrubs, forbs, and grasses.

This unit is 40 percent Brownsto gravelly sandy loam, 3 to 10 percent slopes; 30 percent Luhon loam, 3 to 15 percent slopes; and 20 percent McFadden gravelly sandy loam, 3 to 15 percent slopes. The components of this unit are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Garlips loam in draws and snowdrift sites. Also included are small areas of deep very cobbly sandy loam soils on steep sides of ravines and drainageways. These inclusions make up 10 percent of the total acreage.

The Brownsto soils are very deep and well drained. They formed in alluvium. Typically the surface layer is brown gravelly sandy loam about 2 inches thick. The upper 9 inches of the subsoil is brown gravelly sandy loam. The lower part is light yellowish brown and very pale brown very cobbly sandy loam to 60 inches or more.

Permeability of the Brownsto soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is slight. The hazard of wind erosion is slight.

The Luhon soils are very deep and well drained. They formed in alluvium. Typically the surface layer is brown loam about 4 inches thick. The upper part of the subsoil is light yellowish brown loam about 8 inches thick. The lower part is very pale brown loam about 28 inches thick. The substratum is light yellowish brown loam to 60 inches or more.

Permeability of the Luhon soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The McFadden soils are very deep and well drained. They formed in alluvium. Typically the surface layer is brown gravelly sandy loam about 7 inches thick. The subsoil is pale brown and very pale brown gravelly sandy loam to 60 inches or more.

Permeability of the McFadden soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is slight. The hazard of wind erosion is slight.

This unit is used mainly for grazing.

The potential plant community on the Brownsto soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, needleleaf sedge, Sandberg bluegrass, and forbs increase. Under further deterioration, annual weeds invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Luhon soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the McFadden soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated.

The Brownsto soils are in windbreak suitability group 6G and planting zone II, and in the Shallow Sandy 10-14 Foothills and Basins West range site. The Luhon soils are in windbreak suitability group 8 and planting zone II, and in the Loamy 10-14 Foothills and Basins West range site. The McFadden soils are in windbreak suitability group 5K and planting zone II, and in the Sandy 10-14 Foothills and Basins West range site.

112—Chittum-Eyre Family complex, 10 to 30 percent slopes.

This map unit is on the southern mountain slopes of the O-Wi-Yu-Kuts Mountain. Elevation is 7,500 to 8,500 feet. The average annual precipitation is 16 to 18 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 30 to 60 days. Native vegetation is thinly scattered trees, shrubs, forbs, and grasses.

This unit is 40 percent Chittum gravelly loam, and 40 percent Eyre Family very gravelly loam. The Chittum soils occur mainly on north slopes. The Eyre Family soils occur mainly on ridges and back slopes. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Rock outcrop on ridges and escarpments. Also included are small areas of Lotex stony loam on ridges and south slopes. Also included is a soil similar to Chittum loam, but which is 40 to 60 inches deep to bedrock, in the bottom of swales. These inclusions make up 20 percent of the total acreage.

The Chittum soils are shallow and well drained. They formed in residuum and colluvium derived from quartzite and sandstone. Typically the surface layer is reddish brown gravelly loam about 12 inches thick. The subsoil is reddish brown gravelly loam about 7 inches thick. Bedrock is at a depth of about 19 inches.

Permeability of the Chittum soils is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Eyre Family soils are shallow and well drained. They formed in residuum derived from quartzite. Typically these soils are reddish brown very gravelly loam about 10 inches deep over bedrock.

Permeability of the Eyre Family soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used for grazing.

The potential plant community on the Chittum soils is mainly true mountainmahogany, Utah serviceberry, bluegrass, sedge, and bluebunch wheatgrass. If the vegetation deteriorates, mountain big sagebrush, Oregongrape, and snowberry increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 1,900 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,600 pounds in favorable years to 1,400 pounds in unfavorable years.

The potential plant community on the Eyre Family soils is mainly bluebunch wheatgrass, muttongrass, prairie junegrass, needleandthread, common stonecrop, rock goldenrod, black sagebrush, and fringed sagewort. If the vegetation deteriorates, Letterman needlegrass, rock goldenrod, cushion milkvetch, and gray horsebrush increase. Under further deterioration, annual and biennial forbs invade. The potential plant community produces 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 300 pounds in unfavorable years.

The Chittum soils are in capability subclass VIIe, nonirrigated; windbreak suitability group 10 and planting zone III; and are in the Mountain Stony Loam (Browse) range site. The Eyre Family is in capability subclass VIIs, nonirrigated; windbreak suitability group 10 and planting zone III; and are in the Mountain Windswept Ridge (Black Sagebrush) range site.

113—Chroder fine sandy loam, 0 to 5 percent slopes.

These very deep, well drained soils are on piedmont slopes in Browns Park. They formed in alluvium and eolian material derived dominantly from sandstone. Elevation is 5,600 to 6,000 feet. The average annual precipitation is about 7 to 9 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. The native vegetation is mainly shrubs and grasses.

Included in this unit is Strych gravelly loam and Lanver very channery sandy loam on piedmont slopes and in drainageways. These soils make up 15 percent of the total acreages.

The Chroder soils typically have a pale brown fine sandy loam surface layer about 5 inches thick. The upper 6 inches of the subsoil is pale brown fine sandy loam. The lower part is light yellowish brown sandy loam about 22 inches thick. The substratum is very pale brown sandy loam to a depth of 60 inches.

Permeability of the Chroder soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for grazing.

The potential plant community on the Chroder soils is mainly Indian ricegrass, galleta, needleandthread, sand dropseed, globe mallow, shadscale, and fourwing saltbush. If the vegetation deteriorates, galleta, spiny horsebrush, and low rabbitbrush increase. Under further deterioration, cheatgrass and annual forbs invade. The potential plant community produces 550 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 5 and planting zone I; and are in the Desert Sandy Loam (Indian Ricegrass) range site.

114—Condie gravelly loam, 6 to 50 percent slopes.

These very deep, well drained soils are on mountain slopes on Phil Pico Mountain and Willow Creek Butte. They formed in colluvium derived from quartzite and sandstone. Elevation is 8,300 to 9,500 feet. The average annual precipitation is about 18 to 22 inches, the average annual air temperature is 35 to 40 degrees F, and the average frost-free period is 50 to 80 days. Native vegetation is conifers with an understory of shrubs and forbs.

Included in this unit are small areas of Babb loam and Teeler gravelly loam. Both of these soils are rangeland. They make up 15 percent of the total acreage.

The Condie soils typically have a layer of leaves and partially decomposed organic matter about 1 inch thick on the surface. The surface layer is reddish brown gravelly loam 9 inches thick. The upper part of the subsurface layer is light brown gravelly sandy loam about 10 inches thick. The lower part is light reddish brown very cobbly sandy loam about 18 inches thick. The subsoil is reddish brown very cobbly sandy clay loam to 60 inches or more. In some areas, the surface layer is loam.

Permeability of the Condie soils is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for timber production, for recreation, or for grazing.

The potential plant community on the Condie soils is mainly Douglas-fir with an understory of snowberry, Oregongrape, mountainlover, wheatgrasses, bluegrass, and elk sedge. In some areas, the present vegetation also consists of quaking aspen, snowberry, and Letterman needlegrass. The potential plant community produces 200 pounds of air-dry vegetation per acre in normal years. Production ranges from 500 pounds in favorable years to 100 pounds in unfavorable years.

The Douglas-fir site index for this map unit is 45. If this unit is used for timber production, the main limitations are the low production potential and steep slopes (see figure 6).

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 5 and planting zone III; and are in the High Mountain Loam (Douglas-fir) woodland site.

115—Cowestglen fine sandy loam, 0 to 2 percent slopes.

These very deep, moderately well drained soils are on flood plains of Henrys Fork River and Sheep Creek. They formed in alluvium. Elevation is 6,000 to 7,300 feet. The average annual precipitation is 9 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is cottonwood trees, shrubs, forbs, and grasses.

Included in this unit are small areas of a soil similar to Cowestglen, but which has a very gravelly loamy sand underlying material at a depth of 20 to 40 inches. Also included are small areas of Riverwash. These inclusions make up 15 percent of the total acreage.

The Cowestglen soils typically have a surface layer of grayish brown fine sandy loam about 8 inches thick. The upper 34 inches of the underlying material is light brownish gray fine sandy loam containing a few lenses, 1/4 to 1/2 inch thick, of loamy sand. The lower part to 60 inches or more is light brownish gray gravelly sandy loam containing common yellowish brown mottles.

Permeability of the Cowestglen soils is moderately rapid. Available water capacity is moderate. Subirrigation is provided by the water table. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe. These soils have a rare hazard of flooding. The water table fluctuates between a depth of 3 to 5 feet during the spring and early summer.

This unit is used mainly for grazing and for irrigated pasture and hayland.

The potential plant community on the Cowestglen soils is mainly basin wildrye, needleandthread, rhizomatous wheatgrasses, cottonwood, big sagebrush, and silver sagebrush. If the vegetation deteriorates, woody plants increase. Under further deterioration, annual weeds and grasses and Kentucky bluegrass invade. The potential plant community produces 2,300 pounds of air-dry vegetation per acre in normal years. Production ranges from 3,000 pounds in favorable years to 1,600 pounds in unfavorable years.

The Cowestglen soils are well suited to irrigated hay and pasture. Where practical, sprinkler irrigation saves

Figure 6.—Typical area of the wooded map unit of Condie gravelly loam, 6 to 50 percent slopes. Most of the wooded areas in the survey areas are small in size. Low production potential limits the opportunity to use these areas for timber production.

water and applies it uniformly. Conservative use of irrigation water reduces leaching of fertilizer nutrients and promotes high quality forage.

This unit is in capability subclass IVw, nonirrigated and irrigated; irrigation design group 15; windbreak suitability group 1K and planting zone II. It is in the Lowland 10-14 Foothills and Basins West range site.

116—Coyet loamy fine sand, 3 to 6 percent slopes.

These very deep, somewhat excessively drained soils are on alluvial fans and foot slopes. They formed in alluvium derived from sandstone. Elevation is 6,000 to 6,800 feet. The average annual precipitation is 10 to 12 inches, the average annual air temperature is 42 to 45 degrees F, and the frost-free period is 60 to 90 days. The native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of a soil similar to the Coyet soils, but which is strongly alkaline or very strongly alkaline. Also included are small areas of Goslin fine sandy loam. These inclusions make up 15 percent of the total acreage.

The Coyet soils typically have a surface layer of brown loamy fine sand about 4 inches thick. The underlying material is yellowish brown loamy fine sand to 60 inches or more.

Permeability of the Coyet soils is rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight, except that the hazard of gully erosion is severe where the runoff is concentrated. The hazard of wind erosion is severe.

This unit is used for grazing and irrigated hayland. A few small areas are used for irrigated cropland.

The potential plant community on the Coyet soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Coyet soils are moderately well suited to irrigated small grains, crops, hay, and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Due to the available water capacity of the soils, frequent irrigation will be necessary. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

The Coyet soils are in capability subclass VIs, nonirrigated, IVs, irrigated; irrigation design group 19; windbreak suitability group 7 and planting zone II. They are in the Sandy 10-14 Foothills and Basins West range site.

117—Cryofluvents-Borofibrists complex, 0 to 2 percent slopes.

This map unit is on flood plains. Elevation is 7,200 to 7,500 feet. The average annual precipitation is 10 to 16 inches, the average annual air temperature is about 38 to 43 degrees F, and the frost-free period is 30 to 60 days. The native vegetation is mainly shrubs, sedges, and grasses.

This unit is 50 percent Cryofluvents soils and 45 percent Borofibrists soils. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Turson loam, making up 5 percent of the total acreage.

The Cryofluvents soils are very deep and somewhat poorly drained. They formed in alluvium. Commonly, the surface layer is light brownish gray loam, sandy loam or clay loam about 3 to 5 inches thick. The upper part of the underlying material is light brownish gray sandy loam, loam, or clay loam, 3 to 23 inches thick. The lower part is brown very cobbly sandy loam to very gravelly loamy sand to a depth of 60 inches or more.

Permeability of the Cryofluvents soils is moderate. Available water capacity is moderate. Effective rooting depth is 24 to 36 inches for nonwater-tolerant plants. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight. Depth to a seasonal high water table is 2 to 3 feet from March through August. These soils are subject to a rare hazard of flooding.

The Borofibrists soils are very deep and very poorly drained. They formed in alluvium overlain by peat. Typically the upper part of the soil consists of a very dark grayish brown peat layer about 22 inches thick. The upper part of the underlying material is light gray loam about 15 inches thick with dark olive gray mottles. The lower part is grayish brown very cobbly loamy sand to a depth of 60 inches or more.

Permeability of the Borofibrists soils is moderate in the upper part of the underlying material and rapid in the lower part. Available water capacity is high. Effective rooting depth is 6 to 12 inches for non-water-tolerant plants and 60 inches or more for water-tolerant plants. Runoff is very slow and the hazard of water erosion is slight. The hazard of wind erosion is slight. These soils have an occasional hazard of flooding. Borofibrists soils also have a water table that commonly is at the surface but may be at a depth of 1 foot during the late summer.

This unit is used for grazing.

The potential plant communities on the Cryofluvents and Borofibrists soils are mainly sedges, rushes, tufted hairgrass, Kentucky bluegrass, redtop, willow, and shrubby cinquefoil. If the vegetation deteriorates, sedges, dandelion, groundsel, iris, and silverweed cinquefoil increase. Under further deterioration, Canada thistle, elk thistle, and musk thistle invade. The potential plant community produces 3,000 pounds of air-dry vegetation per acre in normal years. Production ranges from 3,500 pounds in favorable years to 2,500 pounds in unfavorable years.

This unit is in capability subclass Vw, nonirrigated; windbreak suitability group 1K and planting zone III; and are in the Wet Fresh Meadow range site.

118—Dahlquist very cobbly sandy loam, 1 to 3 percent slopes.

These very deep, well drained soils are on fan terraces south and west of Lonetree. They formed in alluvium containing a high content of rock fragments. Elevation is 7,500 to 8,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 42 degrees F, and the frost-free period is 50 to 90 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Dahlquist soils on 3 to 10 percent slopes. Also included are small areas of Brownsto gravelly sandy loam, 0 to 10 percent slopes. These inclusions make up 10 percent of the total acreage.

The Dahlquist soils typically have a surface layer of brown very cobbly sandy loam about 2 inches thick. The upper part of the subsoil is reddish brown very cobbly clay loam about 15 inches thick. The lower part is reddish brown very cobbly sandy loam to 60 inches or more.

Permeability of the Dahlquist soils is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight. Where irrigated, about half of the areas of these soils have a water table at a depth of 1 to 4 feet during the irrigation season.

This unit is used mainly for grazing and for irrigated hayland and pasture.

The potential plant community on the Dahlquist soils is mainly bluebunch wheatgrass, bottlebrush squirreltail, Letterman needlegrass, needleandthread, antelope bitterbrush, and big sagebrush. If the vegetation deteriorates, low rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,000 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years.

The Dahlquist soils are moderately well suited to irrigated hay and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Due to the low available water capacity of this soils, frequent irrigations will be necessary. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

This unit is in capability subclass VIs, nonirrigated, IVs, irrigated; irrigation design group 13; windbreak suitability group 6G and planting zone II. It is in the Coarse Upland 10-14 Foothills and Basins West range site.

119—Delphill-Iyers-Poposhia complex, 3 to 25 percent slopes.

This map unit is on hills north and west of Lonetree. Elevation is 7,500 to 8,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 42 degrees F, and the frost-free period is 60 to 90 days. Some higher elevations may have a slightly shorter growing season but this does not effect use and management. Native vegetation is shrubs, forbs, and grasses with a few junipers.

This unit is 40 percent Delphill loam, 3 to 25 percent slopes; 20 percent Iyers clay loam, 10 to 25 percent slopes; and 20 percent Poposhia loam, 3 to 15 percent slopes. The Delphill soils are mainly on the convex windswept south- and west-facing slopes and ridgetops with sparse vegetation. The Iyers soils are mainly on the north- and east-facing snowdrift sites favorable for the growth of a variety of shrubs. The Poposhia soils are mainly on foot slopes and in draws. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Blackhall sandy loam, Blazon loam, and Rock outcrop on back slopes and ridge crests. Also included are small areas of Rhoamett clay loam on foot slopes and in swales. These inclusions make up 20 percent of the total acreage.

The Delphill soils are moderately deep and well drained. They formed in residuum derived from shale. Typically the surface layer is light brownish gray loam about 4 inches thick. The subsoil layer is light gray loam about 5 inches thick. The substratum is light gray silty clay loam about 26 inches thick. Shale is at a depth of about 35 inches.

Permeability of the Delphill soils is moderately slow. Available water capacity is moderate. Effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Iyers soils are moderately deep and well drained. They formed in residuum and colluvium derived from shale. Typically the surface layer is light brownish gray clay loam about 1 inch thick. The subsoil layer is brown clay loam about 5 inches thick. The substratum is light gray clay loam about 33 inches thick. Shale is at a depth of about 39 inches.

Permeability of the Iyers soils is slow. Available water capacity is moderate. Effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Poposhia soils are very deep and well drained. They formed in alluvium and colluvium derived from shale. Typically the surface layer is grayish brown loam about 2 inches thick. The upper part of the underlying material is grayish brown loam about 38 inches thick. The lower part is light grayish brown loam to 60 inches or more.

Permeability of the Poposhia soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant community on the Delphill soils is mainly mountainmahogany, bluebunch wheatgrass, needleandthread, and rhizomatous wheatgrasses. If the vegetation deteriorates, sedges, rabbitbrush, and big sagebrush increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in

normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Iyers soils is mainly bluebunch wheatgrass, thickspike wheatgrass, Indian ricegrass, bottlebrush squirreltail, juniper, and mountainmahogany. If the vegetation deteriorates, forbs and Sandberg bluegrass increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 350 pounds of air-dry vegetation per acre in normal years. Production ranges from 500 pounds in favorable years to 200 pounds in unfavorable years.

The potential plant community on the Poposhia soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush, and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated. The Delphill soils are in windbreak suitability group 6R, planting zone II, and in the Rocky Hills 10-14 Foothills and Basins West range site. The Iyers soils are in windbreak suitability group 6R, planting zone II, and in the Very Shallow 10-14 Foothills and Basins West range site. The Poposhia soils are in windbreak suitability group 8, planting zone II, and in the Loamy 10-14 Foothills and Basins West range site.

120—Dollard-Moyerson complex, 6 to 25 percent slopes.

This map unit is on hills in Lucerne Valley and Antelope Flats. Elevation is 6,100 to 7,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 42 to 45 degrees F, and the average frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 70 percent Dollard silty clay and 20 percent Moyerson clay. The Dollard soils are on back slopes and foot slopes. The Moyerson soils are on shoulders and ridge crests. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Blazon clay loam, Poposhia clay loam and Rhoamett silty clay. These inclusions make up 10 percent of the total acreage.

The Dollard soils are moderately deep and well drained. They formed in residuum and colluvium derived from shale. Typically the surface layer is light yellowish brown silty clay about 6 inches thick. The upper part of the subsoil is light yellowish brown silty clay about 14 inches thick. The lower part is variegated light yellowish brown and olive silty clay about 8 inches thick. Soft shale is at a depth of about 28 inches.

Permeability of the Dollard soils is slow. Available water capacity is low. Effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Moyerson soils are shallow and well drained. They formed in residuum derived from shale. Typically the surface layer is olive clay about 6 inches thick. The underlying material is olive gray silty clay about 6 inches thick. Shale is at a depth of about 12 inches.

Permeability of the Moyerson soils is slow. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

Slumps are common in some areas; both soil and shale bedrock have slid downhill.

This unit is used mainly for grazing. It is also used for homesites.

The potential plant community on the Dollard soils is mainly western wheatgrass, bottlebrush squirreltail, Indian ricegrass, Gardner saltbush, and winterfat. If the vegetation deteriorates, winterfat becomes more dominant. Under further deterioration, halogeton and annual weeds invade. The potential plant community produces 600 pounds of air-dry vegetation per acre in normal years. Production ranges from 750 pounds in favorable years to 400 pounds in unfavorable years.

The potential plant community on the Moyerson soils is mainly western wheatgrass, Indian ricegrass, bottlebrush squirreltail, muttongrass, low sagebrush, and winterfat. If the vegetation deteriorates, low sagebrush and forbs increase. The potential plant community produces 750 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,000 pounds in favorable years to 500 pounds in unfavorable years.

As a site for buildings and construction, the Dollard and Moyerson soils have severe limitations caused by their high shrink-swell potential and depth to bedrock. Septic tank absorption fields also perform very poorly due to the depth to bedrock and restricted permeability.

The Dollard soils are in capability subclass VIe, nonirrigated; windbreak suitability group 4C and planting zone II; and are in the Saline Upland 10-14 Foothills and Basins West range site. The Moyerson soils are in capability subclass VIIe, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Shallow Clayey 10-14 Foothills and Basins West range site.

121—Eyre-Handran Families complex, 20 to 65 percent slopes.

This map unit is on mountain slopes of the O-Wi-Yu-Kuts Mountains. Elevation is 7,500 to 8,500 feet. The

average annual precipitation is about 16 to 20 inches, the average annual air temperature is 36 to 40 degrees F, and the frost-free period is 30 to 60 days. Native vegetation is trees, shrubs, forbs, and grasses.

This unit is 40 percent Eyre Family cobbly sandy loam, 20 to 40 percent slopes, and 40 percent Handran Family very stony sandy loam, 30 to 65 percent slopes. The Eyre Family soils are on north slopes. The Handran soils are on back slopes and foot slopes and in swales. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Rock outcrop and a shallow very gravelly sandy loam soil on ridges with sparse vegetation. Also included is a very deep, dark brown loam soil along creeks and drainageways. These inclusions make up 20 percent of the total acreage.

The Eyre Family soils are shallow and well drained. They formed in residuum derived from quartzite and sandstone. Typically the surface layer is dark reddish brown cobbly sandy loam about 13 inches thick. The underlying material is pinkish gray very cobbly sandy loam about 5 inches thick. Hard sandstone is at a depth of about 18 inches.

Permeability of the Eyre Family soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 10 to 20 inches, with some roots penetrating deeper in bedrock fractures. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Handran Family soils are very deep and well drained. They formed in colluvium derived from quartzite and sandstone. Typically the surface layer is dark reddish brown very stony sandy loam about 12 inches thick. The underlying material is reddish brown very stony sandy loam to 60 inches or more.

Permeability of the Handran Family soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for grazing. Wooded areas can provide some timber products, but they generally are not used for timber production because of limited accessibility.

The potential plant community on the Eyre Family soils is mainly Douglas-fir with an understory of mountain snowberry, true mountainmahogany, Utah serviceberry, bluegrass, blue wildrye, and elk sedge. In some areas, the present vegetation also includes quaking aspen, snowberry, and Letterman needlegrass. The potential plant community produces 200 pounds of air-dry vegetation per acre in normal years. Production ranges from 500 pounds in favorable years to 100 pounds in unfavorable years.

The potential plant community on the Handran Family soils is mainly true mountainmahogany, Utah serviceberry, mountain snowberry, bluegrass, sedge, and bluebunch wheatgrass. If the vegetation deteriorates, mountain big sagebrush, Oregongrape, and snowberry increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 1,900 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,600 pounds in favorable years to 1,400 pounds in unfavorable years.

The Eyre Family soils can provide some timber but generally is not used for timber production because the areas are not near existing roads and they have a low production potential. The site index for these soils for Douglas-fir is 35.

This unit is in capability subclass VIIs, nonirrigated windbreak suitability group 10 and planting zone III. The Eyre Family soils are in the High Mountain Very Steep Loam (Douglas-fir) woodland site; the Handran Family soils are in the Mountain Stony Loam (Browse) range site.

122—Flatnose loam, 0 to 3 percent slopes.

These very deep, moderately well drained soils are on flood plains adjacent to Green River and Willow Creek in Browns Park. They formed in alluvium derived dominantly from sandstone and quartzite. Elevation is 5,400 to 5,900 feet. The average annual precipitation is 8 to 12 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of a similar soil that has a dark colored surface layer. Also included is a similar soil that has a loamy sand texture throughout the profile; and a similar soil that has clay loam strata in the profile. These inclusions are on flood plains and drainageways. They make up 15 percent of the total acreage.

The Flatnose soils typically have a surface layer of brown loam about 7 inches thick. The underlying material is pale brown stratified loam, fine sandy loam, sandy loam, and loamy fine sand to a depth of 60 inches or more.

Permeability of the Flatnose soils is moderately rapid. Available water capacity is high. Moisture is also available to deep rooted plants from the water table and surface run-in. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate. These soils are subject to a rare hazard of flooding. These soils have a seasonal high water table at a depth of 3 to 5 feet from March through September.

This unit is used mainly for grazing. It is also used for irrigated cropland, hayland, and pasture.

These soils are well suited to irrigated small grain crops, hay, and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

The potential plant community on the Flatnose soils is mainly basin wildrye, western wheatgrass, needleandthread, Indian ricegrass, muttongrass, and basin big sagebrush. If the vegetation deteriorates, rubber rabbitbrush and basin big sagebrush increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 1,500 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,000 pounds in favorable years to 1,000 pounds in unfavorable years.

This unit is in capability subclass Vw, nonirrigated, IIIw, irrigated; windbreak suitability group 1K and planting zone II; and are in the Loamy Bottom (Basin Big Sagebrush) range site.

123—Garlips loam, 0 to 2 percent slopes.

These very deep, well drained soils are on slumps in the Bald Range area southeast of Lonetree. They formed in alluvium derived from sedimentary rocks. Elevation is 7,700 to 8,100 feet. The average annual precipitation is 12 to 14 inches, the average annual air temperature is 38 to 42 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is mainly shrubs, forbs, and grasses with a few cottonwoods.

Included in this unit, intermingled with the Garlips soils, are small areas of Menbar clay loam in the lowest part of some depressions. Also included are small areas of Evanston loam. These inclusions make up 15 percent of the total acreage.

The Garlips soils typically have a surface layer of dark brown loam about 19 inches thick. The subsoil is pale brown loam about 22 inches thick. The substratum is pale brown and very pale brown loam to 60 inches or more.

Permeability of the Garlips soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate. These areas receive run-in water from surrounding areas.

This unit is used mainly for grazing.

The potential plant community on the Garlips soils is mainly basin wildrye, needleandthread, rhizomatous wheatgrasses, cottonwood, big sagebrush, and silver sagebrush. If the vegetation deteriorates, woody plants increase. Under further deterioration, annual weeds and grasses and Kentucky bluegrass invade. The potential plant community produces 2,300 pounds of air-dry vegetation per acre in normal years. Production ranges from 3,000 pounds in favorable years to 1,600 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 8 and planting zone II; and are in the Lowland 10-14 Foothills and Basins West range site.

124—Gerst-Strych complex, 10 to 40 percent slopes.

This map unit is on hillslopes in Browns Park. Elevation is 5,700 to 6,300 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 45 to 48 degrees F, and the average frost-free period is 90 to 110 days. Native vegetation is shrubs, forbs, grasses, and some juniper.

This unit is 70 percent Gerst loam and 20 percent Strych gravelly sandy loam. The Gerst soils occur mainly on shoulders and back slopes. The Strych soils occur mainly on foot slopes.

Included in this unit are small areas of Milok fine sandy loam; Yarts fine sandy loam; and a soil similar to Strych, but which has bedrock at a depth of 20 to 40 inches. These soils occur on the same landscape positions as Strych and make up 10 percent of the total acreage.

The Gerst soils are shallow and well drained. They formed in residuum derived dominantly from shale. Typically the surface layer is very pale brown loam about 6 inches thick. The underlying material is light brownish gray and light gray channery loam about 12 inches thick. Shale is at a depth of about 18 inches.

Permeability of the Gerst soils is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Strych soils are very deep and well drained. They formed in alluvium derived from sandstone and shale. Typically the surface layer is brown gravelly sandy loam about 4 inches thick. The subsoil is light brown very gravelly sandy loam about 9 inches thick. The substratum is light brown very gravelly sandy loam to a depth of 60 inches or more.

Permeability of the Strych soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant community on the Gerst soils is mainly Utah juniper and pinyon with an understory of black sagebrush, true mountainmahogany, Mormontea, galleta, and saline wildrye. If the vegetation deteriorates, Utah juniper, pinyon, and snakeweed increase. Under

further deterioration, annual grasses and forbs invade. The potential plant community produces 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 150 pounds in unfavorable years.

The potential plant community on the Strych soils is mainly Wyoming big sagebrush, spiny hopsage, rubber rabbitbrush, Indian ricegrass, and bottlebrush squirreltail. If the vegetation deteriorates, rabbitbrush and Wyoming big sagebrush increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years.

This unit is in capability subclass VIIe, nonirrigated, windbreak suitability group 10, and planting zone I. The Gerst soils are in the Semidesert Shallow Loam (Utah Juniper-Pinyon) range site and the Strych soils are in the Semidesert Gravelly Sandy Loam (Wyoming Big Sagebrush) range site.

125—Goslin fine sandy loam, 3 to 6 percent slopes.

These very deep, well drained soils are on alluvial fans and toe slopes. They formed in alluvium derived from sandstone. Elevation is 6,000 to 6,700 feet. The average annual precipitation is 10 to 12 inches, the average annual air temperature is 42 to 45 degrees F, and the frost-free period is 60 to 90 days. The native vegetation is shrubs, forbs, and grasses.

Included in this map unit are small areas of Grieves fine sandy loam and Sinkson loam which make up 10 percent of the total acreage.

The Goslin soils typically have a surface layer of brown fine sandy loam about 6 inches thick. The subsoil is light brown fine sandy loam 23 inches thick. The substratum is light brown fine sandy loam to 60 inches or more.

Permeability of the Goslin soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for grazing. It is also used for irrigated cropland, hayland, and pasture. A few small areas are used for homesites.

The potential plant community on the Goslin soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Goslin soils are well suited to irrigated hay, small grain crops, and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

The Goslin soils are well suited to use as a site for buildings. They have few limitations.

The Goslin soils are in capability subclass VIe, nonirrigated, IVe, irrigated; irrigation design group 15; windbreak suitability group 6G; and planting zone II. They are in the Sandy 10-14 Foothills and Basins West range site.

126—Goslin fine sandy loam, 6 to 10 percent slopes.

These very deep, well drained soils are on alluvial fans and foot slopes. They formed in alluvium derived from sandstone. Elevation is 6,200 to 6,700 feet. The average annual precipitation is 10 to 12 inches, the average annual air temperature is 42 to 45 degrees F, and the frost-free period is 60 to 90 days. The native vegetation is shrubs, forbs, and grasses.

The Goslin soils typically have a surface layer of reddish brown fine sandy loam about 6 inches thick. The subsoil is yellowish red fine sandy loam 19 inches thick. The substratum is yellowish red fine sandy loam to 60 inches or more.

Permeability of the Goslin soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for grazing. It is also used for irrigated hayland, cropland, and pasture. A few small areas are used for homesites.

The potential plant community on the Goslin soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Goslin soils are well suited to irrigated hay, small grain crops, and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

The Goslin soils are well suited to use as a site for buildings. They have few limitations.

The Goslin soils are in capability subclass VIe, nonirrigated, IVe, irrigated; irrigation design group 15; windbreak suitability group 6G; and planting zone II. They are in the Sandy 10-14 Foothills and Basins West range site.

127—Grieves-Tisworth fine sandy loams, 1 to 5 percent slopes.

This unit is on alluvial fans and terraces in Clay Basin and Antelope Flats. Elevation is 6,200 to 6,600 feet. The average annual precipitation is about 9 to 12 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 60 percent Grieves fine sandy loam and 40 percent Tisworth fine sandy loam. The Grieves soils are on alluvial fans. The Tisworth soils are on alluvial fans and terraces. These soils are so intricately intermingled it was not practical to map them separately.

The Grieves soils are very deep and well drained. They formed in alluvium. Typically the surface layer is pale brown fine sandy loam about 1 inch thick. The subsoil is pale brown fine sandy loam 6 inches thick. The substratum is light yellowish brown fine sandy loam to 60 inches or more.

Permeability of the Grieves soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Tisworth soils are very deep and well drained. They formed in alluvium. Typically the surface layer is yellowish brown fine sandy loam about 3 inches thick. The subsoil is yellowish brown very strongly alkaline loam and sandy clay loam about 25 inches thick. The substratum is light yellowish brown strongly alkaline loam and fine sandy loam to 60 inches or more.

Permeability of the Tisworth soils is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used for grazing.

The potential plant community on the Grieves soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Tisworth soils is mainly western wheatgrass, Indian ricegrass, basin wildrye, black greasewood, and Gardner saltbush. If the vegetation deteriorates, greasewood increases. Under further deterioration, docks, pepperweed, and other annuals invade. The potential plant community produces 1,300 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,600 pounds in favorable years to 800 pounds in unfavorable years.

The Grieves soils are in capability subclass VIe, nonirrigated; windbreak suitability group 5K and planting zone II; and are in the Sandy 10-14 Foothills and Basins West range site. The Tisworth soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 9N and planting zone II; and are in the Saline Lowland-Drained 10-14 Foothills and Basins West range site.

128—Grobutte Family-Rentsac-Rock outcrop complex, 6 to 65 percent slopes.

This map unit is on breaks and mountain slopes in Clay Basin. Elevation is 6,600 to 8,200 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is mainly juniper, pinyon pine, shrubs, forbs, and grasses.

This unit is 40 percent Grobutte Family very stony sandy loam, 30 to 65 percent slopes; 20 percent Rentsac channery sandy loam, 6 to 30 percent slopes; and 20 percent Rock outcrop. The Grobutte Family soils are mainly on the foot slopes. The Rentsac soils are mainly on ridge crests. The Rock outcrop is on back slopes as ledges and vertical cliffs. These components are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Spool loamy fine sand; Joebas gravelly sandy loam on small benches; and Grieves fine sandy loam in the bottom of ravines. These inclusions make up 20 percent of the total acreage.

The Grobutte Family soils are very deep and well drained. They formed in colluvium derived from sandstone. Typically the soils are light brownish gray very stony sandy loam to 60 inches or more. These soils commonly contain a few boulders which may range up to 10 feet in diameter.

Permeability of the Grobutte Family soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Rentsac soils are very shallow or shallow and are well drained. They formed in residuum derived from

sandstone. Typically the surface layer is pale brown and brown channery sandy loam about 9 inches thick. The underlying material is light yellowish brown extremely channery sandy loam about 6 inches thick. Hard sandstone is at a depth of about 15 inches.

Permeability of the Rentsac soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 5 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for grazing.

The potential plant community on the Grobutte Family soils is mainly pinyon and Utah juniper with an understory of Saskatoon serviceberry, Indian ricegrass, needleandthread, black sagebrush, true mountainmahogany, and bluebunch wheatgrass. If the vegetation deteriorates, pinyon and Utah juniper increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 600 pounds of air-dry vegetation per acre in normal years. Production ranges from 800 pounds in favorable years to 400 pounds in unfavorable years.

The potential plant community on the Rentsac soils is mainly Utah juniper and pinyon with an understory of black sagebrush, true mountainmahogany, Mormontea, galleta, bluebunch wheatgrass, and saline wildrye. If the vegetation deteriorates, Utah juniper, pinyon, and snakeweed increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 150 pounds in unfavorable years.

The Grobutte Family soils are in capability subclass VIs, nonirrigated; windbreak suitability group 6G and planting zone II; and are in the Upland Stony Loam (Pinyon-Utah Juniper) range site. The Rentsac soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Semidesert Shallow Loam (Utah Juniper-Pinyon) range site. Rock outcrop is in capability subclass VIIIs, nonirrigated; windbreak suitability group 10; and planting zone II.

129—Hagga-Cowestglen association, nearly level.

This unit is on the flood plains of the Henrys Fork River and on low terraces and alluvial fans. Elevation is 6,000 to 7,000 feet. The average annual precipitation is 9 to 12 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, grasses, sedges, and cottonwood trees.

This unit is 40 percent Hagga loam and 35 percent Cowestglen fine sandy loam. The Hagga soils occur in slightly lower and wetter sites than the Cowestglen soils. It was impractical to map them separately as they are managed as a unit.

Included in this unit are small areas of a soil similar to the Hagga soils, but which has a clay or silty clay underlying material; a soil similar to the Cowestglen soils, but which has a very cobbly or very gravelly substratum at a depth of 20 to 40 inches; and Riverwash along stream channels. These inclusions make up 25 percent of the total acreage.

The Hagga soils are very deep and poorly drained. They formed in alluvium. Typically the surface layer is dark brown loam about 8 inches thick. The underlying material is gray and light brownish gray stratified loam, sandy clay loam, sandy loam, and gravelly sandy loam to 60 inches or more. Faint or distinct mottles are present in all layers. In many areas, there is a 1- to 5-inch layer of peat on the surface.

Permeability of the Hagga soils is moderately slow. Available water capacity is high. A water table is above a depth of 12 inches in spring and early summer, and above a depth of 30 inches the remainder of the year. Effective rooting depth is restricted by the water table for many plants, but for water-tolerant plants is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight. These soils have a rare hazard of flooding.

The Cowestglen soils are very deep and moderately well drained. They formed in alluvium. Typically the surface layer is brown fine sandy loam about 8 inches thick. The underlying material is brown and light brownish gray stratified loamy fine sand, sand, fine sandy loam, and loam to 60 inches or more. Common yellowish brown mottles occur at a depth of 42 inches.

Permeability of the Cowestglen soils is moderately rapid. Available water capacity is moderate. A water table fluctuates between a depth of 3 to 5 feet in the spring and early summer. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe. These soils have a rare hazard of flooding.

This unit is used for hayland, rangeland, and pasture.

The potential plant community on the Hagga soils is mainly basin wildrye, tufted hairgrass, Nebraska sedge, rhizomatous wheatgrasses, willows, and shrubby cinquefoil. If the vegetation deteriorates, willows, low growing sedges, and rushes increase. Under further deterioration, annual grasses and weeds and foxtail invade. The potential plant community produces 3,700 pounds of air-dry vegetation per acre in normal years. Production ranges from 4,300 pounds in favorable years to 3,000 pounds in unfavorable years.

The potential plant community on the Cowestglen soils is mainly basin wildrye, needleandthread, rhizomatous wheatgrasses, cottonwood, big sagebrush, and silver sagebrush. If the vegetation deteriorates, woody plants increase. Under further deterioration, annual weeds and grasses and Kentucky bluegrass invade. The potential plant community produces 2,300 pounds of air-dry vegetation per acre in normal years. Production ranges from 3,000 pounds in favorable years to 1,600 pounds in unfavorable years.

If the Hagga soils are used for irrigated hay, they are too wet for haying operations in the early summer and most areas have a hummocky surface. The Cowestglen soils are well suited to irrigated hay and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces leaching of fertilizer nutrients. Saturating these soils with water for long periods of time increases sedges and rushes, producing low quality forage.

The Hagga soils are in capability subclass Vw, nonirrigated and irrigated; irrigation design group 12; and windbreak suitability group 1K and planting zone II. They are in the Subirrigated 10-14 Foothills and Basins West range site. The Cowestglen soils are in capability subclass IVw, nonirrigated and irrigated; irrigation design group 12; and windbreak suitability group 1K and planting zone II. They are in the Lowland 10-14 Foothills and Basins West range site.

130—Hanly Family-Riverwash complex, 1 to 3 percent slopes.

This map unit is on the flood plains of Red Creek. Elevation is 5,900 to 6,300 feet. The average annual precipitation is about 9 to 12 inches, the average annual air temperature is 42 to 46 degrees F, and the frost-free period is 60 to 90 days. Native vegetation on the Hanly Family soils is shrubs, forbs and grasses. Little or no vegetation grows on Riverwash.

This unit is 50 percent Hanly Family loamy sand and 40 percent Riverwash. These areas are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Coyet loamy fine sand and Goslin fine sandy loam on low terraces. These inclusions make up 10 percent of the total acreage.

The Hanly Family soils are very deep and somewhat poorly drained or moderately well drained. They formed in alluvium. Typically the surface layer is brown loamy sand about 20 inches thick. The underlying material is stratified gravelly loamy sand, gravelly sand, and sand to 60 inches or more.

Permeability of the Hanly Family soils is rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight. Subirrigation water is supplied by the water table. A seasonal high water table is at a depth of 2 to 5 feet from March through September. These soils have an occasional hazard of flooding.

Riverwash consists of sandy and gravelly sediments that are flooded, washed and reworked by rivers frequently. These areas have a water table within a depth of 2 feet throughout the year.

This unit is used for grazing.

The potential plant community on the Hanly Family soils is mainly basin wildrye, tufted hairgrass, Nebraska sedge, rhizomatous wheatgrasses, willows, and shrubby cinquefoil. If the vegetation deteriorates, willows, low growing sedges, and rushes increase. Under further deterioration, annual grasses and weeds and foxtail invade. The potential plant community produces 3,700 pounds of air-dry vegetation per acre in normal years. Production ranges from 4,300 pounds in favorable years to 3,000 pounds in unfavorable years.

The Hanly Family soils are in capability subclass VIw, nonirrigated; windbreak suitability group 1K and planting zone II; and are in the Subirrigated 10-14 Foothills and Basins West range site. Riverwash is in capability subclass VIIIw, nonirrigated; windbreak suitability group 10 and planting zone II.

131—Haploborolls-Torriorthents complex, 10 to 70 percent slopes.

This map unit is on mountain slopes occurring between Browns Park and Clay Basin, and in the Jessen Butte area. Elevation is 6,000 to 8,000 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is pinyon pine, juniper, shrubs, forbs and grasses. These areas are very inaccessible due to steepness and stoniness of the terrain.

This unit is 40 percent Haploborolls, 10 to 70 percent slopes and 40 percent Torriorthents, 10 to 70 percent slopes. The Haploborolls soils are on north-, northeast-, and northwest-facing slopes; the Torriorthents soils are on south-, southeast-, and west-facing slopes. The soils are so variable in texture, depth, and color it was not possible to classify them into a few series. They are so intermingled it was impractical to map them separately.

Included in this unit are small areas of Rock outcrop on ridge crests and mountain slopes; Joebas gravelly sandy loam on ridgetops; Luhon gravelly loam on foot slopes; and Hanly Family loamy sand on flood plains. Also included are areas along the Green River in Browns Park at Kings Point and west of the Jarvis Ranch with similar soils and vegetation; however, elevation is from 5,400 to

6,000 feet, average annual air temperature is 45 to 48 degrees F, and frost-free period is 90 to 110 days. These inclusions make up 20 percent of the total acreage.

Haploborolls soils are shallow to very deep and are well drained. They formed in residuum and colluvium derived from quartzite, sandstone, and other metamorphic and sedimentary rocks. Commonly, the surface layer is reddish brown very stony sandy loam or very stony loam about 10 to 18 inches thick. The next layer commonly is weak red very stony sandy loam or very stony loam. Depth to bedrock ranges from 15 to more than 60 inches.

Permeability of Haploborolls soils is moderately rapid or moderate. Available water capacity is very low to moderate. Effective rooting depth is 15 to 60 inches or more. Runoff is rapid and the hazard of water erosion is sever. The hazard of wind erosion is slight.

Torriorthents soils are shallow to very deep and are well drained. They formed in residuum and colluvium derived from quartzite, sandstone and other metamorphic and sedimentary rocks. Commonly, the surface layer is reddish brown or brown very stony sandy loam or very gravelly loam about 4 inches thick. The underlying material commonly is light yellowish brown or reddish brown very gravelly sandy loam or very cobbly sandy clay loam. Depth to bedrock ranges from 10 to 60 inches or more.

Permeability of the Torriorthents soils is moderate or moderately rapid. Available water capacity is very low to moderate. Effective rooting depth is 10 to 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used for grazing but provides little forage. Access by livestock is limited by steep slopes.

The potential plant community on the Haploborolls soils is mainly pinyon and Utah juniper with an understory of black sagebrush, true mountainmahogany, Saskatoon serviceberry, Indian ricegrass, needleandthread, and bluebunch wheatgrass. If the vegetation deteriorates, pinyon and Utah juniper increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 600 pounds of air-dry vegetation per acre in normal years. Production ranges from 800 pounds in favorable years to 400 pounds in unfavorable years.

The potential plant community on the Torriorthents soils is mainly Utah juniper and pinyon with an understory of black sagebrush, true mountainmahogany, Mormontea, galleta, bluebunch wheatgrass, and saline wildrye. If the vegetation deteriorates, Utah juniper, pinyon, and snakeweed increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 150 pounds in unfavorable years.

This unit is in capability subclass VIIe, nonirrigated; windbreak suitability group 6G; and planting zone II. The Haploborolls soils are in the Upland Stony Loam (Pinyon-Utah Juniper) range site; the Torriorthents soils are in the Semidesert Shallow Loam (Utah Juniper-Pinyon) range site.

132—Harpole very stony sandy loam, 2 to 5 percent slopes.

These very deep, well drained soils are on alluvial fans emanating from the Uinta Mountains. They formed in alluvium. Elevation is 8,200 to 8,800 feet. The average annual precipitation is 15 to 20 inches, the average annual air temperature is 36 to 40 degrees F, and the frost-free period is 50 to 80 days. Native vegetation is dominantly shrubs, forbs, and grasses.

The Harpole soils typically have a surface layer of brown very stony sandy loam about 8 inches thick. The subsoil is reddish brown very stony sandy clay loam about 22 inches thick. The substratum is reddish brown very stony sandy loam to 60 inches or more.

Permeability of the Harpole soils is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight.

This unit is used for grazing.

The potential plant community on the Harpole soils is mainly black sagebrush, bluebunch wheatgrass, prairie junegrass, bluegrass, and stemless goldenweed. If the vegetation deteriorates, black sagebrush and gray horsebrush increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 650 pounds of air-dry vegetation per acre in normal years. Production ranges from 800 pounds in favorable years to 450 pounds in unfavorable years.

This unit is in capability subclass VIIs, nonirrigated; windbreak suitability group 6G and planting zone II; and are in the Upland Stony Loam (Black Sagebrush) range site.

133—Harpole-Worfstone Families complex, 20 to 60 percent slopes.

This map unit is on mountain slopes of Goslin Mountain and Dutch John Mountain. Elevation is 6,400 to 8,100 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 43 degrees F, and the average frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 40 percent Harpole Family very gravelly loam and 40 percent Worfstone Family very stony loam. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Rock outcrop on ridges and Bitton very gravelly loam in draws and drainageways. These inclusions make up 20 percent of the acreage.

The Harpole Family soils are very deep and well drained. They formed in colluvium and residuum derived dominantly from sandstone and quartzite. Typically the surface layer is reddish brown very gravelly loam about 13 inches thick. The subsoil is reddish brown very gravelly clay loam about 23 inches thick. The substratum is reddish brown extremely gravelly clay loam to 60 inches or more.

Permeability of the Harpole Family soils is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Worfstone Family soils are shallow and well drained. They formed in residuum derived from sandstone and quartzite. Typically the surface layer is reddish brown very stony loam about 5 inches thick. The upper part of the subsoil is reddish brown very cobbly clay loam about 7 inches thick. The lower part is reddish brown extremely cobbly clay loam about 3 inches thick. Fractured bedrock is at a depth of about 15 inches.

Permeability of the Worfstone Family soils is moderately slow. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used for grazing.

The potential plant community on the Harpole Family soils is mainly true mountainmahogany, Utah serviceberry, mountain big sagebrush, snowberry, fescue, bluegrass, needleandthread, and bluebunch wheatgrass. If the vegetation deteriorates, mountain big sagebrush, Oregongrape, and snowberry increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 800 pounds in unfavorable years.

The potential plant community on the Worfstone Family soils is mainly bluebunch wheatgrass, muttongrass, prairie junegrass, needleandthread, common stonecrop, rock goldenrod, black sagebrush, and fringed sagewort. If the vegetation deteriorates, Letterman needlegrass, rock goldenrod, cushion milkvetch, and gray horsebrush increase. Under further deterioration, annual and biennial forbs invade. The potential plant community produces 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 300 pounds in unfavorable years.

The Harpole Family soils are in capability subclass VIe, nonirrigated; windbreak suitability group 6G and planting zone II; and are in the Mountain Very Steep Stony Loam (Browse) range site. The Worfstone Family soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Mountain Windswept Ridge (Black Sagebrush) range site.

134—Henrieville sandy loam, 0 to 5 percent slopes.

These very deep, well drained soils are on alluvial fans in Browns Park. They formed in alluvium. Elevation is 5,600 to 5,800 feet. The average annual precipitation is 8 to 10 inches, the average annual air temperature is 45 to 48 degrees F, and the average frost-free period is 90 to 110 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Milok fine sandy loam on fan terraces. Also included are small areas of a soil similar to Henrieville, except the underlying material is loam or silt loam, on alluvial fans. These soils make up 15 percent of the total acreage.

The Henrieville soils typically have a very pale brown strongly alkaline sandy loam surface layer about 7 inches thick. The upper part of the underlying material is very pale brown strongly alkaline sandy loam about 27 inches thick. The lower part is very pale brown moderately alkaline sandy loam to a depth of 60 inches or more.

Permeability of the Henrieville soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for grazing.

The potential plant community on the Henrieville soils is mainly fourwing saltbush, Indian ricegrass, sand dropseed, bud sagebrush, shadscale, and spiny hopsage. If the vegetation deteriorates, galleta, low rabbitbrush, shadscale, and rubber rabbitbrush increase. Under further deterioration, cheatgrass and halogeton invade. The potential plant community produces 450 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 300 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 9N and planting zone I; and are in the Desert Alkali Sand (Fourwing Saltbush) range site.

135—Henrysfork-Borofibrists complex, 0 to 2 percent slopes.

This map unit is on flood plains and alluvial fans near Lonetree. Elevation is 7,400 to 8,300 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 30 to 60 days. Vegetation is mostly sedges, grasses, forbs, and shrubs.

This unit is 50 percent Henrysfork clay loam and 30 percent Borofibrists soils. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Cryofluvents soils, Menbar clay loam, and Turson clay loam. These inclusions make up 20 percent of the total acreage.

The Henrysfork soils are very deep and somewhat poorly or moderately well drained. They formed in alluvium. Typically the surface layer is very pale brown clay loam about 3 inches thick. The upper 47 inches of the underlying material is very pale brown light gray clay loam containing a high amount of calcium carbonate. The lower part is light brownish gray very cobbly sandy clay loam to 60 inches or more.

Permeability of the Henrysfork soils is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. These soils receive seepage water which causes a water table and adds carbonates to the soils. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight. The water table is between a depth of 2 and 5 feet during the spring and summer months. These soils have a rare hazard of flooding.

The Borofibrists soils are very deep and poorly or very poorly drained. They have a hummocky surface. The surface layer is peat about 24 inches thick. The next layer is black loam and clay loam about 9 inches thick. The underlying material is olive brown very cobbly loamy sand to 60 inches or more.

Permeability of the Borofibrists soils is moderate. Available water capacity is high. Effective rooting depth is less than 12 inches for non-water-tolerant plants. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight. The water table commonly is at the surface, but may be at a depth of 1 foot during late summer. These soils have a rare hazard of flooding.

This unit is used mainly for grazing.

The potential plant community on the Henrysfork soils is mainly alkali sacaton, inland saltgrass, western wheatgrass, basin wildrye, Nuttall alkaligrass, alkali bluegrass, and black greasewood. If the vegetation deteriorates, greasewood, inland saltgrass, and alkali muhly increase. Under further deterioration, annual weeds, cheatgrass, and halogeton invade. The potential plant community produces 3,000 pounds of air-dry vegetation per acre in normal years. Production ranges from 3,400 pounds in favorable years to 2,500 pounds in unfavorable years.

The potential plant community on the Borofibrists soils is mainly sedges, rushes, tufted hairgrass, redtop, willow, and shrubby cinquefoil. If the vegetation deteriorates, sedges, dandelion, groundsel, iris, and silverweed cinquefoil increase. Under further deterioration, Canada thistle, elk thistle, and musk thistle invade. The potential plant community produces 3,000 pounds of air-dry vegetation per acre in normal years. Production ranges from 3,500 pounds in favorable years to 2,500 pounds in unfavorable years.

This unit is in capability subclass Vw, nonirrigated. The Henrysfork soils are in windbreak suitability group 9G, planting zone III, and are in the Saline Subirrigated 10-14 Foothills and Basins West range site. The Borofibrists soils are in windbreak suitability group 10, planting zone III, and are in the Wet Fresh Meadow range site.

136—Hickey loam, 0 to 2 percent slopes.

These very deep, well drained soils are on glacial moraines southwest of Lonetree. They formed in glacial till. Elevation is 7,500 to 8,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 36 to 42 degrees F, and the frost-free period is 50 to 80 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Hickey cobbly sandy loam, making up 5 percent of the total acreage.

Typically the Hickey soils have a surface layer of dark brown loam about 6 inches thick. The upper part of the subsoil is brown clay loam about 10 inches thick. The lower part is light brown and reddish brown sandy clay loam to 60 inches or more.

Permeability of the Hickey soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for grazing, irrigated hayland, and pasture.

The potential plant community on the Hickey soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Hickey soils are well suited to irrigated hay and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

This unit is in capability subclass VIe, dryland, IVe, irrigated; irrigation design group 12; windbreak suitability group 8; and planting zone II. It is in the Loamy 10-14 Foothills and Basins West range site.

137—Hickey cobbly sandy loam, 10 to 40 percent slopes.

These very deep, well drained soils are on side slopes and scarps of glacial moraines southwest of Lonetree. They formed in glacial till. Elevation is 7,700 to 8,700 feet. The average annual precipitation is 10 to 16 inches, the average annual air temperature is 36 to 42 degrees F, and the frost-free period is 50 to 80 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Evanston loam in draws and on foot slopes. Also included are small areas of Luhon gravelly loam on ridges and shoulders of slopes. These inclusions make up 15 percent of the total acreage.

The Hickey soils typically have a surface layer of brown cobbly sandy loam about 5 inches thick. The upper part of the subsoil is reddish brown clay loam about 4 inches thick. The next part is reddish brown clay loam about 17 inches thick. The lower part of the subsoil is brown stony sandy clay loam to 60 inches or more. In some areas the surface is about 50 percent covered with gravel, cobbles, and stones.

Permeability of the Hickey soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for grazing.

The potential plant community on the Hickey soils is mainly bluebunch wheatgrass, thickspike wheatgrass, Indian ricegrass, needleandthread, and big sagebrush. If the vegetation deteriorates, perennial forbs increase. Under further deterioration, annual grasses and forbs and thistle invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 8 and planting zone II; and are in the Shallow Loamy 10-14 Foothills and Basins West range site.

138—Hickey loam-Hickey gravelly sandy clay loam complex, 2 to 10 percent slopes.

This map unit is on glacial moraines southwest of Lonetree. Elevation is 7,500 to 8,700 feet. The average annual precipitation is 10 to 15 inches, the average annual air temperature is 36 to 42 degrees F, and the frost-free period is 50 to 80 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 50 percent Hickey loam and 40 percent Hickey gravelly sandy clay loam. rub. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Luhon stony loam on convex windswept knolls and Evanston loam in swales and snowdrift sites. These inclusions make up 10 percent of the total acreage.

The Hickey loam soils are very deep and well drained. They formed in glacial till. Typically the surface layer is dark brown loam about 2 inches thick. The upper part of the subsoil is brown clay loam about 14 inches thick. The lower part is light brown and reddish brown sandy clay loam to 60 inches or more.

I01Permeability of the Hickey loam soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Hickey gravelly sandy clay loam soils are very deep and well drained. They formed in glacial till. Typically the upper 2 inches of the surface layer is reddish brown gravelly sandy clay loam. The next 2 inches is reddish brown gravelly clay loam. The upper part of the subsoil is reddish brown clay loam about 4 inches thick. The next part is brown clay loam about 22 inches thick. The lower part of the subsoil is brown sandy clay loam to 60 inches or more.

Permeability of the Hickey gravelly sandy clay loam soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant community on the Hickey loam soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Hickey gravelly sandy clay loam soils is mainly bluebunch wheatgrass, thickspike wheatgrass, Indian ricegrass, needleandthread, and big sagebrush. If the vegetation deteriorates, perennial forbs increase. Under further deterioration, annual grasses and forbs and thistle invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 8; and planting zone II. The Hickey loam soils are in the Loamy 10-14 Foothills and Basins West range site; the Hickey gravelly sandy clay loam is in the Shallow Loamy 10-14 Foothills and Basins West range site.

139—Hoodle-Namon dry-Namon Families association, 4 to 60 percent slopes.

This map unit is on glacial moraines. Elevation is 8,500 to 9,500 feet. The average annual precipitation is 18 to 24 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 30 to 60 days. Native vegetation is conifers.

This unit is 40 percent Hoodle Family cobbly clay loam, 4 to 30 percent slopes; 25 percent Namon Family, dry cobbly loam, 10 to 30 percent slopes; and 15 percent Namon Family extremely stony loam, 30 to 60 percent slopes. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of a soil similar to the Namon Family extremely stony loam soils, but which has a light colored surface, on ridges. Also included are small areas of a deep very gravelly loam soil on north slopes under Douglas-fir, and Rock outcrop on ridges and back slopes. These inclusions make up 20 percent of the total acreage.

The Hoodle Family soils are very deep and well drained. They formed in glacial drift. Typically they have a layer of dead needles, twigs, and decomposed organic matter about 2 inches thick on the surface. The surface layer is brown cobbly clay loam about 5 inches thick. The upper part of the subsoil is brown very cobbly clay loam about 8 inches thick. The next part is light brown extremely cobbly clay loam 18 inches thick. The lower part of the subsoil is extremely cobbly sandy clay loam to 60 inches or more.

Permeability of the Hoodle Family soils is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Namon Family, dry soils are very deep and well drained. They formed in glacial drift. Typically there is a layer of needles, leaves, twigs, and partially decomposed organic matter about 3 inches thick on the surface. The surface layer is dark reddish brown cobbly loam about 2 inches thick. The subsurface layer is light reddish brown cobbly loam about 2 inches thick. The upper part of the subsoil is reddish brown very cobbly clay loam about 9 inches thick. The next part is reddish yellow very cobbly clay loam 37 inches thick. The lower part of the subsoil is reddish yellow very cobbly and cobbly clay loam to 60 inches or more.

Permeability of the Namon Family, dry soils is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

The Namon Family extremely stony loam soils are very deep and well drained. They formed in glacial drift. Typically there is a layer of needles, twigs, and partially decomposed organic matter about 3 inches thick on the surface. The surface layer is dark brown extremely stony loam about 1 inch thick. The upper part of the subsoil is dark brown very cobbly clay loam about 9 inches thick. The next part is brown extremely cobbly clay loam about 24 inches thick. The lower part of the subsoil is brown gravelly clay loam about 9 inches thick. The substratum is brown extremely cobbly sandy loam to 60 inches or more.

Permeability of the Namon Family extremely stony loam soils is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used for grazing and for timber production.

The potential plant communities on the Hoodle Family and the Namon, dry soils are mainly Douglas-fir with an understory of snowberry, true mountainmahogany, Utah serviceberry, bluegrass, blue wildrye, and elk sedge. In some areas, the present vegetation also consists of lodgepole pine, quaking aspen, snowberry, and Letterman needlegrass. The potential plant community produces 200 pounds of air-dry vegetation per acre in normal years. Production ranges from 500 pounds in favorable years to 100 pounds in unfavorable years.

The potential plant community on the Namon Family soils is mainly Engelmann spruce with an understory of mountain snowberry, elk sedge, true mountainmahogany, bluegrass, blue wildrye, and quaking aspen. In some areas, the present vegetation also consist of lodgepole

pine. The potential plant community produces 200 pounds of air-dry vegetation per acre in normal years. Production ranges from 500 pounds in favorable years to 100 pounds in unfavorable years.

This unit is moderately well suited to timber production. The main limitation of this unit is the low production potential. Another limitation of the Namon Family extremely stony loam soils is the surface stoniness and steepness of slope. The Hoodle Family and the Namon Family, dry soils have few other limitations. The site index of this unit for Douglas-fir, subalpine fir, and Engelmann spruce is 35.

The Hoodle Family and the Namon Family, dry soils are in capability subclass VIs, nonirrigated. The Namon Family extremely stony loam soils are in capability subclass VIIs, nonirrigated. This unit is in windbreak suitability group 6G and planting zone III. The Hoodle and the Namon Family, dry soils are in the High Mountain Very Steep Loam (Douglas-fir) woodland site. The Namon Family soils are in the High Mountain Very Steep Loam (Engelmann Spruce) woodland site.

140—Joebas gravelly sandy loam, 3 to 15 percent slopes.

These shallow, well drained soils are on the plateaus and tops of Mountain Home and Head of Cottonwood mountains in eastern Daggett County. They formed in residuum derived from quartzite and sandstone. Elevation is 7,600 to 8,000 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 42 degrees F, and the frost-free period is 60 to 90 days. The native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Rock outcrop on convex knolls. Also included are small areas of a soil similar to the Joebas soils, but which is 20 to 30 inches deep to bedrock, in concave swales. These inclusions make up 15 percent of the total acreage.

The Joebas soils typically have a surface layer of reddish brown gravelly sandy loam about 2 inches thick. The upper part of the subsoil is reddish brown gravelly sandy clay loam about 11 inches thick. The lower part is light reddish brown gravelly sandy clay loam about 6 inches thick. Hard quartzite bedrock is at a depth of about 19 inches.

Permeability of the Joebas soils is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant community on the Joebas soils is mainly black sagebrush, bluebunch wheatgrass, Sandberg bluegrass, and prairie junegrass. If the vegetation deteriorates, snakeweed, rock goldenrod, and stemless goldenweed increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 450 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 350 pounds in unfavorable years.

This unit is in capability subclass VIIe, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Upland Shallow Loam (Black Sagebrush) range site.

141—Kappes-McFadden fine sandy loams, 2 to 6 percent slopes.

This map unit is on plains. Elevation is 6,600 to 7,300 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 70 percent Kappes fine sandy loam, 2 to 6 percent slopes, and 30 percent McFadden fine sandy loam, 2 to 4 percent slopes. The Kappes soils occur on the convex slopes and knolls. The McFadden soils occur on the concave slopes. The components of this unit are so intricately intermingled it was not practical to map them separately at the scale used.

The Kappes soils are moderately deep and well drained. They formed in residuum and colluvium derived from sandstone. Typically the surface layer is brown fine sandy loam about 8 inches thick. The upper part of the subsoil is yellowish brown fine sandy loam about 5 inches thick. The lower part is light yellowish brown and very pale brown highly calcareous fine sandy loam about 15 inches thick. Soft sandstone is at a depth of about 28 inches.

Permeability of the Kappes soils is moderately rapid. Available water capacity is low. Effective rooting depth is 20 to 40 inches. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The McFadden soils are very deep and well drained. They formed in alluvium and colluvium derived from sandstone. Typically the surface layer is dark brown fine sandy loam about 6 inches thick. The upper part of the subsoil is brown fine sandy loam about 8 inches thick. The lower part is light yellowish brown and very pale brown, highly calcareous fine sandy loam to 60 inches or more.

Permeability of the McFadden soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for irrigated cropland, hayland, and pasture. It is also used for grazing.

The potential plant communities on the Kappes and McFadden soils are mainly needleandthread, Indian

ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

These soils are well suited to irrigated small grain crops, hay, and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

This unit is in capability subclass VIe, nonirrigated, IVe, irrigated; irrigation design group 14; windbreak suitability group 6R; and planting zone II. It is in the Sandy 10-14 Foothills and Basins West range site.

142—Lanver gravelly sandy loam, 3 to 15 percent slopes.

These moderately deep, well drained soils are on fan terraces in Browns Park. They formed in alluvium derived from sandstone and quartzite over residuum derived from sandstone. Elevation is 5,600 to 6,200 feet. The average annual precipitation is 8 to 12 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit is Strych gravelly sandy loam and Milok fine sandy loam on fan terraces. Also included is Gerst loam on rolling hills. These soils make up 15 percent of the total acreage.

The Lanver soils typically have a surface layer of brown gravelly sandy loam about 6 inches thick. The upper part of the subsoil is pale brown very cobbly loam about 11 inches thick. The lower part is very pale brown very cobbly sandy loam about 21 inches thick. Sandstone bedrock is at a depth of about 38 inches.

Permeability of the Lanver soils is moderate. Available water capacity is low. Effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant community on the Lanver soils is mainly fourwing saltbush, Indian ricegrass, galleta, and needleandthread. If the vegetation deteriorates, galleta, snakeweed, and low rabbitbrush increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 650 pounds of air-dry vegetation per acre in normal years. Production ranges from 800 pounds in favorable years to 450 pounds in unfavorable years.

This map unit is in capability subclass VIe, nonirrigated; windbreak suitability group 6R and planting zone I; and are in the Semidesert Sandy Loam (Fourwing Saltbush) range site.

143—Ledgefork cobbly sandy loam, 3 to 5 percent slopes.

These very deep, somewhat excessively drained soils are on alluvial fans emanating from the Uinta Mountains. They formed in alluvium. Elevation is 8,200 to 8,700 feet. The average annual precipitation is 15 to 20 inches, the average annual air temperature is 36 to 40 degrees F, and the frost-free period is 50 to 80 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Riverwash along stream channels, which makes up less than 5 percent of the total acreage.

The Ledgefork soils typically have a surface layer of reddish brown cobbly sandy loam about 7 inches thick. The upper part of the underlying material is reddish brown extremely cobbly sandy loam about 10 inches thick. The lower part is reddish brown extremely cobbly sand to 60 inches or more.

Permeability of the Ledgefork soils is rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight.

This unit is used for grazing.

The potential plant community on the Ledgefork soils is mainly true mountainmahogany, Utah serviceberry, bluegrass, sedge, and bluebunch wheatgrass. If the vegetation deteriorates, mountain big sagebrush, Oregongrape, and snowberry increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 1,900 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,600 pounds in favorable years to 1,400 pounds in unfavorable years.

This unit is in capability subclass VIIs, nonirrigated; windbreak suitability group 6G and planting zone III; and are in the Mountain Stony Loam (Browse) range site.

144—Lotex sandy loam-Chittum-Lotex stony loam complex, 0 to 6 percent slopes.

This map unit is on the O-Wi-Yu-Kuts Flats plateau. Elevation is 8,000 to 8,700 feet. The average annual precipitation is about 16 to 20 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 30 to 60 days. Native vegetation is trees, shrubs, forbs, and grasses.

This unit is 40 percent Lotex sandy loam, 0 to 6 percent slopes; 30 percent Chittum loam, 2 to 6 percent slopes; and 20 percent Lotex stony loam, 2 to 6 percen

slopes. These soils are so intricately intermingled it was not possible to map them separately.

Included in this unit are small areas of Rock outcrop occurring intermittently. Also included are small areas of a soil, occurring in concave swales, which is similar to Chittum but is 20 to 40 inches deep to bedrock. These inclusions make up 10 percent of the total acreage.

The Lotex sandy loam soils are very shallow and well drained. They formed in residuum derived from quartzite and sandstone. Typically the surface layer is reddish brown sandy loam about 2 inches thick. The subsoil is reddish brown loam about 5 inches thick. Hard quartzite bedrock at a depth of about 7 inches.

Permeability of the Lotex sandy loam soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 4 to 10 inches. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Chittum soils are shallow and well drained. They formed in residuum derived from quartzite and sandstone. Typically the surface layer is dark reddish brown loam about 8 inches thick. The subsoil is dark reddish brown loam about 7 inches thick. Hard quartzite bedrock is at a depth of about 15 inches.

Permeability of the Chittum soils is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Lotex stony loam soils are very shallow or shallow and are well drained. They formed in residuum derived from quartzite and sandstone. Typically they are dark reddish brown stony loam over hard quartzite bedrock at a depth of 9 inches. About 15 to 20 percent of the surface is covered by cobbles, stones, and boulders.

Permeability of the Lotex stony loam soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 4 to 20 inches, with some root penetration in the bedrock fractures. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight.

This unit is used for grazing.

The potential plant community on the Lotex sandy loam soils is mainly bluebunch wheatgrass, muttongrass, prairie junegrass, needleandthread, common stonecrop, rock goldenrod, black sagebrush, and fringed sagewort. If the vegetation deteriorates, Letterman needlegrass, rock goldenrod, cushion milkvetch, and gray horsebrush increase. Under further deterioration, annual and biennial forbs invade. The potential plant community produces 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 300 pounds in unfavorable years.

The potential plant community on the Chittum soils is mainly western wheatgrass, Columbia needlegrass, bluegrasses, needleandthread, and mountain big sagebrush. If the vegetation deteriorates, big sagebrush, low rabbitbrush, Letterman needlegrass, and lupine increase. Under further deterioration, thistles and other biennial forbs invade. The potential plant community produces 1,500 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,000 pounds in favorable years to 1,000 pounds in unfavorable years.

The potential plant community on the Lotex stony loam soils is mainly curlleaf mountainmahogany, mountain snowberry, Utah serviceberry, Sandberg bluegrass, and bluebunch wheatgrass. If the vegetation deteriorates, low rabbitbrush, mountain big sagebrush, and Oregongrape increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 1,800 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,500 pounds in favorable years to 1,300 pounds in unfavorable years.

The Lotex sandy loam soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 10 and planting zone III; and are in the Mountain Windswept Ridge (Black Sagebrush) range site. The Chittum soils are in capability subclass VIe, nonirrigated; windbreak suitability group 10 and planting zone III; and are in the Mountain Loam (Mountain Big Sagebrush) range site. The Lotex stony loam soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 10 and planting zone III; and are in the Mountain Stony Loam (Curlleaf Mountainmahogany) range site.

145—Luhon loam, 0 to 3 percent slopes.

These very deep, well drained soils are on terraces. They formed in alluvium. Elevation is 6,800 to 7,200 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 44 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Brownsto gravelly sandy loam, which makes up 10 percent of the total acreage.

The Luhon soils typically have a surface layer of brown loam about 5 inches thick. The upper part of the subsoil is brown loam 6 inches thick. The next part is light gray and very pale brown clay loam about 27 inches thick. The lower part of the subsoil is very pale brown gravelly loam to 60 inches or more.

Permeability of the Luhon soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for irrigated hayland and pasture. It is also used for grazing.

The potential plant community on the Luhon soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Luhon soils are well suited to irrigated hay and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

The Luhon soils are in capability subclass VIe, nonirrigated, IIIe, irrigated; irrigation design group 11; windbreak suitability group 8; and planting zone II. They are in the Loamy 10-14 Foothills and Basins West range site.

146—Luhon loam, 3 to 6 percent slopes.

These very deep, well drained soils are on alluvial fans and fan terraces. They formed in alluvium. Elevation is 7,000 to 7,500 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 44 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Brownsto gravelly sandy loam. Also included are areas of the Luhon and Brownsto soils on 6 to 10 percent slopes. These inclusions make up 15 percent of the total acreage.

The Luhon soils typically have a surface layer of brown loam about 3 inches thick. The upper part of the subsoil is brown and pale brown loam about 9 inches thick. The lower part is pinkish gray loam to 60 inches or more. In some areas the surface is gravelly loam.

Permeability of the Luhon soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for grazing. It is also used for irrigated hayland and pasture.

The potential plant community on the Luhon soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Luhon soils are well suited to irrigated hay and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

The Luhon soils are in capability subclass VIe, nonirrigated, IVe, irrigated; irrigation design group 11; windbreak suitability group 8; and planting zone II. They are in the Loamy 10-14 Foothills and Basins West range site.

147—Luhon channery loam, 2 to 8 percent slopes.

These very deep, well drained soils are on fan terraces. They formed in alluvium derived from sedimentary rocks. Elevation is 6,200 to 7,000 feet. The average annual precipitation is 10 to 12 inches, the average annual air temperature is 42 to 45 degrees F, and the frost-free period is 60 to 90 days. The native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Brownsto gravelly sandy loam on edges of fan terraces and on the sides of ravines that dissect the fan terraces. These inclusions make up 15 percent of the total acreage.

The Luhon soils typically have a surface layer of pale brown channery loam about 6 inches thick. The upper 6 inches of the subsoil is light yellowish brown channery loam. The lower part is very pale brown channery loam to 60 inches or more.

Permeability of the Luhon soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight.

This unit is used mainly for grazing.

The potential plant community on the Luhon soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 5 and planting zone II; and are in the Sandy 10-14 Foothills and Basins West range site.

148—Luhon-Brownsto complex, 4 to 15 percent slopes.

This map unit is on fan terraces. Elevation is 7,300 to 8,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 44

degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 50 percent Luhon gravelly sandy loam and 40 percent Brownsto gravelly sandy loam. These soils are so intermingled it was not practical to map them separately.

Included in this unit are small areas of McFadden gravelly sandy loam. Also included, on the sides of ravines and scarps, is a very cobbly sandy loam soil that is shallow over shale. These inclusions make up 10 percent of the total acreage.

The Luhon soils are very deep and well drained. They formed in alluvium. Typically the surface layer is dark yellowish brown and yellowish brown gravelly sandy loam about 6 inches thick. The subsoil is light brown and pink loam about 24 inches thick. The substratum is light brown loam to 60 inches or more. In some areas the surface layer is loam.

Permeability of the Luhon soils is moderate. Available water capacity is high. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is medium.

The Brownsto soils are very deep and well drained. They formed in alluvium. Typically the surface layer is brown gravelly sandy loam 6 inches thick. The upper part of the subsoil is light yellowish brown very gravelly sandy loam about 9 inches thick. The next part is very pale brown very gravelly sandy loam about 13 inches thick. The lower part of the subsoil is very pale brown very cobbly sandy loam to 60 inches or more.

Permeability of the Brownsto soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is slight. The hazard of wind erosion is slight.

This unit is used mainly for grazing.

The potential plant communities on the Luhon and Brownsto soils are mainly black sagebrush, bluebunch wheatgrass, prairie junegrass, bluegrass, and stemless goldenweed. If the vegetation deteriorates, black sagebrush and gray horsebrush increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 650 pounds of air-dry vegetation per acre in normal years. Production ranges from 800 pounds in favorable years to 450 pounds in unfavorable years.

The Luhon soils are in capability subclass VIe, nonirrigated; windbreak suitability group 8; and planting zone II. The Brownsto soils are in capability subclass VIs, nonirrigated; windbreak suitability group 6G; and planting zone III. This unit is in the Upland Stony Loam (Black Sagebrush) range site.

149—Luhon-Evanston complex, 3 to 30 percent slopes.

This map unit is on hills. Elevation is 7,000 to 8,200 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 42 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 60 percent Luhon gravelly loam, 3 to 30 percent slopes and 20 percent Evanston loam, 3 to 15 percent slopes. The Luhon soils are on west- and north-facing slopes. The Evanston soils are on east-facing slopes, in swales, and at snowdrift sites. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Brownsto gravelly loam; McFadden gravelly sandy loam and Rockinchair gravelly loam on ridges; Poposhia loam and Sinkson clay loam on foot slopes; and Garlips loam in draws and snowdrift sites. Included also is an area, with slopes of 30 to 55 percent, adjacent to the upper end of Clay Basin Creek in eastern Daggett County. These inclusions make up 20 percent of the total acreage.

The Luhon soils are very deep and well drained. They formed in alluvium and colluvium. Typically the surface layer is brown gravelly loam about 6 inches thick. The subsoil is very pale brown gravelly loam about 18 inches thick. The substratum is light yellowish brown loam to 60 inches or more.

Permeability of the Luhon soils is moderate. Available water capacity is high. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Evanston soils are very deep and well drained. They formed in alluvium and colluvium. Typically the surface layer is brown loam about 3 inches thick. The upper part of the subsoil is brown loam 7 inches thick. The next part is pale brown clay loam about 5 inches thick. The lower part of the subsoil is light yellowish brown and pink gravelly loam to 60 inches or more.

Permeability of the Evanston soils is moderate. Available water capacity is high. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant community on the Luhon soils is mainly bluebunch wheatgrass, thickspike wheatgrass, Indian ricegrass, needleandthread, and big sagebrush. If the vegetation deteriorates, perennial forbs increase. Under further deterioration, annual grasses and forbs and thistle invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in

normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Evanston soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Luhon soils are in capability subclass VIe, nonirrigated. The Evanston soils are in capability subclass IVe, nonirrigated. This unit is in windbreak suitability group 8 and planting zone II. The Luhon soils are in the Shallow Loamy 10-14 Foothills and Basins West range site. The Evanston soils are in the Loamy 10-14 Foothills and Basins West range site.

150—Luhon-Hickey-Heath complex, 3 to 25 percent slopes.

This map unit is on a glacial moraines at the base of the Uinta Mountains southwest of Lonetree. Elevation is 8,200 to 8,800 feet. The average annual precipitation is 12 to 18 inches, the average annual air temperature is 36 to 42 degrees F, and the frost-free period is 50 to 80 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 35 percent Luhon clay loam, 3 to 25 percent slopes; 30 percent Hickey loam, 6 to 20 percent slopes; and 20 percent Heath loam, 6 to 15 percent slopes. The Luhon soils occur on the windswept convex slopes and knolls. The Hickey soils occur on the smooth slopes. The Heath soils are on concave snowdrift sites at higher elevations. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Condie gravelly loam and Lail loam under aspen and conifers. These inclusions make up 15 percent of the total acreage.

The Luhon soils are very deep and well drained. They formed in glacial till. Typically the surface layer is brown clay loam about 5 inches thick. The upper part of the subsoil is light yellowish brown gravelly clay loam about 25 inches thick. The lower part is pale brown gravelly clay loam to 60 inches or more.

Permeability of the Luhon soils is moderate. Available water capacity is high. The effective precipitation is low, due mainly to the windswept position. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. Gullies up to 10 feet deep are common. The hazard of wind erosion is moderate.

The Hickey soils are very deep and well drained. They formed in glacial till. Typically the surface layer is reddish brown loam about 2 inches thick. The upper part of the subsoil is reddish brown loam about 7 inches thick. The lower part is reddish brown clay loam about 13 inches thick. The substratum is brown clay loam to 60 inches or more.

Permeability of the Hickey soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Heath soils are very deep and well drained. They formed in glacial till. Typically the surface layer is brown loam about 12 inches thick. The upper part of the subsoil is brown clay loam about 12 inches thick. The lower part is brown clay loam to 60 inches or more.

Permeability of the Heath soils is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used for grazing.

The potential plant community on the Luhon soils is mainly bluebunch wheatgrass, muttongrass, prairie junegrass, needleandthread, common stonecrop, rock goldenrod, black sagebrush, and fringed sagewort. If the vegetation deteriorates, Letterman needlegrass, rock goldenrod, cushion milkvetch, and gray horsebrush increase. Under further deterioration, annual and biennial forbs invade. The potential plant community produces 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 300 pounds in unfavorable years.

The potential plant community on the Hickey soils is mainly black sagebrush, bluebunch wheatgrass, bluegrass, and prairie junegrass. If the vegetation deteriorates, snakeweed, rock goldenrod, and stemless goldenweed increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 450 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 350 pounds in unfavorable years.

The potential plant community on the Heath soils is mainly western wheatgrass, Columbia needlegrass, bluegrasses, and mountain big sagebrush. If the vegetation deteriorates, big sagebrush, low rabbitbrush, Letterman needlegrass, and lupine increase. Under further deterioration, thistles and other biennial forbs invade. The potential plant community produces 1,500 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,000 pounds in favorable years to 1,000 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 8; and planting zone II. The Luhon soils are in Mountain Windswept Ridge (Black Sagebrush) range site. The Hickey soils are in the Upland Shallow Loam (Black Sagebrush) range site. The Heath soils are in the Mountain Loam (Mountain Big Sagebrush) range site.

151—Luhon-Rockinchair loams, 1 to 6 percent slopes.

This map unit is on pediments. Elevation is 6,500 to 7,200 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 60 percent Luhon loam and 30 percent Rockinchair loam. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Brownsto gravelly sandy loam and Kappes sandy loam. Also included are a few small wet areas caused by water seepage from irrigation canals. These inclusions make up 10 percent of the total acreage.

The Luhon soils are very deep and well drained. They formed in alluvium derived from sandstone and shale. Typically the surface layer is yellowish brown loam about 8 inches thick. The subsoil is light brown and pinkish white loam about 22 inches thick. The substratum is reddish yellow sandy loam to 60 inches or more.

Permeability of the Luhon soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Rockinchair soils are moderately deep and well drained. They formed in residuum and alluvium derived from sandstone and shale. Typically the surface layer is grayish brown loam about 4 inches thick. The upper part of the subsoil is brown loam 7 inches thick. The lower part is very pale brown and white, highly calcareous loam and clay loam about 21 inches thick. Soft shale is at a depth of about a 32 inches.

Permeability of the Rockinchair soils is moderate. Available water capacity is moderate. Effective rooting depth is 20 to 40 inches. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for grazing. A few small areas are irrigated for hayland and pasture.

The potential plant communities on the Luhon and Rockinchair soils are mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Luhon and Rockinchair soils are well suited to irrigated hay and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

This unit is in capability subclass VIe, nonirrigated, IVe, irrigated; and irrigation design group 10. The Luhon soils are in windbreak suitability group 8 and planting zone II, and the Rockinchair soils are in windbreak suitability group 6R and planting zone II. Both soils are in the Loamy 10-14 Foothills and Basins West range site.

152—McFadden fine sandy loam, 0 to 6 percent slopes.

These very deep, well drained soils are on alluvial fans and fan terraces. They formed in mixed alluvium. Elevation is 6,100 to 7,500 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of McFadden gravelly sandy loam and Luhon loam, making up 15 percent of the total acreage.

The McFadden soils typically have a surface layer of brown fine sandy loam about 7 inches thick. The upper part of the subsoil is light yellowish brown fine sandy loam about 14 inches thick. The lower part is very pale brown fine sandy loam about 20 inches thick. The substratum is light yellowish brown fine sandy loam to 60 inches or more.

Permeability of the McFadden soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used for grazing and for irrigated cropland, hayland, and pasture.

The potential plant community on the McFadden soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The McFadden soils are well suited to irrigated small grain crops, hay, and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

This unit is in capability subclass VIe, nonirrigated, IVe, irrigated; irrigation design group 14; windbreak suitability group 5K; and planting zone II. It is in the Sandy 10-14 Foothills and Basins West range site.

153—McFadden fine sandy loam, 6 to 10 percent slopes.

These very deep, well drained soils are on alluvial fans and foot slopes. They formed in alluvium. Elevation is 6,300 to 7,500 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. The native vegetation is shrubs, forbs, and grasses.

The McFadden soils typically have a surface layer of light yellowish brown fine sandy loam about 7 inches thick. The subsoil is very pale brown fine sandy loam to 60 inches or more.

Permeability of the McFadden soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for irrigated cropland, hayland, and for grazing.

The potential plant community on the McFadden soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The McFadden soils are well suited to irrigated crops, hay, and pasture. The contour ditch irrigation method is suitable for use on this soil; however, the distance between ditches should be kept to a minimum due to the moderately rapid permeability of these soils. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

This unit is in capability subclass VIe, nonirrigated, IVe, irrigated; irrigation design group 14; windbreak suitability group 5K; and planting zone II. It is in the Sandy 10-14 Foothills and Basins West range site.

154—McFadden gravelly sandy loam, 2 to 6 percent slopes.

These very deep, well drained soils are on terraces. They formed in alluvium. Elevation is 6,100 to 6,900 feet. The average annual precipitation is 10 to 12 inches, the average annual air temperature is 43 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of McFadden fine sandy loam on terraces and Brownsto very gravelly sandy loam on sides of ravines. These inclusions make up 15 percent of the total acreage.

The McFadden soils typically have a surface layer of pale brown gravelly sandy loam about 3 inches thick. The upper part of the subsoil is pale brown gravelly sandy loam about 8 inches thick. The lower part is white and very pale brown gravelly sandy loam to 60 inches or more.

Permeability of the McFadden soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for grazing. It is also used for irrigated cropland, hayland, and pasture.

The potential plant community on the McFadden soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The McFadden soils are well suited to irrigated small grain crops, hay, and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

This unit is in capability subclass VIe, nonirrigated, IVe, irrigated; irrigation design group 14; windbreak suitability group 5K; and planting zone II. It is in the Sandy 10-14 Foothills and Basins West range site.

155—McFadden-Brownsto-Rock outcrop complex, 20 to 60 percent slopes.

This map unit is on south-facing mountain slopes of Phil Pico Mountain. Elevation is 8,000 to 8,800 feet. The average annual precipitation is 12 to 14 inches, the average annual air temperature is 38 to 42 degrees F,

and the average frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 40 percent McFadden gravelly loam, 20 to 45 percent slopes; 35 percent Brownsto gravelly sandy loam, 30 to 60 percent slopes; and 15 percent Rock outcrop. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Rencot very gravelly loam on ridges and Babb gravelly loam on north-facing slopes. These inclusions make up 10 percent of the total acreage.

The McFadden soils are very deep and well drained. They formed in alluvium and colluvium derived dominantly from sandstone. Typically the surface layer is brown gravelly sandy loam about 6 inches thick. The upper part of the subsoil is yellowish brown gravelly sandy loam about 9 inches thick. The lower part is very pale brown gravelly sandy loam to a depth of 60 inches or more.

Permeability of the McFadden soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Brownsto soils are deep and well drained. They formed in residuum and colluvium derived from sandstone. Typically the surface layer is brown gravelly sandy loam about 6 inches thick. The upper part of the subsoil is pale brown very gravelly sandy loam about 10 inches thick. The lower part is very pale brown very gravelly sandy loam to a depth of 60 inches or more.

Permeability of the Brownsto soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Rock outcrop consist of exposures of reddish and gray sandstone and conglomerate.

This unit is used mainly for grazing.

The potential plant communities on the McFadden and Brownsto soils are mainly mountain big sagebrush, antelope bitterbrush, needleandthread, bluegrass, bluebunch wheatgrass, and western wheatgrass. If the vegetation deteriorates, mountain big sagebrush and snakeweed increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 1,000 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The McFadden soils are in capability subclass VIIe, nonirrigated; windbreak suitability group 5K and planting zone II; and are in the Upland Stony Loam (Mountain Big Sagebrush) range site. The Brownsto soils are in capability subclass VIIe, nonirrigated; windbreak suitability group 6G and planting zone II; and are in the Upland Stony Loam (Mountain Big Sagebrush) range site. Rock outcrop is in capability subclass VIIIs.

156—Middlewood-Boettcher complex, 2 to 10 percent slopes.

These soils are on the plateaus and dip slopes on the north slope of Dutch John Mountain. Elevation is 6,400 to 6,900 feet. The average annual precipitation is 12 to 14 inches, the average annual air temperature is 40 to 44 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 50 percent Middlewood sandy loam, 2 to 10 percent slopes and 30 percent Boettcher fine sandy loam, 2 to 6 percent slopes. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of a soil similar to Middlewood, but which has 50 percent shale channers on the surface and is 6 to 10 inches deep to bedrock, on small low convex knolls and ridges with sparse vegetation. Also included is Blazon channery clay loam, 10 to 30 percent slopes, on ravine slopes; Spool loamy fine sand, 3 to 6 percent slopes, associated with Rock outcrop and with a juniper overstory; and Rock outcrop occurring intermittently throughout the unit. These inclusions make up 20 percent of the unit.

The Middlewood soils are shallow and well drained. They formed in residuum derived from shale. Typically the upper part of the surface layer is brown sandy loam about 2 inches thick. The lower part is dark yellowish brown loam about 3 inches thick. The upper part of the subsoil is dark yellowish brown clay loam about 7 inches thick. The lower part is light gray clay loam about 6 inches thick. Hard shale bedrock is at a depth of about 18 inches.

Permeability of the Middlewood soils is moderately slow. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Boettcher soils are moderately deep and well drained. They formed in residuum and alluvium derived from shale. Typically the surface layer is brown fine sandy loam about 3 inches thick. The upper part of the subsoil is dark yellowish brown and brown clay about 15 inches thick. The next part is light brownish gray clay loam about 12 inches thick. The lower part of the subsoil is light brownish gray very channery clay loam about 5 inches thick. Shale bedrock is at a depth of about 35 inches.

Permeability of the Boettcher soils is slow. Available water capacity is moderate. Effective rooting depth is 20

to 40 inches. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for grazing.

The potential plant community on the Middlewood soils is mainly bluebunch wheatgrass, thickspike wheatgrass, Indian ricegrass, needleandthread, and big sagebrush. If the vegetation deteriorates, perennial forbs increase. Under further deterioration, annual grasses and forbs and thistle invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Boettcher soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Middlewood soils are in capability subclass VIIe, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Shallow Loamy 10-14 Foothills and Basins West range site. The Boettcher soils are in capability subclass VIe, nonirrigated; windbreak suitability group 6R and planting zone II; and are in the Loamy 10-14 Foothills and Basins West range site.

157—Milok sandy loam, 2 to 6 percent slopes.

These very deep, well drained soils are on fan terraces in the Browns Park area. They formed in alluvium derived from quartzite and sedimentary rocks. Elevation is 5,600 to 6,000 feet. The average annual precipitation is 8 to 12 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit is 10 percent Strych gravelly sandy loam.

The Milok soils typically have a surface layer of reddish brown sandy loam about 2 inches thick. The upper 9 inches of the subsoil is reddish brown sandy loam. The next 7 inches is pink gravelly sandy loam. The lower part of the subsoil is pink gravelly loam about 10 inches thick. The substratum is reddish brown gravelly sandy loam to 60 inches or more.

Permeability of the Milok soils is moderately rapid. Available water capacity is low to moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for grazing.

The potential plant community on the Milok soils is mainly fourwing saltbush, Indian ricegrass, galleta, and needleandthread. If the vegetation deteriorates, galleta, snakeweed, and low rabbitbrush increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 650 pounds of air-dry vegetation per acre in normal years. Production ranges from 800 pounds in favorable years to 450 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 5K and planting zone I; and are in the Semidesert Sandy Loam (Fourwing Saltbush) range site.

158—Ouray loamy sand, 3 to 10 percent slopes.

These very deep, well drained soils are on alluvial fans in Antelope Flats and Pigeon Basin areas. They formed in alluvium derived from sandstone and quartzite. Elevation is 6,600 to 7,100 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Ouray loamy sand, 10 to 20 percent slopes, and Tally fine sandy loam. They make up 15 percent of the total acreage.

The Ouray soils typically have a surface layer of dark brown and brown loamy sand about 16 inches thick. The subsoil is brown loamy sand about 26 inches thick. The substratum is light brown sand to 60 inches or more.

Permeability of the Ouray soils is rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for grazing.

The potential plant community on the Ouray soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 7 and planting zone II; and are in the Sandy 10-14 Foothills and Basins West range site.

159—Pesmore-Garlips complex, 25 to 70 percent slopes.

This map unit is on the mountain slopes of Goslin Mountain, Two Horse Butte, Mountain Home, and Head of Cottonwood. Elevation is 6,600 to 7,800 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 43 degrees F, and the average frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 45 percent Pesmore very stony loam and 40 percent Garlips gravelly loam. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Rock outcrop. Also included are small areas of a soil similar to Pesmore with bedrock at a depth of 10 to 20 inches on convex ridges. Also included are small areas of Brownsto very gravelly sandy loam on lower foot slopes. These inclusions make up 15 percent of the total acreage.

The Pesmore soils are moderately deep and well drained. They formed in colluvium and residuum derived from metamorphic rocks. Typically the surface layer is dark brown and brown very stony loam about 10 inches thick. The subsoil is pink very stony loam about 15 inches thick. The substratum is light brown extremely stony loam about 9 inches thick. Quartzite bedrock is at a depth of 34 inches.

Permeability of the Pesmore soils is moderate. Available water capacity is very low. Effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Garlips soils are very deep and well drained. They formed in alluvium and colluvium derived from metamorphic rocks. Typically the surface layer is dark brown and brown gravelly loam about 18 inches thick. The subsoil is light yellowish brown gravelly loam about 16 inches thick. The substratum is pale brown gravelly loam to 60 inches or more.

Permeability of the Garlips soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant community on the Pesmore soils is mainly bluebunch wheatgrass, muttongrass, prairie junegrass, needleandthread, common stonecrop, rock goldenrod, black sagebrush, and fringed sagewort. If the vegetation deteriorates, Letterman needlegrass, rock goldenrod, cushion milkvetch, and gray horsebrush increase. Under further deterioration, annual and biennial forbs invade. The potential plant community produces 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 300 pounds in unfavorable years.

The potential plant community on the Garlips soils is mainly true mountainmahogany, Utah serviceberry, mountain big sagebrush, snowberry needleandthread, bluegrass, and bluebunch wheatgrass. If the vegetation deteriorates, mountain big sagebrush, Oregongrape, and snowberry increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 800 pounds in unfavorable years.

The Pesmore soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 6R and planting zone II; and are in the Mountain Windswept Ridge (Black Sagebrush) range site. The Garlips soils are in capability subclass VIe, nonirrigated; windbreak suitability group 8 and planting zone II; and are in the Mountain Very Steep Stony Loam (Browse) range site.

160—Pits.

These areas consist of pits that have been excavated to remove sand, gravel, and other minerals. Included are piles of earth and geologic materials. The nature of these areas is highly variable.

161—Poposhia loam, 0 to 3 percent slopes.

These very deep, well drained soils are on alluvial fans. They formed in alluvium derived from shale and sandstone. Elevation is 6,200 to 7,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. The native vegetation is shrubs, forbs, and grasses.

The Poposhia soils typically have a surface layer of grayish brown loam about 2 inches thick. The subsoil is grayish brown loam about 38 inches thick. The substratum is light brownish gray loam to 60 inches or more. In some areas the surface is clay loam.

Included in this unit are small areas of Grieves fine sandy loam. This makes up 10 percent of the total acreage.

Permeability of the Poposhia soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for grazing and for irrigated cropland, hayland, and pasture. A few small areas are also used for homesites.

The potential plant community on the Poposhia soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Poposhia soils are well suited to irrigated small grain crops, hay, and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly (see figure 7). Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

If the Poposhia soils are used for homesites, the main limitations are the shrink-swell potential and permeability. Foundations for dwellings should be designed to compensate for the moderate shrink-swell potential. Septic tank adsorption fields should be designed to compensate for the moderate permeability. (See figure 8.)

The Poposhia soils are in capability subclass VIe, nonirrigated, IVe irrigated; irrigation design group 12; windbreak suitability group 9N and planting zone II. They are in the Loamy 10-14 Foothills and Basins West range site.

162—Poposhia loam, 3 to 6 percent slopes.

These very deep, well drained soils are on alluvial fans. They formed in alluvium. Elevation is 6,300 to 7,500 feet. The average annual precipitation is 10 to 14 inches, the

Figure 7.—The map unit of Poposhia loam, 0 to 3 percent slopes, is well suited to use as irrigated pasture and hayland.

Figure 8.—An area of Rhoamett silty clay, 0 to 5 percent slopes in the foreground; Poposhia loam, 0 to 3 percent slopes in the center; and Redcreek-Blackhall-Rock outcrop complex, 6 to 35 percent slopes in the background. Data in this report shows that the map unit of Poposhia loam, 0 to 3 percent slopes has moderate limitations for homesites and that the other two map units shown here have severe limitations.

average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. The native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of a similar soil, except it contains 15 to 30 percent channers and gravel. Also included are small areas of Grieves fine sandy loam. These inclusions make up 15 percent of the total acreage.

The Poposhia soils typically have a surface layer of grayish brown loam about 5 inches thick. The subsoil is pale brown clay loam 20 inches thick. The substratum is pale brown clay loam to 60 inches or more.

Permeability of the Poposhia soils is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for grazing. It is also used for irrigated cropland, hayland, and pasture.

The potential plant community on the Poposhia soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Poposhia soils are well suited to irrigated small grain crops, hay, and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

The Poposhia soils are in capability subclass VIe, nonirrigated, IVe, irrigated; irrigation design group 12; windbreak suitability group 9N; and planting zone II. They are in the Loamy 10-14 Foothills and Basins West range site.

163—Poposhia loam, 6 to 10 percent slopes.

These very deep, well drained soils are on fan aprons and foot slopes. They formed in alluvium derived from shale and sandstone. Elevation is 6,300 to 7,500 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. The native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas which have about 1 to 2 percent of the surface covered with stones 1 to 2 feet in diameter. These areas are on the south side of Lucerne Valley on the foot slopes of Jessen Butte. Also included are small areas of Grieves fine sandy loam. These inclusions make up 15 percent of the total acreage.

The Poposhia soils typically have a surface layer of light yellowish brown loam about 3 inches thick. The subsoil is light yellowish brown loam about 24 inches thick. The substratum is light yellowish brown clay loam to 60 inches or more.

Permeability of the Poposhia soils is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for grazing. It is also used for irrigated cropland, hayland, and pasture.

The potential plant community on the Poposhia soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Poposhia soils are well suited to irrigated small grain crops, hay, and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

The Poposhia soils are in capability subclass VIe, nonirrigated, IVe, irrigated; irrigation design group 12; windbreak suitability group 9N; and planting zone II. They are in the Loamy 10-14 Foothills and Basins West range site.

164—Poposhia clay loam, 0 to 3 percent slopes.

These very deep, well drained soils are on alluvial fans. They formed in alluvium. Elevation is 6,200 to 6,500 feet. The average annual precipitation is 10 to 12 inches, the average annual air temperature is 42 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of a soil similar to the Poposhia soils, but which has a water table at a depth of 3 to 5 feet caused by irrigation waste water runoff and seepage. These inclusions make up 10 percent of the total acreage.

The Poposhia soils typically have a surface layer of brown clay loam about 6 inches thick. The underlying material is light yellowish brown clay loam to 60 inches or more. In some areas the surface layer is loam.

Permeability of the Poposhia soils is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for irrigated cropland, hayland, and pasture. It is also used for grazing.

The potential plant community on the Poposhia soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Poposhia soils are well suited to irrigated small grain crops, hay, and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

The Poposhia soils are in capability subclass VIe, nonirrigated, IVe, irrigated; irrigation design group 8; windbreak suitability group 9N; and planting zone II.

They are in the Loamy 10-14 Foothills and Basins West range site.

165—Poposhia clay loam, 3 to 6 percent slopes.

These very deep, well drained soils are on alluvial fans. They formed in alluvium. Elevation is 6,200 to 7,900 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Grieves fine sandy loam which make up 10 percent of the acreage.

The Poposhia soils typically have a surface layer of brown clay loam about 6 inches thick. The underlying material is light yellowish brown clay loam to 60 inches or more. In some areas the surface layer is loam.

Permeability of the Poposhia soils is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for irrigated cropland, hayland, and pasture. It is also used for grazing.

The potential plant community on the Poposhia soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Poposhia soils are well suited to irrigated small grain crops, hay, and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

The Poposhia soils are in capability subclass VIe, nonirrigated, IVe, irrigated; irrigation design group 8; windbreak suitability group 9N; and planting zone II. They are in the Loamy 10-14 Foothills and Basins West range site.

166—Poposhia very fine sandy loam, strongly alkaline, 1 to 3 percent slopes.

These very deep, well drained soils are on alluvial fans. They formed in alluvium derived from shale. Elevation is 6,200 to 6,700 feet. The average annual precipitation is 10 to 12 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is salt-tolerant shrubs, forbs, and grasses.

Included in this unit are small areas of Grieves fine sandy loam and Tisworth loam on alluvial fans, making up 10 percent of the total acreage.

The Poposhia, strongly alkaline soils typically have a surface layer of light brownish gray very fine sandy loam about 4 inches thick. The subsoil is light brownish gray strongly alkaline loam about 17 inches thick. The substratum is light brownish gray strongly alkaline sandy clay loam to 60 inches or more.

Permeability of the Poposhia, strongly alkaline soils is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of gully erosion is severe due to the concentration of runon from adjacent hills. The hazard of wind erosion is moderate.

This unit is used for grazing.

The potential plant community on the Poposhia soils is mainly western wheatgrass, bottlebrush squirreltail, Indian ricegrass, Gardner saltbush, and winterfat. If the vegetation deteriorates, winterfat becomes more dominant and bare spots increase. Under further deterioration, halogeton and annual weeds invade. The potential plant community produces 600 pounds of air-dry vegetation per acre in normal years. Production ranges from 750 pounds in favorable years to 400 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 9N and planting zone II; and are in the Saline Upland 10-14 Foothills and Basins West range site.

167—Recklor-Amsden-Davtone complex, 6 to 40 percent slopes.

This map unit is on mountain slopes on Bender Mountain and Willow Creek Butte. Elevation is 7,500 to 9,000 feet. The average annual precipitation is 16 to 20 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 50 to 80 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 40 percent Recklor gravelly loam, 6 to 40 percent slopes; 30 percent Amsden cobbly loam, 10 to 20 percent slopes; and 15 percent Davtone loam, 10 to 20 percent slopes. The Recklor soils are on windswept convex ridges and back slopes. The Amsden soils are on leeward slopes and in ravines and draws. The Davtone soils are on foot slopes and draw bottoms.

Included in this unit are small areas of Rock outcrop and Rogert very gravelly loam on ridges, Parkay Family gravelly loam in draws, and Brownsto gravelly sandy loam

on foot slopes at the lower elevations. These inclusions make up 15 percent of the total acreage.

The Recklor soils are very deep and well drained. They formed in colluvium derived from sedimentary rocks. Typically the surface layer is reddish brown gravelly loam about 3 inches thick. The upper part of the subsoil is reddish brown very gravelly clay loam about 19 inches thick. The lower part is reddish brown very gravelly clay loam to 60 inches or more.

Permeability of the Recklor soils is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Amsden soils are very deep and well drained. They formed in colluvium and residuum derived from sedimentary rocks. Typically the surface layer is dark reddish brown cobbly loam about 5 inches thick. The upper part of the subsoil is reddish brown cobbly clay loam about 10 inches thick. The lower part is reddish brown clay loam to 60 inches or more.

Permeability of the Amsden soils is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Davtone soils are very deep and well drained. They formed in alluvium derived from sedimentary rocks. Typically the surface layer is dark reddish gray loam about 16 inches thick. The upper part of the subsoil is reddish brown clay loam about 11 inches thick. The lower part is reddish brown clay loam about 15 inches thick. The substratum is reddish brown gravelly clay loam to 60 inches or more.

Permeability of the Davtone soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant community on the Recklor soils is mainly bluebunch wheatgrass, muttongrass, prairie junegrass, needleandthread, common stonecrop, rock goldenrod, black sagebrush, and fringed sagewort. If the vegetation deteriorates, Letterman needlegrass, rock goldenrod, cushion milkvetch, and gray horsebrush increase. Under further deterioration, annual and biennial forbs invade. The potential plant community produces 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 300 pounds in unfavorable years.

The potential plant communities on the Amsden and Davtone soils are mainly western wheatgrass, Columbia needlegrass, bluegrasses, and mountain big sagebrush. If the vegetation deteriorates, big sagebrush, low rabbitbrush, Letterman needlegrass, and lupine increase. Under further deterioration, thistles and other biennial forbs invade. The potential plant community produces 1,500 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,000 pounds in favorable years to 1,000 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated. The Recklor soils are in windbreak suitability group 6G, planting zone III, and the Mountain Windswept Ridge (Black Sagebrush) range site. The Amsden and Davtone soils are in windbreak suitability group 3, planting zone III, and the Mountain Loam (Mountain Big Sagebrush) range site.

168—Redcreek-Blackhall-Rock outcrop complex, 6 to 35 percent slopes.

This map unit is on breaks in the Manila Lucerne Valley area. Elevation is 6,100 to 7,000 feet. The average annual precipitation is 10 to 12 inches, the average annual air temperature is 42 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is juniper, shrubs, forbs, and grasses.

This unit is 35 percent Redcreek channery fine sandy loam, 6 to 35 percent slopes, on south-facing slopes; 30 percent Blackhall fine sandy loam, 6 to 25 percent slopes, on north-facing slopes; and 20 percent Rock outcrop. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Goslin fine sandy loam, 6 to 15 percent slopes, in swales and on foot slopes. Also included are small areas of a soil similar to Goslin, but which is 20 to 40 inches deep to bedrock. Also included is a small area with slopes of 50 to 100 percent occurring south of Sheep Creek in sec. 1 and 2, T. 2 N., R. 19 E., Daggett County, Utah. These inclusions make up 15 percent of the total acreage.

The Redcreek soils are very shallow or shallow and are well drained. They formed in residuum derived from sandstone. Typically they are light brown channery fine sandy loam about 16 inches deep over hard sandstone.

Permeability of the Redcreek soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 4 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Blackhall soils are very shallow or shallow and are well drained. They formed in residuum derived from sandstone. Typically the surface layer is light yellowish brown fine sandy loam about 4 inches thick. The underlying material is very pale brown fine sandy loam

about 12 inches thick. Soft sandstone is at a depth of about 16 inches.

Permeability of the Blackhall soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Rock outcrop consists of gray and reddish sandstone of the Wasatch formation occurring as vertical cliffs and as other areas of exposed bedrock.

This unit is used mainly for wildlife habitat and for grazing.

The potential plant community on the Redcreek soils is mainly bluebunch wheatgrass, thickspike wheatgrass, Indian ricegrass, bottlebrush squirreltail, juniper, and mountainmahogany. If the vegetation deteriorates, forbs and Sandberg bluegrass increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 350 pounds of air-dry vegetation per acre in normal years. Production ranges from 500 pounds in favorable years to 200 pounds in unfavorable years.

The potential plant community on the Blackhall soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, needleleaf sedge, Sandberg bluegrass, and forbs increase. Under further deterioration, annual weeds invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

This unit is in capability subclass VIIe, nonirrigated; windbreak suitability group 10; and planting zone II. Rock outcrop is in capability subclass VIIIs, nonirrigated. The Redcreek soils are in the Very Shallow 10-14 Foothills and Basins West range site. The Blackhall soils are in the Shallow Sandy 10-14 Foothills and Basins West range site.

169—Rentsac very channery sandy loam-Rentsac channery sandy loam-Rock outcrop complex, 20 to 35 percent slopes.

This map unit is on the dip slopes along the south side of Lucerne Valley. Elevation is 6,200 to 7,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 42 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is trees, shrubs, forbs, and grasses.

This unit is 30 percent Rentsac very channery sandy loam, 30 percent Rentsac channery sandy loam with an overstory of juniper and pinyon trees, and 25 percent Rock outcrop. The Rock outcrop occurs mainly on the dip slopes and south-facing escarpments. These soils and the Rock outcrop are so intricately intermingled it was not practical to map them separately.

Included in this unit, on a windswept area south and above Sheep Creek, is an area of Rencot very stony loam, 20 to 35 percent slopes; and an area of Rentsac very channery loam, 40 to 60 percent slopes. Also included is an area of a soil similar to Rentsac channery sandy loam, but which contains less than 35 percent rock fragments, occurring in the SE¼ of sec. 33, T. 3 N., R. 20 E., Daggett County, Utah. Other inclusions are Kappes fine sandy loam and Grieves fine sandy loam, which occur in concave pockets and in draws; and Brownsto gravelly sandy loam on the fan pediment northeast of Jessen Butte. These inclusions make up 15 percent of the total acreage.

The Rentsac very channery sandy loam soils are shallow and well drained. They formed in residuum derived from limestone and sandstone. Typically they have a surface layer of yellowish brown very channery sandy loam about 2 inches thick. The upper part of the subsoil is yellowish brown very channery sandy loam 3 inches thick. The lower part is yellowish brown extremely flaggy sandy loam about 5 inches thick. Limestone bedrock is at a depth of about 10 inches.

Permeability of the Rentsac very channery sandy loam soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

The Rentsac channery sandy loam soils are shallow and well drained. They formed in residuum derived from limestone and sandstone. Typically they have a layer on the surface about 4 inches thick consisting of brown dead needles over black partially decomposed needles and other organic material. The surface layer is brown channery sandy loam about 6 inches thick. The subsoil is brown extremely flaggy sandy loam about 5 inches thick. Limestone bedrock is at a depth of about 11 inches.

Permeability of the Rentsac channery sandy loam soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff on this unit is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Rock outcrop consist of exposures of gray limestone and yellowish brown sandstone bedrock.

This unit is used for grazing.

The potential plant community on the Rentsac very channery sandy loam soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, needleleaf sedge, Sandberg bluegrass, and forbs increase. Under further deterioration, annual weeds invade. The potential plant community produces 900 pounds of air-dry

vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Rentsac channery sandy loam soils is mainly Utah juniper and pinyon with an understory of black sagebrush, true mountainmahogany, Mormontea, bluebunch wheatgrass, and saline wildrye. If the vegetation deteriorates, Utah juniper, pinyon, and snakeweed increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 150 pounds in unfavorable years.

This unit is in capability subclass VIIs, nonirrigated; windbreak suitability group 10; and planting zone II. Rock outcrop is in capability subclass VIIIs, nonirrigated. The Rentsac very channery sandy loam soils are in the Shallow Sandy 10-14 Foothills and Basins West range site. The Rentsac channery sandy loam soils are in the Semidesert Shallow Loam (Utah Juniper-Pinyon) range site.

170—Rhoamett silty clay, 0 to 5 percent slopes.

These very deep, well or moderately well drained soils are on valley floors, valley side slopes, and in alluvial draws. They formed in alluvium derived from shale. Elevation is 6,000 to 7,900 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Poposhia clay loam and Spicerton silty clay loam. Also included in the area along Birch Spring in Lucerne Valley is a soil similar to the Rhoamett soils, but which has an extremely gravelly sand substratum below a depth of 24 inches. Also included are small areas of Salt flats. These inclusions make up 15 percent of the total acreage.

The Rhoamett soils typically have a surface layer of pale olive and light olive brown silty clay about 7 inches thick. The underlying material is light olive brown and olive silty clay to 60 inches or more.

Permeability of the Rhoamett soils is slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for irrigated hayland and pasture. Some areas are rangeland and some have been used for homesites.

The potential plant community on the Rhoamett soils is mainly western wheatgrass, bottlebrush squirreltail, Indian ricegrass, Gardner saltbush, and winterfat. If the vegetation deteriorates, winterfat becomes more dominant as bare spots increase. Under further deterioration, halogeton and annual weeds invade. The potential plant community produces 600 pounds of air-dry vegetation per acre in normal years. Production ranges from 750 pounds in favorable years to 400 pounds in unfavorable years.

The Rhoamett soils are well suited to irrigated hay and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces the risk of erosion and leaching of fertilizer nutrients.

As a building site, the Rhoamett soils have severe limitations. Foundations of buildings should be designed to withstand the effects of the high shrink-swell potential. Because of the slow permeability, septic tank absorption fields of conventional size do not function adequately when installed in these soils.

The Rhoamett soils are in capability subclass VIs, nonirrigated, IVs, irrigated; irrigation design group 4; windbreak suitability group 4C; and planting zone II. They are in the Saline Upland 10-14 Foothills and Basins West range site.

171—Rockinchair-Luhon-Rentsac complex, 6 to 30 percent slopes.

This map unit is on hillslopes. Elevation is 7,300 to 7,900 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 43 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, grasses, and some juniper.

This unit is 40 percent Rockinchair gravelly loam, 6 to 30 percent slopes; 30 percent Luhon loam, 6 to 15 percent slopes; and 15 percent Rentsac very channery loam, 6 to 30 percent slopes. The Rockinchair soils are on convex exposed ridges and slopes. The Luhon soils are on foot slopes and in draws. The Rentsac soils are on ridge crests. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Blazon gravelly loam on ridges and exposed slopes. Also included are small areas of Poposhia loam in draws. These inclusions make up 15 percent of the total acreage.

The Rockinchair soils are moderately deep and well drained. They formed in colluvium and residuum derived from limestone, sandstone, and shale. Typically the surface layer is brown gravelly loam about 8 inches thick. The upper part of the subsoil is light yellowish brown gravelly loam about 6 inches thick. The lower part is yellowish brown, pinkish gray and white loam about 9 inches thick. Shale is at a depth of about 23 inches.

Permeability of the Rockinchair soils is moderate. Available water capacity is low. Effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Luhon soils are very deep and well drained. They formed in alluvium derived from limestone, sandstone, and shale. Typically the surface layer is brown loam about 4 inches thick. The upper part of the subsoil is pale brown loam about 10 inches thick. The lower part is very pale brown loam to 60 inches or more.

Permeability of the Luhon soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is moderate and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Rentsac soils are very shallow or shallow and are well drained. They formed in residuum derived from limestone and sandstone. Typically they are brown and light yellowish brown very channery loam about 11 inches deep over fractured sandstone.

Permeability of the Rentsac soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 5 to 20 inches. Runoff is rapid and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used for grazing.

The potential plant communities on the Rockinchair and Rentsac soils are mainly bluebunch wheatgrass, thickspike wheatgrass, Indian ricegrass, bottlebrush squirreltail, juniper, and mountainmahogany. If the vegetation deteriorates, forbs and Sandberg bluegrass increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 350 pounds of air-dry vegetation per acre in normal years. Production ranges from 500 pounds in favorable years to 200 pounds in unfavorable years.

The potential plant community on the Luhon soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Rockinchair soils are in capability subclass VIe, nonirrigated; windbreak suitability group 6R and planting zone II; and are in the Very Shallow 10-14 Foothills and Basins West range site. The Luhon soils are in capability subclass VIe, nonirrigated; windbreak suitability group 8 and planting zone II; and are in the Loamy 10-14 Foothills and Basins West range site. The Rentsac soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Very Shallow 10-14 Foothills and Basins West range site.

172—Rock outcrop-Blazon complex, 20 to 40 percent slopes.

This unit is on escarpments in Clay Basin, Antelope Flats, and the Manila area. Elevation is 6,300 to 7,500 feet. The average annual precipitation is 10 to 12 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is a few scattered juniper on the Rock outcrop; it is shrubs, forbs, and grasses on the Blazon soils.

This unit is 70 percent Rock outcrop and 20 percent Blazon clay loam, 20 to 40 percent slopes. The Rock outcrop consists of vertical cliffs and is also on the slopes below the cliffs. The Blazon soils are on the foot slopes. These components are so intricately intermingled it was not practical to map them separately.

Included in this unit are very small areas of shallow sandy loam soils on small benches among the Rock outcrop. Also included are small areas of deep clay loam soils in draws. These inclusions make up 10 percent of the total acreage.

Rock outcrop consists of exposures of sandstone and shale bedrock.

The Blazon soils are shallow and well drained. They formed in residuum and colluvium derived from shale. Typically the surface layer is light yellowish brown clay loam 3 inches thick. The underlying material is olive gray clay loam about 10 inches thick. Shale is at a depth of 13 inches.

Permeability of the Blazon soils is slow. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for wildlife habitat and also has scenic value. The foot slopes are used for grazing in some areas. The small amount of vegetation produced on this unit limits its use for grazing.

The potential plant community on the Blazon soils is mainly western wheatgrass, bottlebrush squirreltail, Indian ricegrass, princesplume, Gardner saltbush, and winterfat. If the vegetation deteriorates, green molly summercyprus increases. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 150 pounds in unfavorable years.

Rock outcrop is in capability subclass VIIIs, nonirrigated. The Blazon soils are in capability subclass

VIIe, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Shale 10-14 Foothills and Basins West range site.

173—Rock outcrop-Coyet loamy sand-Coyet loamy fine sand complex, 6 to 20 percent slopes.

This unit is on escarpments and foot slopes in the Glades area, east of Flaming Gorge. Elevation is 6,200 to 7,300 feet. The average annual precipitation is 10 to 12 inches, the average annual air temperature is 42 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is juniper, pinyon, shrubs, forbs, and grasses.

This unit is 40 percent Rock outcrop; 25 percent Coyet loamy sand, 10 to 20 percent slopes; and 20 percent Coyet loamy fine sand, 6 to 10 percent slopes. Rock outcrop is on vertical escarpments. The Coyet loamy sand soils are below the Rock outcrop on dissected foot slopes with an overstory of juniper and pinyon. The Coyet loamy fine sand soils are on dissected alluvial fans.

Included in this unit is a very bouldery loamy sand soil on 30 to 50 percent slopes occurring as talus below the Rock outcrop cliffs. Also included are small areas of Lotex very stony loam occurring on small benches among the Rock outcrop. Inclusions make up 15 percent of the total acreage.

The Rock outcrop consist of exposures of yellowish fine grained sandstone.

The Coyet loamy sand soils are very deep and somewhat excessively drained. They formed in alluvium derived from sandstone. Typically the surface layer is brown loamy sand about 5 inches thick. The next layer is brown loamy sand about 15 inches thick. The underlying material is yellowish brown loamy sand to 60 inches or more.

Permeability of the Coyet soils is rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Coyet loamy fine sand soils are very deep and somewhat excessively drained. They formed in alluvium derived from sandstone. Typically the surface layer is brown loamy fine sand about 3 inches thick. The underlying material is light yellowish brown loamy fine sand to 60 inches or more.

Permeability of the Coyet soils is rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used for grazing. It has a high scenic value.

The potential plant community on the Coyet loamy sand soils is mainly Utah juniper and pinyon with an understory of black sagebrush, true mountainmahogany, Mormontea, galleta, and saline wildrye. If the vegetation deteriorates, Utah juniper, pinyon, and snakeweed increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 200 pounds of air-dry vegetation per acre in normal years. Production ranges from 250 pounds in favorable years to 100 pounds in unfavorable years.

The potential plant community on the Coyet loamy fine sand soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

Rock outcrop is in capability subclass VIIIs. The Coyet soils are in capability subclass VIe, nonirrigated; windbreak suitability group 7; and planting zone II. The Coyet loamy sand soils are in the Semidesert Shallow Loam (Utah Juniper-Pinyon) range site. The Coyet loamy fine sand soils are in the Sandy 10-14 Foothills and Basins West range site.

174—Rock River loam, 2 to 8 percent slopes.

These very deep, well drained soils are on fan terraces in Clay Basin. They formed in alluvium. Elevation is 6,200 to 6,800 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. The native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Brownsto gravelly sandy loam and Tisworth fine sandy loam. These make up 10 percent of the total acreage.

The Rock River soils typically have a surface layer of yellowish brown loam about 2 inches thick. The upper part of the subsoil is yellowish brown loam about 12 inches thick. The lower part is light yellowish brown loam 14 inches thick. The substratum is light yellowish brown loam to 60 inches or more. About 20 percent of the area has a 1- to 2- inch-thick fine sandy loam surface layer.

Permeability of the Rock River soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant community on the Rock River soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, and big sagebrush. If the vegetation deteriorates, big sagebrush increases. Under further deterioration, cheatgrass and annual weeds invade.

The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Rock River soils are in capability subclass VIe, nonirrigated; windbreak suitability group 5 and planting zone II; and are in the Sandy 10-14 Foothills and Basins West range site.

175—Rock River-Brownsto complex, 8 to 15 percent slopes.

This unit is on fan terraces and toe slopes of the mountains surrounding Clay Basin. They are dissected by numerous moderately steep sided ravines and drainageways. Elevation is 6,400 to 7,200 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is dominantly Utah juniper and pinyon pine, interspersed with small areas of sagebrush, forbs, and grasses.

This unit is 40 percent Rock River fine sandy loam and 30 percent Brownsto gravelly sandy loam. The soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Bitton gravelly loam, Brownsto very gravelly sandy loam, Blackhall fine sandy loam, and Dahlquist very cobbly sandy loam on the moderately steep sides of ravines and terrace escarpments. Also included are small areas of Evanston loam and Luhon gravelly sandy loam on fan terraces. These inclusions make up 30 percent of the total acreage.

The Rock River soils are very deep and well drained. They formed in alluvium. Typically the surface layer is brown fine sandy loam about 3 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam about 12 inches thick. The lower part is brown sandy loam about 25 inches thick. The substratum is pale brown gravelly sandy loam to 60 inches or more.

Permeability of the Rock River soils is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Brownsto soils are very deep and well drained. They formed in alluvium. Typically the surface layer is brown gravelly sandy loam about 6 inches thick. The upper part of the subsoil is pale brown very gravelly sandy clay loam about 16 inches thick. The lower part is light brownish gray very gravelly sandy clay loam to 60 inches or more.

Permeability of the Brownsto soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used mainly for grazing.

The potential plant communities on the Rock River and Brownsto soils are mainly Utah juniper with an understory of black sagebrush, bluebunch wheatgrass, prairie junegrass, and bluegrass. If the vegetation deteriorates, Utah juniper and snakeweed increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 300 pounds of air-dry vegetation per acre in normal years. Production ranges from 450 pounds in favorable years to 200 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated. The Rock River soils are in windbreak suitability group 5, planting zone II, and the Upland Shallow Loam (Utah Juniper-Pinyon) range site. The Brownsto soils are in windbreak suitability group 6G, planting zone II, and the Upland Shallow Loam (Utah Juniper-Pinyon) range site.

176—Rogert-Parkay Family-Davtone complex, 10 to 55 percent slopes.

This map unit is on mountains. Elevation is 7,500 to 8,600 feet. The average annual precipitation is 14 to 19 inches, the average annual air temperature is 36 to 40 degrees F, and the average frost-free period is 50 to 80 days. The native vegetation is shrubs, forbs, and grasses.

This unit is 40 percent Rogert very gravelly sandy loam, 10 to 55 percent slopes; 30 percent Parkay Family very gravelly loam, 10 to 40 percent slopes; and 15 percent Davtone loam, 10 to 25 percent slopes. The Rogert soils are on the crests and ridges with sparse vegetation. The Parkay Family soils are on the mountain slopes. The Davtone soils are on foot slopes and in draws and ravines. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit is Rock outcrop on ridges and mountaintops and Rock River loam on the lower foot slopes. These inclusions make up 15 percent of the total acreage.

The Rogert soils are shallow and well drained. They formed in residuum derived from granite. Typically they are brown very gravelly sandy loam about 13 inches deep over granite bedrock.

Permeability of the Rogert soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight. These soils are windswept and most of the snow is blown off.

The Parkay Family soils are very deep and well drained. They formed in colluvium and residuum derived

from granite, metamorphic, and sedimentary rocks. Typically the surface layer is dark reddish gray very gravelly loam about 6 inches thick. The upper part of the subsoil is reddish brown very gravelly loam about 14 inches thick. The lower part is light reddish brown very gravelly sandy clay loam. The substratum is reddish brown very gravelly sandy clay loam to 60 inches or more.

Permeability of the Parkay Family soils is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Davtone soils are very deep and well drained. They formed in colluvium derived from granite, metamorphic, and sedimentary rocks. Typically the surface layer is dark grayish brown loam 6 inches thick. The upper part of the subsoil is dark brown loam about 14 inches thick. The next part is reddish brown clay loam about 25 inches thick. The lower part of the subsoil is reddish brown gravelly loam to 60 inches or more.

Permeability of the Davtone soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. These soils receive run-in water from higher areas and snow blown off of surrounding areas. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant community on the Rogert soils is mainly bluebunch wheatgrass, muttongrass, prairie junegrass, needleandthread, common stonecrop, rock goldenrod, black sagebrush, and fringed sagewort. If the vegetation deteriorates, Letterman needlegrass, rock goldenrod, cushion milkvetch, and gray horsebrush increase. Under further deterioration, annual and biennial forbs invade. The potential plant community produces 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 300 pounds in unfavorable years.

The potential plant community on the Parkay Family soils is mainly true mountainmahogany, Utah serviceberry, and bluebunch wheatgrass. If the vegetation deteriorates, mountain big sagebrush, Oregongrape, and snowberry increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 1,900 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,600 pounds in favorable years to 1,400 pounds in unfavorable years.

The potential plant community on the Davtone soils is mainly western wheatgrass, Columbia needlegrass, bluegrasses, and mountain big sagebrush. If the vegetation deteriorates, big sagebrush, low rabbitbrush, Letterman needlegrass, and lupine increase. Under further deterioration, thistles and other biennial forbs invade. The potential plant community produces 1,500 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,000 pounds in favorable years to 1,000 pounds in unfavorable years.

The Rogert soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 10 and planting zone III; and are in the Mountain Windswept Ridge (Black Sagebrush) range site. The Parkay Family soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 5 and planting zone III; and are in the Mountain Stony Loam (Browse) range site. The Davtone soils are in capability subclass VIe, nonirrigated; windbreak suitability group 3 and planting zone III; and are in the Mountain Loam (Mountain Big Sagebrush) range site.

177—Rogrube gravelly loam-Rogrube clay loam complex, 3 to 5 percent slopes.

These soils are on pediments below Cedar Mountain. Elevation is 7,200 to 7,500 feet. The average annual precipitation is 9 to 12 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 70 percent Rogrube gravelly loam and 20 percent Rogrube clay loam. The Rogrube clay loam soils occur on the edges and slightly higher knolls of the pediments where they are more exposed to wind. The Rogrube gravelly loam soils occur on the planar areas of the pediments. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Brownsto gravelly sandy loam occurring on the pediments, pediment escarpments, and in ravines. Also included are small areas of Rock outcrop on pediment escarpments and in ravines. These inclusions make up 10 percent of the total acreage.

The Rogrube gravelly loam soils are very deep and well drained. They formed in alluvium derived from shale. Typically the surface layer is brown gravelly loam about 6 inches thick. The upper part of the subsoil is light yellowish brown gravelly loam about 11 inches thick. The lower part is gypsiferous, very pale brown gravelly loam about 7 inches thick. The substratum is gypsiferous, pink cobbly sandy loam to 60 inches or more.

Permeability of Rogrube gravelly loam is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Rogrube clay loam soils are very deep and well drained. They formed in alluvium and residuum derived from shale. Typically the surface layer is light brownish gray and pale brown clay loam about 4 inches thick. The

upper part of the subsoil is pale brown clay loam about 9 inches thick. The lower part is gypsiferous, white and light gray loam about 11 inches thick. The substratum is yellowish brown sandy clay loam to 60 inches or more.

Permeability of the Rogrube clay loam is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used for grazing.

The potential plant community on the Rogrube gravelly loam soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Rogrube clay loam soils is mainly bluebunch wheatgrass, thickspike wheatgrass, Indian ricegrass, bottlebrush squirreltail, juniper, and mountainmahogany. If the vegetation deteriorates, forbs and Sandberg bluegrass increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 350 pounds of air-dry vegetation per acre in normal years. Production ranges from 500 pounds in favorable years to 200 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 5K; and planting zone II. The Rogrube gravelly loam soils are in the Loamy 10-14 Foothills and Basins West range site. The Rogrube clay loam soils are in the Very Shallow 10-14 Foothills and Basins West range site.

178—Roto-Rockinchair-Rencot complex, 1 to 10 percent slopes.

This map unit is on plains. Elevation is 6,500 to 7,000 feet. The average annual precipitation is 9 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the average frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 30 percent Roto channery loam, 1 to 4 percent slopes; 30 percent Rockinchair loam, 1 to 10 percent slopes; and 30 percent Rencot very channery loam, 1 to 10 percent slopes. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Kappes fine sandy loam, Lilsnake loam, and Luhon loam. These inclusions make up 10 percent of the total acreage.

The Roto soils are moderately deep and well drained. They formed in residuum derived from limestone and shale. Typically the surface layer is pale brown and yellowish brown channery loam about 7 inches thick. The upper part of the subsoil is yellowish brown very channery loam about 5 inches thick. The lower part is white highly calcareous very gravelly loam about 13 inches thick. Shale is at a depth of 25 inches.

Permeability of the Roto soils is moderate. Available water capacity is very low. Effective rooting depth is 20 to 40 inches. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight.

The Rockinchair soils are moderately deep and well drained. They formed in residuum derived dominantly from shale. Typically the surface layer is pale brown loam about 4 inches thick. The upper part of the subsoil is very pale brown and pale brown highly calcareous clay loam about 22 inches thick. The lower part is variegated grayish brown and light olive brown clay loam about 13 inches thick. Shale bedrock is at a depth of 39 inches.

Permeability of the Rockinchair soils is moderate. Available water capacity is moderate. Effective rooting depth is 20 to 40 inches. Runoff is slow and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Rencot soils are shallow and well drained. They formed in residuum derived from shale and limestone. Typically the surface layer is pale brown very channery loam about 3 inches thick. The subsoil is pale brown, highly calcareous very channery loam about 9 inches thick. Hard limestone bedrock is at a depth of about 12 inches.

Permeability of the Rencot soils is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is medium and the hazard of water erosion is slight. The hazard of wind erosion is slight.

This unit is used mainly for grazing.

The potential plant communities on the Roto and Rockinchair soils are mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Rencot soils is mainly bluebunch wheatgrass, thickspike wheatgrass, Indian ricegrass, needleandthread, and big sagebrush. If the vegetation deteriorates, perennial forbs increase. Under further deterioration, annual grasses and forbs and thistle invade. The potential plant community produces 900 pounds of air-dry vegetation per acre in

normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The Roto soils are in capability subclass VIe, nonirrigated; windbreak suitability group 6R and planting zone II; and are in the Loamy 10-14 Foothills and Basins West range site. The Rockinchair soils are in capability subclass VIe, nonirrigated; windbreak suitability group 6R and planting zone II; and are in the Loamy 10-14 Foothills and Basins West range site. The Rencot soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Shallow Loamy 10-14 Foothills and Basins West range site.

179—Salt flats.

These are wet areas caused by seepage from irrigation ditches and fields. They are mostly barren of vegetation and have a thin crust of crystalline salts on the surface. Included are small areas capable of supporting inland saltgrass. The soil material is very deep, poorly drained, strongly saline silty clay, silty clay loam, or loam. The strong salinity severely inhibits plant growth. A water table is at the surface or within a depth of one foot during irrigation season and, in some areas, most of the year. Slopes are 0 to 4 percent.

This unit is in capability subclass VIIIs.

180—Sedillo Family-Strych complex, 2 to 8 percent slopes.

This map unit is on piedmont slopes in Browns Park. Elevation is 5,600 to 6,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Native vegetation is pinyon and juniper with associated shrubs, forbs, and grasses.

This unit is 60 percent Sedillo Family very cobbly sandy loam and 30 percent Strych gravelly sandy loam. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Milok gravelly sandy loam and Rock outcrop, making up 10 percent of the total acreage.

The Sedillo Family soils are very deep and well drained. They formed in alluvium and colluvium derived from quartzite and sedimentary rocks. Typically the surface layer is reddish brown very cobbly sandy loam about 2 inches thick. The upper part of the subsoil is reddish brown very cobbly sandy clay loam about 5 inches thick. The next part is pinkish white very cobbly sandy clay loam about 16 inches thick. The lower part of the subsoil is pink and light reddish brown very cobbly sandy loam to 60 inches or more.

Permeability of the Sedillo Family soils is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight.

The Strych soils are very deep and well drained. They formed in alluvium derived from quartzite and sedimentary rocks. Typically the surface layer is reddish brown gravelly sandy loam about 6 inches thick. The upper part of the subsoil is light reddish brown gravelly sandy loam about 8 inches thick. The lower part is pinkish white very gravelly sandy loam about 13 inches thick. The substratum is light reddish brown very gravelly sandy loam to 60 inches or more.

Permeability of the Strych soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant communities on the Sedillo and Strych soils are mainly pinyon and Utah juniper with an understory of black sagebrush, true mountainmahogany, Indian ricegrass, needleandthread, and bluebunch wheatgrass. If the vegetation deteriorates, pinyon and Utah juniper increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 600 pounds of air-dry vegetation per acre in normal years. Production ranges from 800 pounds in favorable years to 400 pounds in unfavorable years.

The Sedillo soils are in capability subclass VIe, nonirrigated. The Strych soils are in capability subclass VIIe, nonirrigated. Both soils are in windbreak suitability group 6G, planting zone I, and the Upland Stony Loam (Pinyon-Utah Juniper) range site.

181—Sinkson sandy clay loam, 1 to 8 percent slopes.

These deep, well drained soils are on alluvial fans. They formed in alluvium derived from sandstone. Elevation is 6,400 to 7,600 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Grieves fine sandy loam. Also included is a brown soil and a moderately well drained soil in the Antelope Flats area below Grindstone Springs and along the midsection of Clay Basin Creek. These inclusions make up 10 percent of the total acreage.

Typically the Sinkson soils have a surface layer of reddish brown sandy clay loam about 9 inches thick.

The underlying material is light reddish brown sandy clay loam to 60 inches or more.

Permeability of the Sinkson soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is moderate. Some gullying occurs along drainageways. The hazard of wind erosion is moderate.

This unit is used for grazing.

The potential plant community on the Sinkson soils is mainly thickspike wheatgrass, canby bluegrass, basin wildrye, Letterman needlegrass, big sagebrush, and chokecherry. If the vegetation deteriorates, big sagebrush and low rabbitbrush increase. Under further deterioration, cheatgrass, gumweed, and poverty weed invade. The potential plant community produces 1,800 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,200 pounds in favorable years to 1,200 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 8 and planting zone II; and are in the Overflow 10-14 Foothills and Basins West range site.

182—Spicerton-Poposhia complex, 0 to 3 percent slopes.

This map unit is on alluvial fans. Elevation is 6,200 to 7,600 feet. The average annual precipitation is 9 to 12 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 40 percent Spicerton loam and 40 percent Poposhia loam. The Spicerton soils occur mainly on the portions of the alluvial fans adjacent to drainage channels. The Poposhia soils are mainly on the upper portions of alluvial fans. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Rhoamett clay in lower wetter areas. Also included are small areas of Tisworth very fine sandy loam and Grieves fine sandy loam on the upper portions of fans. These inclusions make up 20 percent of the total acreage.

The Spicerton soils are very deep and well drained. They formed in alluvium derived from sandstone and shale. Typically the surface layer is light brownish gray loam about 1 inch thick. The subsoil is very strongly alkaline grayish brown and pale olive clay loam about 10 inches thick. The upper part of the substratum is very strongly alkaline pale olive clay loam about 24 inches thick. The lower part is strongly alkaline pale olive clay loam to 60 inches or more.

Permeability of the Spicerton soils is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Poposhia soils are very deep and well drained. They formed in alluvium derived from sandstone and shale. Typically the surface layer is light brownish gray loam about 4 inches thick. The underlying material is strongly alkaline light yellowish brown loam to 60 inches or more.

Permeability of the Poposhia soils is high. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is moderate. The hazard of gully erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for grazing. Some areas are used for irrigated hayland or pasture.

The potential plant communities on the Spicerton and Poposhia soils are mainly western wheatgrass, Indian ricegrass, bottlebrush squirreltail, black greasewood, and Gardner saltbush. If the vegetation deteriorates, greasewood increases. Under further deterioration, docks, pepperweed, and other annuals invade. The potential plant community produces 1,300 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,600 pounds in favorable years to 800 pounds in unfavorable years.

The Spicerton and Poposhia soils are limited in their suitability for irrigated crops and pasture due to their high alkalinity. The Spicerton soils have a slow intake rate. Application of gypsum or sulfur may be considered if soil test results indicate that economic amounts will improve the soils. When seeding, use salt-tolerant species of grass.

The Spicerton soils are in capability subclass VIIs, nonirrigated, VIs, irrigated. The Poposhia soils are in capability subclass VIe, nonirrigated, IVe, irrigated. This unit is in irrigation design group 3, windbreak suitability group 9N, planting zone II, and the Saline Lowland-drained 10-14 Foothills and Basins West range site.

183—Spool-Rock outcrop-Blackhall complex, 15 to 50 percent slopes.

This map unit is on hogbacks and breaks. Elevation is 6,100 to 7,600 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is juniper and pinyon with an understory of shrubs, forbs, and grasses.

This unit is 40 percent Spool loamy fine sand, 30 percent Rock outcrop, and 15 percent Blackhall fine sandy loam. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Coyet loamy fine sand and Grieves fine sandy loam in concave swales and on toe slopes. These inclusions make up 15 percent of the total acreage.

The Spool soils are very shallow or shallow and are excessively drained. Typically they are brown and yellowish brown loamy fine sand about 9 inches thick over hard sandstone. Depth to bedrock ranges from 4 to 20 inches.

Permeability of the Spool soils is rapid. Available water capacity is very low. Effective rooting depth is 4 to 20 inches with some roots penetrating fractures in the bedrock. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Rock outcrop consists of exposures of hard noncalcareous sandstone.

The Blackhall soils are shallow and well drained. Typically the surface layer is pale brown fine sandy loam about 3 inches thick. The next layer is pale brown fine sandy loam about 5 inches thick. The underlying material is light yellowish brown channery sandy loam about 5 inches thick. Sandstone bedrock is at a depth of about 13 inches.

Permeability of the Blackhall soils is moderately rapid. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

This unit is used for grazing.

The potential plant community on the Spool soils is mainly Utah juniper and pinyon with an understory of black sagebrush, bluebunch wheatgrass, prairie junegrass, and bluegrass. If the vegetation deteriorates, Utah juniper and snakeweed increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 300 pounds of air-dry vegetation per acre in normal years. Production ranges from 450 pounds in favorable years to 200 pounds in unfavorable years.

The potential plant community on the Blackhall soils is mainly Utah juniper and pinyon with an understory of black sagebrush, true mountainmahogany, bluebunch wheatgrass, Indian ricegrass, bluegrasses, and needleandthread. If the vegetation deteriorates, pinyon and Utah juniper increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 600 pounds of air-dry vegetation per acre in normal years. Production ranges from 800 pounds in favorable years to 400 pounds in unfavorable years.

The Spool soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Upland Shallow Loam (Utah Juniper-Pinyon) range site. Rock outcrop is in capability subclass VIIIs, nonirrigated; windbreak suitability group 10; and planting zone II. The Blackhall soils are in capability subclass VIIe, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Upland Stony Loam (Pinyon-Utah Juniper) range site.

184—Strych gravelly sandy loam-Strych very cobbly sandy loam complex, 8 to 30 percent slopes.

This unit is on alluvial fan terraces and associated ravine side slopes in Browns Park. Elevation is 5,500 to 6,000 feet. The average annual precipitation is 8 to 12 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Native vegetation is shrubs, forbs, grasses, juniper, and pinyon.

This unit is 50 percent Strych gravelly sandy loam, 8 to 15 percent slopes, and 35 percent Strych very cobbly sandy loam, 15 to 30 percent slopes. The Strych gravelly sandy loam soils are on alluvial fan terraces. The Strych very cobbly sandy loam is on ravine side slopes. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit in the area west of the Jesse Ewing Canyon road where it enters Browns Park is a soil similar to the Strych soils but which has a gravelly loam surface layer and subsoil. Also included are small areas of Rock outcrop on ravine side slopes and Yarts fine sandy loam in the bottom of ravines. These inclusions make up 15 percent of the total acreage.

The Strych gravelly sandy loam soils are very deep and well drained. They formed in alluvium derived from quartzite and sedimentary rocks. Typically the surface layer is brown gravelly sandy loam about 9 inches thick. The subsoil is highly calcareous pink, pinkish white and light brown very gravelly sandy loam about 41 inches thick. The substratum is reddish brown extremely gravelly sandy loam to 60 inches or more.

Permeability of the Strych gravelly sandy loam soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Strych very cobbly sandy loam soils are very deep and well drained. They formed in alluvium derived from quartzite and sedimentary rocks. Typically the surface layer is reddish brown very cobbly sandy loam about 4 inches thick. The upper part of the subsoil is brown very gravelly sandy loam about 8 inches thick. The lower part is highly calcareous pink very gravelly sandy loam about 33 inches thick. The substratum is reddish brown extremely gravelly sandy loam to 60 inches or more.

Permeability of the Strych very cobbly sandy loam soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is mainly for grazing.

The potential plant community on the Strych gravelly sandy loam soils is mainly Wyoming big sagebrush, spiny hopsage, rubber rabbitbrush, and bottlebrush squirreltail. If the vegetation deteriorates, rabbitbrush and Wyoming big sagebrush increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years.

The potential plant community on the Strych very cobbly sandy loam soils is mainly Utah juniper and pinyon with an understory of true mountainmahogany, black sagebrush, Mormontea, saline wildrye, and bluebunch wheatgrass. If the vegetation deteriorates, Utah juniper and pinyon increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 550 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years.

This unit is in capability subclass VIIe, nonirrigated. The Strych gravelly sandy loam soils are in windbreak suitability group 6G, planting zone II, and the Semidesert Gravelly Sandy Loam (Wyoming Big Sagebrush) range site. The Strych very cobbly sandy loam soils are in windbreak suitability group 6G, planting zone II, and the Semidesert Stony Loam (Utah Juniper-Pinyon) range site.

185—Strych-Milok complex, 0 to 15 percent slopes.

This map unit is on fan terraces in Browns Park. Elevation is 5,400 to 6,000 feet. The average annual precipitation is 8 to 10 inches, the average annual air temperature is 45 to 48 degrees F, and the average frost-free period is 90 to 110 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 70 percent Strych gravelly sandy loam, 3 to 15 percent slopes, and 15 percent Milok fine sandy loam, 0 to 5 percent slopes. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Lanver gravelly sandy loam. Also included are small areas of a soil similar to Milok, but which is 20 to 40 inches deep to bedrock. Also included are small areas of a deep loamy fine sand soil in concave areas. These soils make up 15 percent of the total acreage.

The Strych soils are very deep and well drained. They formed in alluvium derived from quartzite and sedimentary rocks. Typically the surface layer is brown gravelly sandy loam about 8 inches thick. The upper part of the subsoil is light yellowish brown very gravelly sandy loam about 18 inches thick. The lower part is white extremely cobbly sandy loam to a depth of 60 inches or more.

Permeability of the Strych soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight.

The Milok soils are very deep and well drained. They formed in alluvium derived from quartzite and sedimentary rocks. Typically the surface layer is light brown fine sandy loam about 2 inches thick. The upper part of the subsoil is light brown sandy loam about 31 inches thick. The lower part is pink gravelly sandy loam to 60 inches or more.

Permeability of the Milok soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for grazing.

The potential plant community on the Strych soils is mainly Wyoming big sagebrush, spiny hopsage, rubber rabbitbrush, Indian ricegrass, and bottlebrush squirreltail. If the vegetation deteriorates, rabbitbrush and Wyoming big sagebrush increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years.

The potential plant community on the Milok soils is mainly fourwing saltbush, Indian ricegrass, galleta, and needleandthread. If the vegetation deteriorates, galleta, snakeweed, and low rabbitbrush increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 650 pounds of air-dry vegetation per acre in normal years. Production ranges from 800 pounds in favorable years to 450 pounds in unfavorable years.

The Strych soils are in capability subclass VIIe, nonirrigated, and Semidesert Gravelly Sandy Loam (Wyoming Big Sagebrush) range site. The Milok soils are in capability subclass VIe, nonirrigated, and the Semidesert Sandy Loam (Fourwing Saltbush) range site. This unit is in windbreak suitability group 5 and planting zone I.

186—Tally fine sandy loam, 3 to 10 percent slopes.

These very deep, well drained soils are on mountain plateaus. They formed in alluvium and residuum derived from sandstone, shale, and quartzite. Elevation is 7,300 to 7,900 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Tally soils on 10 to 20 percent slopes. Also included are small areas of Pesmore stony loam and Tolman very flaggy fine sandy loam. These inclusions make up 10 percent of the total acreage.

The Tally soils typically have a surface layer of dark brown fine sandy loam about 14 inches thick. The upper part of the subsoil is brown fine sandy loam about 20 inches thick. The lower part is light brown fine sandy loam to a depth of 60 inches or more.

Permeability of the Tally soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for grazing.

The potential plant community on the Tally soils is mainly western wheatgrass, Columbia needlegrass, bluegrasses, and mountain big sagebrush. If the vegetation deteriorates, big sagebrush, low rabbitbrush, Letterman needlegrass, and lupine increase. Under further deterioration, thistles and other biennial forbs invade. The potential plant community produces 1,500 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,000 pounds in favorable years to 1,000 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 5 and planting zone II; and are in the Mountain Loam (Mountain Big Sagebrush) range site.

187—Tally-Tolman complex, 3 to 25 percent slopes.

This map unit is on mountain plateaus. Elevation is 7,300 to 8,200 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 60 to 90 days. Native vegetation is shrubs, forbs, and grasses.

This unit is 50 percent Tally fine sandy loam and 35 percent Tolman very flaggy fine sandy loam. The Tally soils occur mainly in draws. The Tolman soils occur mainly on convex ridges. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Rock outcrop on ridges. Also included are small areas of a soil similar to Tally, but which has bedrock at a depth of 20 to 40 inches on side slopes. Inclusions make up 15 percent of the total acreage.

The Tally soils are very deep and well drained. They formed in alluvium and residuum derived from sandstone, quartzite, and shale. Typically the surface layer is dark brown fine sandy loam about 14 inches thick. The upper part of the subsoil is brown fine sandy loam about 20 inches thick. The lower part is light brown fine sandy loam to a depth of 60 inches or more.

Permeability of the Tally soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Tolman soils are shallow and well drained. They formed in alluvium and residuum derived from sandstone and quartzite. Typically the surface layer is dark brown very flaggy fine sandy loam about 10 inches thick. The subsoil is brown extremely flaggy sandy clay loam about 4 inches thick. Sandstone bedrock is at a depth of about 14 inches.

Permeability of the Tolman soils is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used mainly for grazing.

The potential plant community on the Tally soils is mainly western wheatgrass, Columbia needlegrass, bluegrasses, and mountain big sagebrush. If the vegetation deteriorates, big sagebrush, low rabbitbrush, Letterman needlegrass, and lupine increase. Under further deterioration, thistles and other biennial forbs invade. The potential plant community produces 1,500 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,000 pounds in favorable years to 1,000 pounds in unfavorable years.

The potential plant community on the Tolman soils is mainly bluebunch wheatgrass, muttongrass, prairie junegrass, needleandthread, common stonecrop, rock goldenrod, black sagebrush, and fringed sagewort. If the vegetation deteriorates, Letterman needlegrass, rock goldenrod, cushion milkvetch, and gray horsebrush increase. Under further deterioration, annual and biennial forbs invade. The potential plant community produces 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 300 pounds in unfavorable years.

The Tally soils are in capability subclass VIe, nonirrigated; windbreak suitability group 5 and planting zone II; and are in the Mountain Loam (Mountain Big Sagebrush) range site. The Tolman soils are in capability subclass VIIs, nonirrigated; windbreak suitability group 10 and planting zone II; and are in the Mountain Windswept Ridge (Black Sagebrush) range site.

188—Teeler gravelly sandy loam, 1 to 10 percent slopes.

These very deep, well drained soils are on mountaintops of Hickey Mountain and Phil Pico Mountain. They formed in alluvium and residuum derived from conglomerate. Elevation is 8,900 to 9,500 feet. The average annual precipitation is 15 to 19 inches but, due to wind exposure, much of the snow blows off or is lost by sublimation. The average annual air temperature is 35 to 40 degrees F, and the frost-free period is 50 to 80 days. Native vegetation is grasses, forbs, and a few low shrubs.

Included in this unit, in long narrow swales that are snow accumulation sites, is a soil that is similar to the Teeler soils but which has a dark surface layer 16 or more inches thick. These inclusions make up 10 percent of the total acreage.

The Teeler soils typically have a surface layer of dark reddish gray gravelly sandy loam about 3 inches thick. The upper part of the subsoil is dark reddish brown very gravelly clay loam about 8 inches thick. The next part is brown very gravelly sandy loam about 6 inches thick. The lower part of the subsoil is variegated pink and light brown very cobbly sandy loam about 19 inches thick. The substratum is reddish brown very cobbly sandy loam to 60 inches.

Permeability of the Teeler soils is moderate. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant community on the Teeler soils is mainly bluebunch wheatgrass, muttongrass, prairie junegrass, needleandthread, common stonecrop, rock goldenrod, black sagebrush, and fringed sagewort. If the vegetation deteriorates, Letterman needlegrass, rock goldenrod, cushion milkvetch, and gray horsebrush increase. Under further deterioration, annual and biennial forbs invade. The potential plant community produces 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 300 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 6G and planting zone III; and are in the Mountain Windswept Ridge (Black Sagebrush) range site.

189—Thermopolis-Blazon-Sinkson complex, 3 to 60 percent slopes.

This unit is on breaks. Elevation is 7,000 to 8,400 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 44 degrees F, and the average frost-free period is 60 to 90 days. The native vegetation is juniper, shrubs, forbs, and grasses.

This unit is 30 percent Thermopolis gravelly loam, 3 to 60 percent slopes; 25 percent Blazon loam, 3 to 60 percent slopes; and 20 percent Sinkson loam, 3 to 20 percent slopes. The Thermopolis and Blazon soils occur on back slopes and foot slopes. The Sinkson soils occur on foot slopes and in draws. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Delphill loam on foot slopes; Poposhia loam and Brownsto gravelly sandy loam in swales on foot slopes and in draws; and Rock outcrop on crests and shoulders. These inclusions make up 25 percent of the total acreage.

The Thermopolis soils are very shallow or shallow and are well drained. They formed in residuum and colluvium derived from shale. Typically they are reddish brown gravelly loam about 17 inches deep over soft shale.

Permeability of the Thermopolis soils is moderate. Available water capacity is very low. Effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Blazon soils are shallow and well drained. They formed in residuum derived from shale. Typically the surface layer is pale brown loam about 7 inches thick. The next layer is pale brown channery loam about 6 inches thick. Shale is at a depth of about 13 inches.

Permeability of the Blazon soils is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Sinkson soils are very deep and well drained. They formed in colluvium derived from shale. Typically the surface layer is reddish brown loam about 9 inches thick. The substratum is light reddish brown loam to 60 inches or more.

Permeability of the Sinkson soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for grazing.

The potential plant communities on the Thermopolis and Blazon soils are mainly bluebunch wheatgrass, thickspike wheatgrass, canby bluegrass, Indian ricegrass, needleandthread, juniper, and big sagebrush. If the vegetation deteriorates, juniper and big sagebrush become more dominant. Under further deterioration,

cheatgrass, annual grasses, and foxtail invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,400 pounds in favorable years to 900 pounds in unfavorable years.

The potential plant community on the Sinkson soils is mainly thickspike wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. If the vegetation deteriorates, rabbitbrush and big sagebrush increase. Under further deterioration, cheatgrass and annual weeds invade. The potential plant community produces 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The Thermopolis and Blazon soils are in capability subclass VIIe, nonirrigated; windbreak suitability group 10 and planting zone II; and in the Shallow Breaks 10-14 Foothills and Basins West range site. The Sinkson soils are in capability subclass VIe, nonirrigated; windbreak suitability group 8 and planting zone II; and are in the Loamy 10-14 Foothills and Basins West range site.

190—Tridell gravelly loam, 3 to 15 percent slopes.

These very deep, well drained soils are on fan terraces. They formed in alluvium. Elevation is 8,100 to 8,500 feet. The average annual precipitation is 11 to 14 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 50 to 80 days. Native vegetation is shrubs, forbs, and grasses.

Included in this unit are small areas of Luhon gravelly loam and Brownsto gravelly sandy loam, making up 10 percent of the total acreage.

The Tridell soils typically have a surface layer of grayish brown gravelly loam about 7 inches thick. The upper part of the subsoil is yellowish brown gravelly loam about 6 inches thick. The lower part is light yellowish brown and pale brown very gravelly loam to 60 inches or more.

Permeability of the Tridell soils is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is slight. The hazard of wind erosion is slight.

This unit is used mainly for grazing.

The potential plant community on the Tridell soils is mainly black sagebrush, bluebunch wheatgrass, prairie junegrass, bluegrass, and stemless goldenweed. If the vegetation deteriorates, black sagebrush and gray horsebrush increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 650 pounds of air-dry vegetation per acre in normal years. Production ranges from 800 pounds in favorable years to 450 pounds in unfavorable years.

This unit is in capability subclass VIe, nonirrigated; windbreak suitability group 6G and planting zone II; and are in the Upland Stony Loam (Black Sagebrush) range site.

191—Turson-Menbar clay loams, 0 to 2 percent slopes.

This map unit occurs on the flood plains of Henrys Fork River and its tributaries. Elevation is 7,300 to 8,400 feet. The average annual precipitation is 10 to 16 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 50 to 80 days. Native vegetation is shrubs, forbs, grasses, sedges, and trees.

This unit is 50 percent Turson clay loam and 25 percent Menbar clay loam. These soils are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of a soil similar to Turson, except the surface layer and subsoil are a fine sandy loam. These soils occur on the Henrys Fork River flood plain adjacent to the Wasatch National Forest and along Birch Creek and Burnt Fork Creek. Also included are small areas of Borofibrists, Cryofluvents, and Henrysfork soils. These inclusions make up 25 percent of the total acreage.

The Turson soils are very deep and somewhat poorly drained. They formed in alluvium. Typically the surface layer is dark grayish brown and grayish brown clay loam about 12 inches thick. The upper part of the underlying material is grayish brown clay loam about 20 inches thick. The lower part is brown very gravelly loamy sand to 60 inches or more.

Permeability of the Turson soils is moderate to a depth of 32 inches, and rapid below this depth. Available water capacity is moderate. These soils are subirrigated by a seasonal water table which is at a depth of 3 to 5 feet during the period from March through September. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate. These soils have an occasional hazard of flooding.

The Menbar soils are very deep and somewhat poorly drained. Typically the surface layer is very dark grayish brown and brown clay loam about 20 inches thick. The underlying material is brown and grayish brown stratified sandy loam, sandy clay loam, and clay loam to 60 inches or more.

Permeability of the Menbar soils is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. These soils are subirrigated by a seasonal water table which is at a depth of 3 to 5 feet during the period from March through July. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight. These soils have a rare hazard of flooding.

This unit is used for grazing and for irrigated pasture and hayland.

The potential plant communities on the Turson and Menbar soils is mainly basin wildrye, needleandthread, rhizomatous wheatgrasses, cottonwood, big sagebrush, and silver sagebrush. If the vegetation deteriorates, woody plants increase. Under further deterioration, annual weeds and grasses and Kentucky bluegrass invade. The potential plant community produces 2,300 pounds of air-dry vegetation per acre in normal years. Production ranges from 3,000 pounds in favorable years to 1,600 pounds in unfavorable years.

This unit is well suited to irrigated hay and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces leaching of fertilizer nutrients. Too much water increases sedges, rushes, and low quality forage.

This unit is in capability subclass IVw, nonirrigated and irrigated; windbreak suitability group 1K and planting zone III; and are in the Lowland 10-14 Foothills and Basins West range site.

192—Yarts-Bunkwater complex, 1 to 6 percent slopes.

This map unit is on alluvial fans in Browns Park. Elevation is 5,400 to 6,000 feet. The average annual precipitation is 9 to 12 inches, the average annual air temperature is 45 to 48 degrees F, and the average frost-free period is 90 to 110 days. Native vegetation is mainly shrubs, forbs, and grasses.

This unit is 50 percent Yarts fine sandy loam, 1 to 6 percent slopes and 40 percent Bunkwater very fine sandy loam, 1 to 3 percent slopes. The Yarts soils occur predominantly on the upper portions of the fans, and the Bunkwater soils predominantly on the lower portions. These soils are so intricately intermingled it was not possible to map them separately.

Included in this unit are small areas of Strych gravelly sandy loam on the upper portions of fans. These inclusions make up 10 percent of the total acreage.

The Yarts soils are very deep and well drained. They formed in alluvium derived from quartzite and sandstone. Typically the surface layer is reddish brown fine sandy loam about 7 inches thick. The subsoil is reddish brown fine sandy loam 18 inches thick. The underlying material is reddish brown fine sandy loam to 60 inches or more.

Permeability of the Yarts soils is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Bunkwater soils are very deep and well drained. They formed in alluvium derived from quartzite and sandstone. Typically the surface layer is light reddish brown very fine sandy loam about 5 inches thick. The subsoil is reddish brown strongly alkaline or very strongly alkaline sandy clay loam about 13 inches thick. The upper part of the substratum is reddish brown loam about 18 inches thick. The lower part is reddish brown sandy loam to 60 inches or more. In some areas the surface layer is fine sandy loam.

Permeability of the Bunkwater soils is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for grazing. Some small areas are used for irrigated hayland and pasture.

The potential plant community on the Yarts soils is mainly fourwing saltbush, Indian ricegrass, galleta, sand dropseed, and needleandthread. If the vegetation deteriorates, galleta, snakeweed, and low rabbitbrush increase. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 650 pounds of air-dry vegetation per acre in normal years. Production ranges from 800 pounds in favorable years to 450 pounds in unfavorable years.

The potential plant community on the Bunkwater soils is mainly black greasewood, bottlebrush squirreltail, alkali sacaton, galleta, Indian ricegrass, seepweed, and shadscale. If the vegetation deteriorates, black greasewood increases. Under further deterioration, annual grasses and forbs invade. The potential plant community produces 700 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,000 pounds in favorable years to 500 pounds in unfavorable years.

If this unit is used for irrigated hay and pasture, the main limitation is the salinity and alkalinity of the Bunkwater soils. The Yarts soils are well suited to irrigated hay and pasture. Where practical, sprinkler irrigation saves water and applies it uniformly. Conservative use of irrigation water reduces leaching of nutrients.

The Yarts soils are in capability subclass VIe, nonirrigated, IIIe, irrigated; irrigation design group 15; windbreak suitability group 5; and planting zone I. They are in the Semidesert Sandy Loam (Fourwing Saltbush) range site. The Bunkwater soils are in capability subclass VIIs, nonirrigated, IVs, irrigated; irrigation design group 10; windbreak suitability group 9N; and planting zone I. They are in the Alkali Flat (Black Greasewood) range site.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey Area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey Area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland or for engineering purposes (USDA, 1961).

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, wildlife habitat, or recreation.

The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in table 4.

Crops and Pasture

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General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils are identified; the system of land capability classification used by the Natural Resources Conservation Service is explained; and the estimated yields of the main crops and pasture are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed soil map units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Irrigated Cropland

The irrigated crops in the survey Area include alfalfa-grass hay, grass hay, oat hay, barley, and pasture. The soils used for irrigated crops in the survey Area are gently sloping to moderately sloping land adjacent to the watercourses throughout the Area. There are approximately 20,000 acres of irrigated land in the survey Area.

In the survey Area wild flood irrigation commonly is used to produce hay to feed livestock during the winter. The irrigated pastures provide green feed for livestock during the growing season. Historically a "low level" system of management has been used on the irrigated lands. However, management has improved with the use of fertilizers, improved species and improved irrigation systems including sprinklers.

Most of the irrigated soils in the Area are well suited to irrigation. There are some soils that have poor drainage and a high water table which limits productivity. At the lower elevations, saline-sodic soils limit productivity. The short growing season also limits production. Yields of irrigated crops vary substantially because of differences in irrigation water management, fertilizer application, and the use of improved species.

Irrigation Water Management

Irrigation water management is management of the application of irrigation water to promote high crop production and to conserve soil and water. Management is needed on all irrigated soils for applying water according to the crop needs and at rates and amounts consistent to the characteristics of the soils.

An efficient water delivery system is needed to properly administer irrigation water management. It has the capacity to meet the crop needs; it is designed to keep seepage loss to a minimum, and to carry the required flow without excessive seepage or causing erosion. Control and water- measuring structures are needed to facilitate the handling of water.

Irrigation system designs are governed by the method of irrigation desired, the crop to be grown, and the potential of the soils. In this survey Area, flood and sprinkler irrigation systems are used. Drip irrigation systems can be used for ornamental landscaping, gardens, orchards, windbreaks, and wildlife shelter belts.

Flood irrigation systems and their corresponding efficiencies are varied. Wild flood methods usually utilize open earth ditches to deliver water to the tops of ridges or to the head of the field. It is very difficult to control the even distribution and application of water with the wild flooding method. The fields usually have high spots that are underwatered and low spots that are overwatered. Flooding with contour ditches distributes water more uniformly than wild flood irrigation. These two flood methods use head gates and/or canvas dams to control the width of each set. Land leveling and the use of gated pipe, alfalfa risers, borders, dikes, furrows, corrugations, lined ditches, shorter lengths of run, and suitable tailwater recovery ditches improve water distribution and increase efficiencies of all flood systems. Some soils in this survey Area have limitations for land leveling. These limitations include depths to: bedrock, coarse fragments, saline and/or alkali layers, and layers containing high amounts of calcium carbonate.

Sprinkler systems apply water to the soils by a system of pipes and sprinkler heads. A sprinkler system either is self-moving or is moved by hand between settings. These systems are most effective and can improve irrigation efficiency, especially where the soils have a high infiltration rate and land leveling is not practical.

Irrigation water can be applied efficiently when the available water holding capacity of the soils, the rate that water enters and moves through the soils, the amount of water required by the crop (consumptive use), and rooting depth of the crop are known.

The amount of water that the soil holds and the intake rate of the soil generally depends on soil texture, depth,

and bulk density. Water which infiltrates the soil and is in excess of the available water-holding capacity of the soil is lost to deep percolation. Deep percolation is the water that moves downward through the soil, past the root zone of the crop being grown. This water carries pesticides, fertilizer, salts, and inherent salts of the underlying geologic material to the ground water. This commonly also decreases the quality of the water downstream. Flood systems generally use more water than sprinkler systems and contribute more to deep percolation and runoff. Flood and sprinkler systems in this Area, when managed properly, divert less water to the farms and ranches, keep more water in the streams and river, and thus positively influence the water quality downstream.

Most crops should be irrigated when approximately 50 percent of the available water capacity has been depleted. The amount of water depleted can be estimated by computing consumptive use and monitoring rainfall daily or weekly. Irrigation scheduling based on crop needs may require water storage if water supplies are not constant throughout the season.

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 4. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit is also shown in the table.

The yields are based mainly on the experience and records of farmers, ranchers, conservationists and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium and trace elements for each crop; effective use of crop residue and barnyard manure; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum. No-till in conjunction with proper management can be used instead of conventional tillage.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in Table 4 are grown in the survey Area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Rangeland

Rangeland is land on which the potential plant community is predominantly native grasses, grasslike plants, forbs, and shrubs suitable for grazing or browsing. In addition to providing food for livestock and wildlife, it also provides cover for animals, provides recreational area, and has aesthetic value.

More than 85 percent of the survey Area is rangeland. Cow-calf and ewe-lamb operations are the primary types of livestock enterprises. Approximately 45 percent of the land in the survey Area is administered by the Federal government. Most of the livestock operators are dependent upon grazing leases of Federal land to supplement grazing from their private holdings.

The rangeland in this survey Area receives from 7 inches to more than 18 inches of precipitation annually. This alone is responsible for a considerable variation in the soils and vegetation. There are areas of Rock outcrop within the Area that support little, if any, vegetation.

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

Each map unit in the section "Detailed Soil Map Units" lists the major grasses, grasslike plants, forbs, and shrubs that make up the potential natural plant community. The name of the range site is also given for each soil.

Table 5 shows, for each soil, the range site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. Only those soils that are used as rangeland or are suited to use as rangeland are listed. An explanation of the column headings in table 5 follows.

A *range site* is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from natural plant communities on other range sites in kind, amount, and proportion of range plants. The relationship between soils and vegetation was ascertained during this survey; thus, range sites generally can be determined directly from the soil map. Soil properties that

affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table are also important.

Total production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year growing conditions are about average. In an unfavorable year growing conditions are well below average, generally caused by low available soil moisture.

Dry weight is the total annual yield per acre of air-dry vegetation. Yields are adjusted to a common percent of air-dry moisture content. The relationship of green weight to air-dry weight varies according to such factors as exposure, amount of shade, recent rains, and unseasonable dry periods.

Characteristic vegetation—the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil—is listed by common name. Under *composition*, the expected percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Range management requires a knowledge of the kinds of soils and the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only.

The 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, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

The basic soil and plant resources can best be maintained or improved through management. Among the important range management practices on all rangeland in the survey Area are proper grazing use and planned grazing systems. This includes deferred grazing and proper season of use in combination with good distribution of grazing. Distribution of grazing can be accomplished with proper placement of watering facilities combined with fencing where needed. The suitability of range improvement practices such as brush management, range seeding, and livestock water pipelines depends on the characteristics of a given site.

Windbreaks and Environmental Plantings

Richard Rintamaki, State Biologist, Natural Resources Conservation Service, Casper, Wyoming, contributed to this section.

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soils and on snow management objectives. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings, reduce building heating and cooling costs, and reduce noise. Tree and shrub plantings can also reduce wave action on ponds and harvest snow for stock water, wildlife water and irrigation water. The plants, which usually include evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Tables 6a, 6b, and 6c show the height that selected adaptable trees and shrubs are expected to reach, given adequate care, in 20 years for each represented soil group and planting zone. The windbreak suitability group and planting zone for each soil is given in the description of each map unit in the section "Detailed Soil Map Units." Definitions of the soil groups are given in this section. This information can be used as a guide in planning windbreaks and other tree and shrub plantings. The soil groups are defined as follows:

Group 1—Soils in this group are loamy, have less than 35 percent clay content, and are subject to frequent flooding (run-in) or a seasonal water table. The upper 12 inches lack free carbonates, have a pH of less than 7.8, and are nonsaline. Soils in this group are suited to farmstead, feedlot, and field windbreaks. Spring planting

may be delayed for a short period because of soil wetness. Competition from weeds and grass is a primary concern in establishment of trees and shrubs.

Group 1K—Soils in this group are loamy, have less than 35 percent clay content, and are subject to frequent flooding (run-in) or a seasonal high water table. In the upper 12 inches, they have free carbonates, a pH of 7.8 to 9.0, or have an electrical conductivity (EC) of less than 4 mmhos/cm. Soils in this group are suited to farmstead, feedlot, and field windbreaks. Spring planting may be delayed for a short period because of soil wetness. Competition from weeds and grass is a primary concern in establishment of trees and shrubs. Free carbonates, high pH, and a slight EC affect the selection and growth of species.

Group 3—Soils in this group are loamy with less than 35 percent clay content or clayey with a loamy surface mantle greater than 20 inches thick. They are moderately well drained or well drained. Available water capacity (AWC) is high. In the upper 12 inches, they lack free carbonates, have a pH of less than 7.8, and are nonsaline. Soils in this group are well suited to farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a principal concern in the establishment of trees and shrubs.

Group 4—Soils in this group are clayey with an 8 to 20 inch loamy surface mantle and are somewhat poorly drained, moderately well drained, or well drained. Soils in this group are suited to farmstead, feedlot, and field windbreaks. The high clay content below the surface mantle affects the selection and growth of tree and shrub species. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs.

Group 4C—Soils in this group have greater than 35 percent clay content throughout after the surface 8 inches is mixed, and are somewhat poorly drained, moderately well drained, or well drained. Soils in this group are suitable for farmstead, feedlot, and field windbreaks. The high clay content affects the selection and growth of trees and shrubs. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs. Because of the high clay content, extra care should be exercised to ensure soil is firmly packed around roots after planting.

Group 5—Soils in this group are loamy with a moderate available water capacity. They are moderately well drained or well drained. In the upper 12 inches, they lack free carbonates, have a pH of less than 7.8, and are nonsaline. Soils in this group are suitable for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a primary concern in establishment and management of trees and shrubs.

Group 5K—Soils in this group are loamy with a moderate available water capacity. They are moderately well drained or well drained. In the upper 12 inches, they have free carbonates, a pH of 7.8 to 9.0, or have an electrical conductivity of less than 4 mmhos/cm. Soils in this group are suitable for farmstead, feedlot, and field windbreaks. Free carbonates and a high pH in the upper 12 inches affect the selection of tree and shrub species. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs.

Group 6G—Soils in this group are loamy-skeletal or sandy-skeletal and moderately well drained to excessively drained. Available water capacity is very low. Soils in this group are suitable for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs. The very low AWC affects the selection and growth of trees and shrubs.

Group 6R—Soils in this group are moderately deep over bedrock. Available water capacity is very low to moderate. Soils in this group are suitable for farmstead, feedlot, and field windbreaks. The very low to moderate AWC affects the selection and growth of tree and shrub species. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs.

Group 7—Soils in this group are deep and sandy throughout. Soils in this group are poorly suited to farmstead, feedlot, and field windbreaks. A low to moderate available water capacity affects the selection, health, and growth of trees and shrubs. Wind erosion at or near the planting site can adversely affect the health and vigor of developing windbreaks. Optimum growth and survival are not expected.

Group 8—Soils in this group are loamy with a high available water capacity. They are moderately well drained or well drained. In the upper 12 inches, they have free carbonates, have a pH of 7.8 to 9.0, or have an EC of less than 4 mmhos/cm. Soils in this group are suitable for farmstead, feedlot, and field windbreaks. Free carbonates and a high pH affect the selection and growth of tree and shrubs. Competition from grass and weeds is a primary concern for establishment and management of trees and shrubs.

Group 9G—Soils in this group are deep with a water table within 5 feet of the surface; some are subject to flooding or ponding. In the upper 12 inches, they have a pH of greater than 7.8 and an EC of 4 to 16 mmhos/cm. Soils in this group are suitable for farmstead, feedlot, and field windbreaks. High pH and low to moderate EC in the upper 12 inches affect the selection and growth of trees and shrubs. Competition from grass and weeds is a

primary concern for establishment and management of trees and shrubs. Spring planting may be delayed for a short period because of soil wetness.

Group 9N—Soils in this group are deep, do not have a water table within 5 feet of the surface, and are not subject to flooding or ponding. In the upper 12 inches, they have a pH of greater than 7.8 and an EC of 4 to 16 mmhos/cm. Soils in this group are suitable for farmstead, feedlot, and field windbreaks. High pH and competition from grass and weeds are primary concerns for establishment and management of trees and shrubs.

Group 10—Soils in this group have one or more characteristics which severely limit planting, survival, or growth of trees and shrubs. Examples include shallow and very shallow soils, soils with a very low available water capacity, poorly drained or very poorly drained soils that are saturated or ponded throughout the growing season, and toxic soils. Soils in this group are usually not recommended for farmstead, feedlot, and field windbreaks. However, onsite investigations may reveal that some tree and shrub plantings can be made with special treatments. The selection of species must be tailored to the soil conditions existing at the altered site.

Adaptability for planting trees and shrubs is based on each plant species' tolerance for the minimum and maximum air temperatures, soil temperatures of an area, and data and observations collected from woody plant material trials and existing windbreaks.

Additional information on planning windbreaks and screens, and planting and caring for trees and shrubs can be obtained from local offices of the Natural Resources Conservation Service, the University of Wyoming Extension Service, or from a commercial nursery.

Wildlife Habitat

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Soils influence wildlife populations primarily through the kinds of habitat they produce. Studies dating back to the 1940's show wildlife productivity is directly related to soil fertility. The abundant populations of wildlife encountered by early settlers and planners were found on the best soils in a given ecological zone. While it is true some species of wildlife can be produced on all lands (soils), it is also generally true that wildlife productivity is a function of the biotic potential of the soils. The quantity and quality of most vegetative wildlife habitat elements will not exceed the capability of the soil resources, unless artificially supplied through intensive management systems.

Most wildlife habitats are created, improved, or maintained by planting suitable and appropriate vegetation, maintaining the existing plant cover, promoting the natural establishment of desired plants, or by combinations of such measures. The behavior of soils can be predicted from knowledge of their properties. The growth habits and characteristics of plants that comprise wildlife habitat are affected by such behavior. From the appraisal of these vegetative habitat elements, the suitability of a site for various kinds of wildlife can be approximated.

The descriptions of the general soil map units include a list of wildlife species known to occur in the particular general soil map unit. Information about big game seasonal habitats was taken from the herd unit maps produced by the Game Division, Wyoming Game and Fish Department.

Information on the soils capability to support irrigated and nonirrigated cultivated crops and native range plants is given in the section "Detailed Soil Map Units." Also provided in this report are the soil-windbreak and forestry interpretations. This information will enable the user with data on wildlife habitat requirements to select sites for wildlife habitat management. The user will also be able to determine the intensity of plant community management needed to produce satisfactory results.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section.

Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, the shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 7 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soils to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soils. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. The depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), the shrink-swell potential, potential for frost action, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 8 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and trench sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 8 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soils through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 8 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and the content of organic matter.

Excessive seepage resulting from rapid permeability in the soils or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. The landfill must be able to bear heavy vehicular traffic. Landfills involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in table 8 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or a cemented pan, a high water table, slope, and flooding affect landfill. Texture, stones and boulders, highly organic layers, soil reaction, and the content of salts and sodium also affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Construction Materials

Table 9 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and the shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. The depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. The depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 9, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soils as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is as much as 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 10 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage and irrigation.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage

potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditch banks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 11.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey Area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 11 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey Area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. These percentages are on a weight basis. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification (ASTM, 1985) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1982).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SC-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments larger than 10 inches in diameter and 3-10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey Area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey Area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 12 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey Area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil Series and Their Morphology."

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence the 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 earth-moving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute the shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

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 the soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

The shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent; and *Very high*, greater than 9 percent.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six

factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control wind erosion are used.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay. These soils are very slightly erodible. Crops can easily be grown if ordinary measures to control wind erosion are used.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils are very slightly erodible. Crops can easily be grown if ordinary measures to control wind erosion are used.
8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 12, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 13 gives estimates of various soil and 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 or excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Table 13 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs, on the average, no more than once in 2 years; and *frequent* that it occurs, on the average, more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period from November through May. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 13 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An *artesian* water table is under hydrostatic head, generally below an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate,* or *high.* It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories(USDA, 1975). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 14 shows the classification of the soils in the survey Area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. In the Henrys Fork Area, the soils were classified into four of these orders. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Mollisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Boroll (*Bor*, meaning cold, plus *oll*, from Mollisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haploborolls (*Hapl*, meaning minimal horizonation, plus *boroll*, the suborder of the Mollisols that has minimal development).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Haploborolls.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, mixed, mesic Typic Haploborolls.

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.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey Area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey Area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual." Many of the technical terms used in the descriptions are defined in "Soil Taxonomy." Unless otherwise indicated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Amsden Series

The Amsden series are very deep, well drained soils on mountain slopes. They formed in colluvium and residuum derived from sedimentary rocks. Elevation is 7,500 to 9,000 feet. The average annual precipitation is 16 to 20 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 50 to 80 days. Slopes are 10 to 20 percent.

These soils are fine-loamy, mixed Argic Cryoborolls.

Typical pedon of Amsden cobbly loam in an area of Recklor-Amsden-Davtone complex, 6 to 40 percent

slopes, 2,200 feet west and 1,400 feet south of northeast corner of sec. 14, T. 3 N., R. 25 E., Daggett County, Utah.

A1—0 to 2 inches; dark reddish brown (5YR 3/3) cobbly loam, dark reddish brown (5YR 3/2) moist; moderate very fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular pores; 10 percent gravel and 10 percent cobbles; mildly alkaline; abrupt wavy boundary.

A2—2 to 5 inches; reddish brown (5YR 4/3) cobbly loam, dark reddish brown (5YR 3/3) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, sticky and slightly plastic; many very fine and fine and common medium and coarse roots; common very fine irregular and tubular pores; 10 percent gravel and 5 percent cobbles; mildly alkaline; clear smooth boundary.

Bt1—5 to 10 inches; reddish brown (5YR 4/3) cobbly clay loam, dark reddish brown (5YR 3/3) moist; moderate medium subangular blocky structure; hard, friable, very sticky and plastic; common very fine to coarse roots; common very fine tubular pores; common distinct clay films on faces of peds; 10 percent gravel and 10 percent cobbles; mildly alkaline; clear smooth boundary.

Bt2—10 to 15 inches; reddish brown (5YR 4/4) cobbly clay loam, reddish brown (5YR 4/4) moist; moderate medium prismatic structure parting to strong very fine subangular blocky; hard, friable, very sticky and plastic; common very fine and fine and few medium and coarse roots; common very fine tubular pores; few faint clay films on faces of peds; 10 percent gravel and 10 percent cobbles; mildly alkaline; clear smooth boundary.

Bt3—15 to 40 inches; reddish brown (5YR 4/4) clay loam, reddish brown (2.5YR 4/4) moist; strong coarse to medium prismatic structure parting to strong fine subangular blocky, hard, firm, very sticky and very plastic; few very fine roots; common very fine tubular pores; many distinct clay films on faces of peds and in pores; 2 percent gravel and 2 percent cobbles; slightly effervescent; 1 percent calcium carbonate equivalent, carbonate is disseminated; mildly alkaline; gradual wavy boundary.

Btk—40 to 60 inches; reddish brown (2.5YR 4/4) clay loam, reddish brown (2.5YR 4/4) moist; moderate coarse prismatic structure parting to moderate medium subangular blocky; hard, firm, very sticky and very plastic; few faint clay films on faces of peds; slightly effervescent; 8 percent calcium carbonate equivalent, carbonate is disseminated and also occurs as threads; mildly alkaline.

The depth to horizons containing calcium carbonate is 15 to 30 inches. The mollic epipedon is 10 to 16 inches thick. The A horizon has hue of 5YR through 10YR. Reaction is neutral or mildly alkaline. The Bt horizon has hue of 5YR or 7.5YR. The content of rock fragments averages 0 to 15 percent and the rock fragments are rounded gravel, cobbles, and a few stones. Reaction is neutral or mildly alkaline. The Btk horizon has hue of 2.5YR or 5YR. Calcium carbonate equivalent ranges from 1 to 14 percent. Reaction is mildly alkaline or moderately alkaline.

Babb Series

The Babb series are very deep, well drained soils on mountain slopes. They formed in colluvium. Elevation is 7,900 to 9,400 feet. The average annual precipitation is 12 to 18 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 50 to 80 days. Slopes are 10 to 35 percent.

These soils are fine-loamy, mixed Typic Cryoborolls.

Typical pedon of Babb loam in an area of Babb-Teeler complex, 5 to 35 percent slopes, 600 feet east and 600 feet south of northwest corner of sec. 32, T. 3 N., R. 18 W., Daggett County, Utah.

A1—0 to 3 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to weak fine granular; slightly hard, friable, sticky and plastic; common very fine roots; few very fine irregular pores; 10 percent gravel; neutral; abrupt smooth boundary.

A2—3 to 12 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; few very fine tubular pores; 10 percent gravel; neutral; clear smooth boundary.

Bw1—12 to 17 inches; light brown (7.5YR 6/4) gravelly loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few very fine tubular pores; 20 percent gravel; neutral; clear smooth boundary.

Bw2—17 to 26 inches; light yellowish brown (10YR 6/4) gravelly loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine irregular pores; 20 percent gravel and 10 percent cobbles; neutral; clear smooth boundary.

Bk—26 to 60 inches; very pale brown (10YR 7/4) gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; 20 percent gravel and 10 percent cobbles; strongly effervescent; 17 percent calcium carbonate

equivalent, carbonate is disseminated and also occurs as coatings on rock fragments; moderately alkaline.

The depth to Bk horizon ranges from 16 to 26 inches. The content of rock fragments in the control section ranges from 15 to 30 percent and is mostly gravel but contains up to 10 percent cobbles in some horizons.

The A horizon has hue of 7.5YR or 10YR. Reaction is neutral or mildly alkaline. The Bw horizon has a neutral or mildly alkaline reaction. Clay content ranges from 18 to 25 percent. The Bk horizon has hue of 7.5YR or 10YR. Calcium carbonate equivalent is 15 to 25 percent. Texture is gravelly loam or gravelly clay loam with 18 to 30 percent clay.

Bitton Series

The Bitton series are very deep, well drained soils on mountain plateaus. They formed in alluvium and residuum derived from sandstone and quartzite. Elevation is 7,300 to 8,200 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 60 to 90 days. Slopes are 5 to 15 percent.

The soils are loamy-skeletal, mixed, Typic Haploborolls.

Typical pedon of Bitton very gravelly loam in an area of Bitton-Tally complex, 5 to 15 percent slopes, 1,700 feet west and 500 feet south of the northeast corner of sec. 35, T. 3 N., R. 23 E., Daggett County, Utah.

A—0 to 4 inches; dark brown (7.5YR 4/2) very gravelly loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine and medium roots; many very fine tubular pores; 40 percent gravel; neutral; clear smooth boundary.

Bw1—4 to 8 inches; dark brown (7.5YR 4/2) very gravelly loam, dark brown (7.5YR 3/2) moist; weak fine and medium blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 35 percent gravel; mildly alkaline; clear wavy boundary.

Bw2—8 to 14 inches; pinkish gray (7.5YR 6/2) very gravelly loam, dark brown (7.5YR 4/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 35 percent gravel; strongly effervescent; moderately alkaline; clear wavy boundary.

Bk—14 to 28 inches; pinkish white (7.5YR 8/2) very gravelly loam, pinkish gray (7.5YR 6/2) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; many very fine tubular pores; 40 percent gravel; violently effervescent; carbonate is disseminated, and also occurs as coatings on underside of gravel; moderately alkaline; gradual wavy boundary.

C—28 to 60 inches; pinkish gray (7.5YR 7/4) very gravelly sandy loam, brown (7.5YR 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; 50 percent gravel; strongly effervescent; strongly alkaline.

The control section contains 35 to 50 percent gravel and 12 to 18 percent clay. The hue is 7.5YR or 10YR.

Blackhall Series

The Blackhall series are very shallow or shallow and well drained soils on plains, breaks and hillslopes. They formed in residuum from sandstone. Elevation is 6,100 to 7,600 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 3 to 50 percent.

These soils are loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents.

Typical pedon of Blackhall fine sandy loam in an area of Blackhall-Kappes-Rentsac complex, 0 to 8 percent slopes, 1,300 feet south and 600 feet west of northeast corner of sec. 20, T. 3 N., R. 19 E., Daggett County, Utah.

A1—0 to 2 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores; strongly effervescent; calcium carbonate is disseminated; mildly alkaline; clear smooth boundary.

A2—2 to 5 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine irregular pores; strongly effervescent; calcium carbonate is disseminated; mildly alkaline; clear smooth boundary.

C—5 to 10 inches; light yellowish brown (10YR 6/4) fine sandy loam, yellowish brown (10YR 5/4) moist; weak medium and coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine irregular pores; strongly effervescent; calcium carbonate is disseminated; mildly alkaline; abrupt wavy boundary.

Cr—10 to 13 inches; platy sandstone that can be dug with a spade.

The depth to the paralithic contact is 6 to 20 inches. Reaction is mildly alkaline or moderately alkaline. The hue is 2.5Y or 10YR. The C horizon has a texture of fine

sandy loam, sandy loam, or channery sandy loam. The content of rock fragments commonly is less than 5 percent, but ranges from 0 to 35 percent.

Blazon Series

The Blazon series are very shallow or shallow and well drained soils on hillslopes, breaks and foot slopes of escarpments. They formed in residuum and colluvium derived from shale. Elevation is 6,100 to 8,400 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 3 to 60 percent.

These soils are loamy, mixed (calcareous) frigid, shallow Ustic Torriorthents.

Typical pedon of Blazon clay loam in an area of Blazon-Delphill complex, 6 to 30 percent slopes, 2,000 feet west and 1,700 feet north of southeast corner of sec. 17, T. 3 N., R. 25 E., Daggett County, Utah.

A—0 to 1 inch; yellowish brown (10YR 5/4) clay loam, dark brown (10YR 4/3) moist; moderate fine granular structure; soft, friable, sticky and plastic; few very fine roots; many very fine irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; abrupt smooth boundary.

Ac—1 to 8 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine irregular and tubular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

C—8 to 12 inches; very pale brown (10YR 7/3) clay loam, light olive brown (2.5Y 5/4) moist; weak very fine angular blocky structure; slightly hard, friable, sticky and very plastic; common very fine and fine roots; few very fine tubular pores; strongly effervescent; moderately alkaline; clear wavy boundary.

Cr—12 inches; shale bedrock.

The depth to bedrock ranges from 4 to 20 inches. The hue is 5Y through 10YR. The C horizon has a texture of the matrix that is loam or clay loam. Rock fragment content is 0 to 35 percent. Reaction is moderately alkaline or strongly alkaline.

Boettcher Series

The Boettcher series are moderately deep, well drained soils on plateaus and dip slopes. They formed in residuum and alluvium derived from shale. Elevation is 6,400 to 6,900 feet. The average annual precipitation is 12 to 14 inches, the average annual air temperature is 40 to 44 degrees F, and the frost-free period is 60 to 90 days. Slopes are 2 to 6 percent.

These soils are fine, montmorillonitic Borollic Haplargids.

Typical pedon of Boettcher fine sandy loam in an area of Middlewood-Boettcher complex, 2 to 10 percent slopes, 1,500 feet east and 2,200 feet north of the southwest corner of sec. 28, T. 3 N., R. 22 E., Daggett County, Utah.

A—0 to 3 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; weak medium platy structure parting to moderate very fine granular; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine irregular pores; mildly alkaline; clear smooth boundary.

Bt—3 to 14 inches; dark yellowish brown (10YR 4/4) clay, dark yellowish brown (10YR 3/4) moist; moderate to strong medium prismatic structure parting to strong very fine and fine subangular blocky; hard, friable, very sticky and plastic; common very fine roots; common very fine tubular pores; many distinct clay films on faces of peds; mildly alkaline; clear smooth boundary.

Btk—14 to 18 inches; brown (10YR 5/3) clay, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, friable, very sticky and plastic; few very fine roots; common very fine tubular pores; few faint clay films on faces of peds; slightly effervescent; carbonate is disseminated; moderately alkaline; gradual smooth boundary.

Bk1—18 to 30 inches; light brownish gray (2.5Y 6/2) clay loam, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, friable, very sticky and plastic; few roots; strongly effervescent; 9 percent calcium carbonate equivalent, carbonate is disseminated; moderately alkaline; clear wavy boundary.

Bk2—30 to 35 inches; light brownish gray (2.5Y 6/2) very channery clay loam, dark grayish brown (2.5Y 4/2) moist; massive and plate-like and block-like rock structure; slightly hard, friable, very sticky and plastic; 40 percent channers; strongly effervescent; 12 percent calcium carbonate equivalent, carbonate is disseminated and also occurs as coatings on shale fragments; moderately alkaline; gradual smooth boundary.

Cr—35 inches; shale bedrock.

The depth to bedrock ranges from 20 to 40 inches. The Bt and Btk horizons have hues of 10YR or 7.5YR. Texture is clay loam or clay with clay ranging from 35 to 50 percent. The Bk horizon has hue of 2.5Y or 5Y.

Bookcliff Series

The Bookcliff series are very deep, well drained soils on mountain slopes. They formed in colluvium derived from conglomerate and shale. Elevation is 8,000 to 8,900 feet. The average annual precipitation is 15 to 19 inches, the average annual air temperature is 36 to 42 degrees F, and the frost-free period is 50 to 80 days. Slopes are 10 to 25 percent.

These soils are fine-loamy, mixed Typic Argiborolls.

Typical pedon of Bookcliff gravelly sandy loam in an area of Bookcliff-Lail-Rabbitex complex, 10 to 25 percent slopes, center of sec. 34, T. 13 N., R. 114 W., Uinta County, Wyoming.

A1—0 to 5 inches; dark reddish gray (5YR 4/2) gravelly sandy loam, dark reddish brown (5YR 3/2) moist; moderate very fine granular structure; soft, friable, sticky and plastic; many very fine and fine roots; many very fine and fine irregular pores; 20 percent gravel and 5 percent cobbles; neutral; abrupt wavy boundary.

Bt1—5 to 11 inches; dark reddish gray (5YR 4/2) gravelly sandy clay loam, dark reddish brown (5YR 3/2) moist; weak coarse subangular blocky structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common very fine and fine and few coarse roots; many very fine and fine irregular and few tubular pores; few faint clay films on faces of peds; 15 percent gravel and 5 percent cobbles; neutral; clear wavy boundary.

Bt2—11 to 18 inches; reddish brown (5YR 4/3) gravelly sandy clay loam, reddish brown (5YR 4/3) moist; moderate coarse subangular blocky structure parting to moderate medium and fine subangular blocky; hard, friable, sticky and plastic; common very fine and fine and few coarse roots; many very fine and fine tubular and few fine irregular pores; many distinct clay films on faces of peds; 15 percent gravel and 5 percent cobbles; mildly alkaline; clear wavy boundary.

Bk1—18 to 25 inches; reddish brown (5YR 5/3) gravelly sandy loam, reddish brown (5YR 4/3) moist; moderate medium subangular blocky structure; very hard, friable, sticky and plastic; few very fine and fine roots; many very fine tubular pores; 20 percent gravel; strongly effervescent; 8 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as coatings on gravel; moderately alkaline; gradual wavy boundary.

Bk2—25 to 60 inches; reddish brown (5YR 5/3) gravelly sandy loam, reddish brown (5YR 4/3) moist; massive; very hard, friable, sticky and plastic; few very fine and fine roots; few very fine tubular pores; 20 percent gravel and 5 percent cobbles; strongly effervescent; 9 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as coatings on gravel and in root channels; moderately alkaline.

The depth to horizons containing calcium carbonate ranges from 15 to 35 inches. The content of gravel and cobbles ranges from 5 to 35 percent. The A horizon has hue of 5YR or 7.5YR. Reaction is neutral or mildly alkaline. The Bt horizons have a texture of the matrix that is sandy clay loam or clay loam with 20 to 30 percent clay. Reaction is neutral or mildly alkaline. The Bk horizons have hue of 5YR or 7.5YR. The texture of the matrix is sandy loam or sandy clay loam with 15 to 30 percent clay. Reaction is mildly alkaline or moderately alkaline. Calcium carbonate equivalent ranges from 5 to 15 percent.

Borofibrists Soils

The Borofibrists soils are very deep, very poorly drained and are on flood plains. They formed in alluvium overlain by peat and muck. Elevation is 7,200 to 8,300 feet. The average annual precipitation is 10 to 16 inches. The average annual air temperature is 38 to 43 degrees F, and the frost-free period is 30 to 60 days. Slopes are 0 to 2 percent.

Typical pedon of Borofibrists in an area of Cryofluvents-Borofibrists complex, 0 to 2 percent slopes, 1,300 feet east and 1,000 feet south of the northwest corner of sec. 19, T. 12 N., R. 111 W., Sweetwater County, Wyoming.

Oi—0 to 16 inches; very dark grayish brown fibrous peat composed of dead roots.

Oe—16 to 22 inches; very dark grayish brown (10YR 3/2) muck composed of partly decomposed roots and leaves.

2C—22 to 37 inches; light gray (5Y 7/2) loam, light gray (5Y 7/2) moist; many faint dark olive gray mottles; massive; hard, friable, sticky and plastic; few very fine roots; slightly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

3C—37 to 60 inches; light grayish brown (2.5Y 6/2) very cobbly loamy sand, grayish brown (2.5Y 5/2) moist; single grain; loose, nonsticky and nonplastic; 25 percent gravel and 30 percent cobbles; mildly alkaline.

The water table commonly is at the surface but may be at a depth of 1 foot during the late summer. The surface is hummocky, with hummocks 6 to 12 inches high. The O horizon ranges from 16 to 24 inches thick. The 2C horizon is 6 to 30 inches thick. The 3C horizon has a content of stream-rounded gravel, cobbles, and stones that ranges from 35 to 70 percent. The texture of the matrix is sand, loamy sand or sandy loam.

Brownsto Series

The Brownsto series are very deep, well drained soils on alluvial fan terraces, terrace escarpments, mountain slopes and toe slopes. They formed in alluvium. Elevation is 6,400 to 8,800 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 0 to 60 percent.

These soils are loamy-skeletal, mixed Borollic Calciorthids.

Typical pedon of Brownsto gravelly sandy loam, 0 to 3 percent slopes, 2,450 feet south and 2,500 feet west of the northeast corner of sec. 5, T. 12 N., R. 111 W., Sweetwater County, Wyoming.

A—0 to 2 inches; grayish brown (10YR 5/2) gravelly sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores; 30 percent gravel; slightly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

BA—2 to 9 inches; grayish brown (10YR 5/2) gravelly sandy loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate fine granular; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores; 30 percent gravel; slightly effervescent; carbonate is disseminated; mildly alkaline; clear wavy boundary.

Bk1—9 to 32 inches; pinkish gray (7.5YR 6/2) very cobbly sandy loam, brown (7.5YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common fine irregular pores; 30 percent gravel, 20 percent cobbles, and 5 percent stones; violently effervescent; 33 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as thick coatings on the underside of rock fragments; moderately alkaline; clear wavy boundary.

Bk2—32 to 60 inches; light brown (7.5YR 6/4) very cobbly sandy loam, brown (7.5YR 4/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few roots; 30 percent gravel, 20 percent cobbles and 5 percent stones; violently effervescent; carbonate is disseminated, and also occurs as few thin coatings on the underside of rock fragments; silica pendants on the underside of rock fragments; moderately alkaline.

The depth to the Bk horizon ranges from 5 to 15 inches. The hue is 7.5YR or 10YR. The A horizon has hue of 7.5YR or 10YR. The Bk horizon has a texture of the matrix that is sandy loam or sandy clay loam, with layers of loamy sand occurring in some pedons below a depth of 40 inches. The content of gravel and cobbles ranges from 35 to 70 percent. Channers and flagstones are present in some pedons when the soils are on mountain slopes. Reaction is moderately alkaline or strongly alkaline.

Bunkwater Series

The Bunkwater series are very deep, well drained soils on alluvial fans. They formed in alluvium from red sandstone and quartzite. Elevation is 5,400 to 6,000 feet. The average annual precipitation is 9 to 12 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Slopes are 1 to 3 percent.

The soils are fine-loamy, mixed, mesic Ustollic Natrargids.

Typical pedon of Bunkwater fine sandy loam in an area of Yarts-Bunkwater complex, 1 to 6 percent slopes, 1,200 feet east and 100 feet south of the northwest corner of sec. 14, T. 2 N., R. 24 E., Daggett County, Utah.

A—0 to 5 inches; light reddish brown (5YR 6/3) very fine sandy loam, reddish brown (5YR 4/3) moist; moderate thick and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine irregular and tubular pores; strongly effervescent; 8 percent calcium carbonate equivalent, carbonate is disseminated; strongly alkaline; abrupt smooth boundary.

Btn1—5 to 11 inches; reddish brown (5YR 5/4) sandy clay loam, reddish brown (5YR 4/4) moist; moderate coarse columnar structure; very hard, friable, sticky and plastic; common very fine and fine and few medium and coarse roots; common very fine and fine tubular pores; strongly effervescent; 8 percent calcium carbonate equivalent, carbonate is disseminated; very strongly alkaline; clear smooth boundary.

Btn2—11 to 18 inches; reddish brown (5YR 5/4) sandy clay loam, reddish brown (2.5YR 4/4) moist; moderate coarse prismatic structure; hard, friable, sticky and plastic; common very fine and fine and few medium and coarse roots; few very fine and fine tubular pores; strongly effervescent; 10 percent calcium carbonate equivalent, carbonate is disseminated; very strongly alkaline; clear smooth boundary.

C1—18 to 36 inches; reddish brown (5YR 5/4) loam, reddish brown (2.5YR 4/4) moist; massive; soft, friable, sticky and plastic; few very fine and fine roots; strongly effervescent; 10 percent calcium carbonate

equivalent, carbonate is disseminated; moderately alkaline; gradual smooth boundary.
C2—36 to 60 inches; reddish brown (5YR 5/4) sandy loam, dark red (2.5YR 3/6) moist; massive; soft, very friable, slightly sticky and slightly plastic; strongly effervescent; carbonate is disseminated; moderately alkaline.

A leaf litter, 1/2 inch deep, is common under most greasewood clumps. The depth to the base of the Btn is 18 to 28 inches. The content of gravel commonly is less than 5 percent but may range from 0 to 15 percent.

The A horizon has a moderately alkaline through very strongly alkaline reaction. The Btn has hue of 2.5YR or 5YR. Texture is clay loam or sandy clay loam with more than 35 percent fine or coarser sand. The C horizon has hue of 2.5YR or 5YR. Texture is loam, clay loam, sandy loam or fine sandy loam. Minor lenses, about 1 inch thick, of very gravelly sandy loam or very gravelly sandy clay loam occur intermittently in some pedons.

Chittum Series

The Chittum series are shallow, well drained soils on mountain slopes and plateaus. They formed in residuum and colluvium derived from quartzite and sandstone. Elevation is 7,500 to 8,700 feet. The average annual precipitation is 16 to 20 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 30 to 60 days. Slopes are 2 to 30 percent.

These soils are loamy, mixed Argic Lithic Cryoborolls.

Typical pedon of Chittum loam in an area of Lotex sandy loam-Chittum-Lotex stony loam complex, 0 to 6 percent slopes, 600 feet south of northeast corner of sec. 3, T. 2 N., R. 25 E., Daggett County, Utah.

A1—0 to 2 inches; dark reddish brown (5YR 3/3) loam, dark reddish brown (5YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores; neutral; clear smooth boundary.
A2—2 to 8 inches; dark reddish brown (5YR 3/3) loam, dark reddish brown (5YR 3/2) moist; weak medium subangular blocky structure parting to moderate medium granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores; neutral; clear smooth boundary.
Bt—8 to 15 inches; dark reddish brown (5YR 3/3) loam, dark reddish brown (5YR 3/2) moist; moderate medium prismatic structure parting to weak medium and fine subangular blocky, with common thin clay films on faces of peds; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; neutral; abrupt wavy boundary.
R—15 inches; hard quartzite.

The depth to bedrock is 10 to 20 inches. The content of rock fragments ranges from 0 to 35 percent. The Bt horizon has a texture of loam or gravelly loam with 18 to 27 percent clay.

Chroder Series

The Chroder series are very deep, well drained soils on piedmont slopes. They formed in alluvium and eolian material derived dominantly from sandstone. Elevation is 5,600 to 6,000 feet. Average annual precipitation is 7 to 9 inches; the mean annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Slopes are 0 to 5 percent.

These soils are coarse-loamy, mixed, mesic Typic Calciorthids.

Typical pedon of Chroder fine sandy loam, 0 to 5 percent slopes, 1,000 feet west and 1,300 feet north of the southeast corner of sec. 35, T. 2 N., R. 25 E., Daggett County, Utah.

A—0 to 5 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; slightly effervescent; moderately alkaline; abrupt smooth boundary.
BA—5 to 11 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine vesicular pores; strongly effervescent; moderately alkaline; clear smooth boundary.
Bk1—11 to 23 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common very fine roots; few very fine vesicular pores; strongly effervescent; moderately alkaline; clear smooth boundary.
Bk2—23 to 33 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 10 percent gravel; strongly effervescent; calcium carbonate is disseminated and also occurs as common threads; moderately alkaline; abrupt smooth boundary.
C—33 to 60 inches; very pale brown (10YR 7/3) sandy loam, pale brown (10YR 6/3) moist massive; slightly

hard, friable, nonsticky and nonplastic; 10 to 15 percent gravel; strongly effervescent; calcium carbonate is disseminated and also occurs as common threads; moderately alkaline.

The A horizon has hue of 10YR or 7.5YR. The Bk and C horizons have hue of 10YR or 7.5YR. Gravel content is 0 to 15 percent.

Condie Series

The Condie series are very deep, well drained soils on mountain slopes. They formed in colluvium derived from quartzite and sandstone. Elevation is 8,300 to 9,500 feet. Average annual precipitation is 18 to 22 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 50 to 80 days. Slopes are 6 to 50 percent.

These soils are loamy-skeletal, mixed Mollic Cryoboralfs.

Typical pedon of Condie gravelly loam in an area of Condie gravelly loam, 6 to 50 percent slopes, 2,700 feet north and 400 feet west of southeast corner of sec. 15, T. 3 N., R. 25 E., Daggett County, Utah.

0i—1 inch to 0; leaves, twigs, and partially decomposed organic matter.

A—0 to 9 inches; reddish brown (5YR 4/3) gravelly loam, dark reddish brown (5YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine to coarse roots; common very fine irregular pores; 15 percent gravel; slightly acid; abrupt wavy boundary.

E1—9 to 19 inches; light brown (7.5YR 6/4) gravelly sandy loam, brown (7.5YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine to medium roots; common very fine tubular pores; 20 percent gravel and 10 percent cobbles; slightly acid; clear smooth boundary.

E2—19 to 37 inches; light reddish brown (5YR 6/4) very gravelly sandy loam, reddish brown (5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine tubular pores; 30 percent gravel and 20 percent cobbles; neutral; clear wavy boundary.

Bt—37 to 60 inches; reddish brown (5YR 4/4) very cobbly sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; many distinct clay films on faces of peds; 20 percent gravel, 20 percent cobbles, and 5 percent stones; neutral.

Reaction is slightly acid or neutral. The A horizon has hue of 5YR through 10YR. The E horizon has hue of 5YR or 7.5YR. The texture of the matrix is loam or sandy loam. The content of gravel and cobbles is 15 to 50 percent. The Bt horizon has a matrix texture of sandy clay loam or clay loam with a clay content of 20 to 35 percent. The content of gravel, cobbles, and stones ranges from 35 to 50 percent.

Cowestglen Series

The Cowestglen series are very deep, moderately well drained soils on flood plains, low terraces and alluvial fans. They formed in alluvium. Elevation is 6,000 to 7,300 feet. The average annual precipitation is 9 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 0 to 2 percent.

These soils are coarse-loamy, mixed (calcareous), frigid Ustic Torrifluvents.

Typical pedon of Cowestglen fine sandy loam, 0 to 2 percent slopes, 2,600 feet east and 2,300 feet north of the southwest corner of sec. 11, T. 12 N., R. 112 W., Sweetwater County, Wyoming.

A1—0 to 2 inches; grayish brown (2.5Y 5/2) fine sandy loam, dark grayish brown (2.5Y 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; many very fine and fine irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

A2—2 to 8 inches; grayish brown (2.5Y 5/2) fine sandy loam, dark grayish brown (2.5Y 4/2) moist; weak coarse subangular blocky structure parting to medium subangular blocky; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine irregular and tubular pores; strongly effervescent; carbonate is disseminated; moderately alkaline, clear wavy boundary.

C1—8 to 42 inches; light brownish gray (2.5Y 6/2) fine sandy loam stratified with a few 1/4 to 1/2 inch loamy sand lenses, olive brown (2.5Y 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; slightly effervescent; carbonate is disseminated; moderately alkaline; clear wavy boundary.

2C—42 to 60 inches; light brownish gray (2.5Y 6/2) gravelly sandy loam, dark grayish brown (2.5Y 4/2) moist; common yellowish brown (10YR 5/6) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; few roots; slightly effervescent; carbonate is disseminated; moderately alkaline.

The control section is stratified with textures of fine sandy loam, loam, loamy fine sand or sand with 0 to 15 percent gravel. Some pedons have very gravelly loamy sand strata below a depth of 40 inches. Black highly organic lenses occur in the C horizon of some pedons. The hue is 2.5Y or 10YR. Reaction is mildly alkaline or moderately alkaline. A water table fluctuates within a depth of 3 to 5 feet during the spring. Some pedons have a 1-inch-thick organic mat on surface.

Coyet Series

The Coyet series are very deep, somewhat excessively drained soils on alluvial fans and foot slopes. They formed in alluvium derived from sandstone. Elevation is 6,000 to 7,300 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 3 to 20 percent.

These soils are mixed, frigid Ustic Torripsamments.

Typical pedon of Coyet loamy fine sand, 3 to 6 percent slopes, 600 feet west and 2,600 feet south of the northeast corner of sec. 28, T. 3 N., R. 20 E., Daggett County, Utah.

A1—0 to 1 inch; brown (10YR 5/3) loamy fine sand, dark brown (10YR 3/3) moist; weak coarse platy structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine vesicular pores; slightly effervescent; carbonate is disseminated; mildly alkaline; abrupt smooth boundary.

A2—1 to 4 inches; brown (10YR 5/3) loamy fine sand, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine vesicular and few very fine tubular pores; slightly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

C—4 to 60 inches; yellowish brown (10YR 5/4) loamy fine sand, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; strongly effervescent; carbonate is disseminated; mildly alkaline.

The soils commonly are effervescent to the surface, but may be noneffervescent to a depth of 2 inches in some pedons. The C horizon has hue of 10YR or 7.5YR. Texture is loamy fine sand or loamy sand.

Cryofluvents

The Cryofluvents soils are very deep, somewhat poorly drained and are on flood plains. They formed in alluvium. Elevation is 7,200 to 7,500 feet. The average annual precipitation is 10 to 16 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 30 to 60 days. Slopes are 0 to 2 percent.

Typical pedon of Cryofluvents in an area of Cryofluvents-Borofibrists complex, 0 to 2 percent slopes, 2,500 feet south and 900 feet east of the northwest corner of sec. 19, T. 12 N., R. 111 W., Sweetwater County, Wyoming.

A—0 to 5 inches; light brownish gray (2.5YR 6/2) loam, dark grayish brown (2.5YR 4/2) moist; weak medium platy structure parting to weak medium and fine granular; soft, friable, sticky and plastic; many very fine and fine roots; many very fine irregular pores; strongly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

AC—5 to 18 inches; light brownish gray (2.5YR 6/2) loam, dark grayish brown (2.5YR 4/2) moist; weak medium to fine subangular blocky structure; soft, friable, sticky and plastic; common very fine and fine roots; few very fine tubular pores; strongly effervescent; carbonate is disseminated; mildly alkaline; clear wavy boundary.

2C—18 to 60 inches; brown (10YR 5/3) very cobbly sandy loam, grayish brown (2.5YR 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; 15 percent gravel and 25 percent cobbles; strongly effervescent; mildly alkaline.

The depth to the 2C horizon ranges from 6 to 30 inches. A seasonal water table is at a depth of 2 to 3 feet. The surface is hummocky in most areas. The 2C horizon has a rock fragment content of 35 to 60 percent. The rock fragments are mainly stream-rounded gravel, cobbles, and stones. The matrix texture is sandy loam or loamy sand.

Dahlquist Series

The Dahlquist series are very deep, well drained soils on fan terraces. They formed in alluvium with a high content of rock fragments. Elevation is 7,500 to 8,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 42 degrees F, and the frost-free period is 50 to 90 days. Slopes are 1 to 3 percent.

These soils are loamy-skeletal, mixed Borollic Haplargids.

Typical pedon of Dahlquist very cobbly sandy loam, 1 to 3 percent slopes, 1,500 feet south and 1,400 feet west of the northeast corner of sec. 12, T. 12 N., R. 114 W., Uinta County, Wyoming.

A—0 to 2 inches; brown (7.5YR 5/4) very cobbly sandy loam, dark brown (7.5YR 3/4) moist; weak coarse platy structure parting to weak fine granular; soft,

very friable, slightly sticky and slightly plastic; few very fine roots; many very fine irregular pores; 20 percent gravel and 20 percent cobbles; neutral; abrupt smooth boundary.

Bt—2 to 17 inches; reddish brown (5YR 4/3) very cobbly clay loam, dark reddish brown (5YR 3/4) moist; moderate coarse subangular blocky structure parting to moderate fine subangular blocky; hard, friable, very sticky and plastic; common very fine and fine roots; many fine irregular and common very fine and fine tubular pores; few distinct clay films on faces of peds; 20 percent gravel and 20 percent cobbles; neutral; clear smooth boundary.

Bk1—17 to 24 inches; reddish brown (5YR 5/3) very cobbly sandy loam, reddish brown (5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; 35 percent gravel, 20 percent cobbles, and 5 percent stones; slightly effervescent; 10 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as crusts on the undersides of rock fragments; moderately alkaline; gradual boundary.

Bk2—24 to 60 inches; reddish brown (5YR 4/3) very cobbly sandy loam, reddish brown (5YR 4/4) moist; massive; loose, very friable, slightly sticky and nonplastic; 25 percent gravel, 25 percent cobbles, and 10 percent stones; slightly effervescent; 6 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as few thin coatings on rock fragments; moderately alkaline.

The depth to horizons containing calcium carbonate is 10 to 18 inches. The A horizon has hue of 5YR through 10YR. Reaction is neutral or mildly alkaline. The Bt horizon has hue of 5YR or 7.5YR. The texture of the matrix is clay loam or sandy clay loam. The content of stream-rounded gravel, cobbles, and stones is 35 to 60 percent. Reaction is neutral or mildly alkaline. The Bk horizons have a hue of 5YR or 7.5YR. The texture of the matrix is sandy loam or loamy sand. The content of stream-rounded gravel, cobbles, and stones ranges from 35 to 65 percent.

Davtone Series

The Davtone series are very deep, well drained soils on mountain foot slopes and in draws and ravines. They formed in alluvium and colluvium from granite and sedimentary rocks. Elevation is 7,400 to 9,000 feet. The average annual precipitation is 14 to 20 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 50 to 80 days. Slopes are 10 to 25 percent.

These soils are fine-loamy, mixed Argic Pachic Cryoborolls.

Typical pedon of Davtone loam in an area of Rogert-Parkay Family-Davtone complex, 10 to 55 percent slopes, 2,300 feet north and 1,300 feet west of southeast corner of sec. 27, T. 3 N., R. 25 E., Daggett County, Utah.

0i—1/2 inch to 0; leaf litter.

A—0 to 6 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak moderate very fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine irregular pores; 5 percent gravel and 5 percent cobbles; mildly alkaline; clear smooth boundary.

Bt1—6 to 20 inches; dark brown (7.5YR 4/2) loam, dark brown (7.5YR 3/2) moist; moderate coarse subangular blocky structure parting to moderate fine subangular blocky; soft, friable, sticky and plastic; common very fine, fine, medium, and coarse roots; many very fine tubular and irregular pores; few distinct clay films on faces of peds; 5 percent gravel and 5 percent cobbles; mildly alkaline; clear wavy boundary.

Bt2—20 to 45 inches; reddish brown (5YR 5/3) clay loam, reddish brown (5YR 4/3) moist; moderate coarse subangular blocky structure parting to moderate very fine and fine subangular blocky; slightly hard, friable, sticky and very plastic; few very fine to coarse roots; common very fine tubular pores; many prominent clay films on faces of peds; 5 percent gravel and 5 percent cobbles; mildly alkaline; gradual wavy boundary.

BC—45 to 60 inches; reddish brown (5YR 5/3) gravelly loam, reddish brown (5YR 4/3) moist; weak fine and medium subangular blocky structure; soft, friable, slightly sticky and plastic; few roots; few very fine tubular pores; 15 percent gravel and cobbles; mildly alkaline.

Thickness of the mollic epipedon is 16 to 30 inches. The content of rock fragments commonly is less than 15 percent, but ranges from 5 to 35 percent. The A horizon has hue of 5YR through 10YR. The Bt horizon has hue of 5YR or 7.5YR. The texture of the Bt1 horizon is loam or clay loam. The C horizon has a texture of loam, gravelly loam, sandy clay loam, or gravelly clay loam.

Delphill Series

The Delphill series are moderately deep, well drained soils on hills. They formed in residuum and alluvium derived from shale. Elevation is 6,200 to 8,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 45 degrees F,

and the frost-free period is 60 to 90 days. Slopes are 3 to 30 percent.

The soils are fine-loamy, mixed (calcareous), frigid Ustic Torriorthents.

Typical pedon of Delphill loam in an area of Blazon-Delphill complex, 6 to 30 percent slopes, 2,000 feet east and 2,300 feet north of the southwest corner of sec. 24, T. 3 N., R. 22 E., Daggett County, Utah.

A—0 to 2 inches; light olive brown (2.5Y 5/4) loam, olive brown (2.5Y 4/4) moist; moderate very fine granular structure with a 1/2 inch crust on surface; slightly hard, friable, sticky and slightly plastic; few very fine roots; many very fine irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

Bw—2 to 5 inches; light olive brown (2.5Y 5/4) loam, olive brown (2.5Y 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine to medium and few coarse roots; common very fine tubular pores; few cicada burrows; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

C1—5 to 20 inches; light yellowish brown (2.5Y 6/4) loam, olive brown (2.5Y 4/4) moist; massive; soft, friable, sticky and slightly plastic; common very fine tubular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; gradual smooth boundary.

C2—20 to 39 inches; light yellowish brown (2.5Y 6/4) loam, olive brown (2.5Y 4/4) moist; massive; soft, friable, sticky and slightly plastic, few very fine roots; common very fine irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear wavy boundary.

Cr—39 inches soft shale.

The depth to shale ranges from 20 to 40 inches. Reaction is moderately alkaline or strongly alkaline. The hue is 5Y through 10YR. The B and C horizons have a texture of loam, clay loam, or silty clay loam with 18 to 35 percent clay. The horizon contains 0 to 15 percent channers.

Dollard Series

The Dollard series are moderately deep, well drained soils on hills. They formed in residuum and colluvium derived from shale. Elevation is 6,100 to 7,500 feet. The average annual precipitation is about 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 3 to 25 percent.

These soils are fine, montmorillonitic (calcareous), frigid Ustic Torriorthents.

Typical pedon of Dollard silty clay in an area of Dollard-Moyerson complex, 6 to 25 percent slopes, 2,100 feet north and 1,100 feet west of the southeast corner of sec. 23, T. 3 N., R. 20 E., Daggett County, Utah.

A1—0 to 1 inch; light yellowish brown (2.5Y 6/4) silty clay, olive brown (2.5Y 4/4) moist; moderate very fine granular structure; soft, friable, very sticky and very plastic; few very fine roots; many very fine irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; abrupt smooth boundary.

A2—1 to 6 inches; light yellowish brown (2.5Y 6/4) silty clay, olive brown (2.5Y 4/4) moist; weak coarse subangular blocky structure parting to weak very fine subangular blocky; soft, friable, very sticky and very plastic; common very fine roots; many very fine irregular and tubular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

Bk—6 to 20 inches; light yellowish brown (2.5Y 6/4) silty clay, olive brown (2.5Y 4/4) moist; massive; hard, friable, very sticky and very plastic; few very fine, fine, and medium roots; common very fine tubular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear wavy boundary.

Bky—20 to 28 inches; variegated light yellowish brown (2.5Y 6/4) and olive (5Y 4/3) silty clay, olive brown (2.5Y 4/4) and olive (5Y 4/3) moist; massive; hard, friable, very sticky and very plastic; few very fine, fine, and medium roots; strongly effervescent; carbonate is disseminated; many 1/8 to 1/4 inch diameter masses of gypsum; moderately alkaline; clear smooth boundary.

Cr—28 inches; shale bedrock.

The depth to shale ranges from 20 to 40 inches. The hue is 5Y through 10YR. The A horizon in some pedons has up to 20 percent angular gravel on the surface and 5 percent gravel in the horizon, but most pedons have about 1 percent gravel. The Bk horizon has a texture of silty clay, clay loam, or clay with clay content ranging from 35 to 50 percent. Electrical conductivity ranges from 4 to 16 mmhos/cm.

Evanston Series

The Evanston series are very deep, well drained soils on hills. They formed in alluvium and colluvium. Elevation is 7,000 to 8,200 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38

to 42 degrees F, and the frost-free period is 60 to 90 days. Slopes are 3 to 15 percent.

These soils are fine-loamy, mixed Aridic Argiborolls.

Typical pedon of Evanston loam in an area of Luhon-Evanston complex, 3 to 30 percent slopes, 200 feet north and 2,200 feet east of southwest corner of sec. 17, T. 3 N., R. 17 E., Summit County, Utah.

A—0 to 3 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine irregular pores; 10 percent gravel; neutral; abrupt smooth boundary.

Bt1—3 to 10 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium and fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; few very fine irregular pores; 10 percent gravel; neutral; clear smooth boundary.

Bt2—10 to 15 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; few very fine tubular pores; common distinct clay films on faces of peds; 10 percent gravel; slightly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

Bk1—15 to 25 inches; light yellowish brown (10YR 6/4) gravelly loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine irregular pores; 15 percent gravel; strongly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

Bk2—25 to 42 inches; pink (7.5YR 7/4) gravelly loam, brown (7.5YR 5/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine irregular pores; 20 percent gravel; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

Bk3—42 to 60 inches; pink (7.5YR 7/4) gravelly loam, brown (7.5YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; 20 percent gravel; strongly effervescent; carbonate is disseminated; moderately alkaline.

The depth to horizons containing calcium carbonates ranges from 10 to 18 inches. Rock fragment content ranges from 0 to 10 percent in the A and Bt horizons, and 0 to 20 percent in the Bk horizons. The hue is 7.5YR or 10YR. The A horizon has a reaction of neutral or mildly alkaline. The Bk horizons have mildly alkaline or moderately alkaline reactions.

Eyre Family

The Eyre Family soils are shallow, well drained and are on mountain slopes. They formed in residuum derived from quartzite and sandstone. Elevation is 7,500 to 8,500 feet. The average annual precipitation is 16 to 20 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 30 to 60 days. Slopes are 20 to 50 percent.

These soils are loamy-skeletal, mixed Lithic Cryoborolls.

Typical pedon of Eyre Family cobbly sandy loam in an area Eyre-Handran Families complex, 20 to 65 percent slopes, 2,000 feet west and 1,500 feet south of northeast corner of sec. 34, T. 3 N., R. 25 E., Daggett County, Utah.

A1—0 to 2 inches; dark reddish brown (5YR 3/2) cobbly sandy loam, very dusky red (2.5YR 2/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine irregular pores; 10 percent gravel and 15 percent cobbles; neutral; clear smooth boundary.

A2—2 to 13 inches; dark reddish brown (5YR 3/2) cobbly sandy loam, very dusky red (2.5YR 2/2) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine tubular pores; 15 percent gravel and 15 percent cobbles; neutral; clear smooth boundary.

C—13 to 18 inches; pinkish gray (5YR 6/2) very cobbly sandy loam, dusky red (2.5YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, very slightly sticky and nonplastic; common very fine to medium roots; common very fine tubular pores; 40 percent cobbles with few gravel and stones; neutral; abrupt wavy boundary.

R—18 inches; hard sandstone.

The depth to bedrock ranges from 10 to 20 inches. Rock fragments in the control section are angular sandstone or quartzite ranging in size from 1/4 inch to 5 feet in diameter, and the content averages 35 to 50 percent. In the control section, the texture of the matrix is sandy loam or loam with clay content ranging from 8 to 18 percent. The hue is 2.5YR through 7.5YR. The C horizon is not present in all pedons.

Flatnose Series

The Flatnose series are very deep, moderately well drained soils on flood plains. They formed in alluvium. Elevation is 5,400 to 5,900 feet. The average annual precipitation is 8 to 12 inches, the average annual air

temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Slopes are 0 to 3 percent.

These soils are coarse-loamy, mixed (calcareous) mesic Typic Ustifluvents.

Typical pedon of Flatnose loam in an area of Flatnose loam, 0 to 3 percent slopes, 600 feet south and 1,800 feet east of the northwest corner of sec. 3, T. 1 N., R. 25 E., Daggett County, Utah.

A—0 to 7 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine vesicular pores; neutral; clear wavy boundary.

C1—7 to 15 inches; brown (10YR 5/3) loam stratified with thin lenses of fine sandy loam and very fine sandy loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure and common bedding planes; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few very fine tubular pores; slightly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

C2—15 to 25 inches; pale brown (10YR 6/3) fine sandy loam stratified with a few thin dark grayish brown lenses of loam and sandy loam, dark brown (10YR 4/3) moist; few faint yellowish brown mottles; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

C3—25 to 38 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 4/3) moist; few faint yellowish brown mottles; massive; soft, friable, nonsticky and nonplastic; few very fine and fine roots; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

C4—38 to 60 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 4/3) moist; few faint yellowish brown mottles; massive; soft, friable, nonsticky and nonplastic; few very fine and fine roots; strongly effervescent; carbonate is disseminated; moderately alkaline.

The A horizon has a neutral or mildly alkaline reaction. The C horizon has a texture of dominantly fine sandy loam or sandy loam stratified with thin layers of loam or loamy fine sand. Reaction is mildly alkaline or moderately alkaline.

Garlips Series

The Garlips series are very deep, well drained soils on mountain slopes and hillsides and stable slumps. They formed in colluvium and alluvium derived from metamorphic and sedimentary rocks. Elevation is 6,600 to 8,100 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 60 to 90 days. Slopes are 0 to 70 percent.

These soils are fine-loamy, mixed Pachic Haploborolls.

Typical pedon of Garlips gravelly loam in an area of Pesmore-Garlips complex, 25 to 70 percent slopes, 1,200 feet south and 1,000 feet east of the northwest corner of sec. 26, T. 3 N., R. 23 E., Daggett County, Utah.

A1—0 to 9 inches; dark brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine, few fine and medium roots; many very fine tubular pores; 15 percent gravel; neutral; clear smooth boundary.

A2—9 to 18 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular block structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, few fine and medium roots; many very fine tubular pores; 15 percent gravel; slightly effervescent; carbonate is disseminated, and also occurs as common faint veins; mildly alkaline; gradual wavy boundary.

Bk—18 to 34 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly and slightly plastic; common very fine roots; many very fine tubular pores; 15 percent gravel; strongly effervescent; 15 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as distinct veins; moderately alkaline; gradual wavy boundary.

C—34 to 60 inches; pale brown (10YR 6/3) gravelly loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; 20 percent gravel; strongly effervescent; 20 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as common faint veins; moderately alkaline.

Texture of the control section is loam or gravelly loam with 18 to 27 percent clay and 0 to 20 percent gravel. The hue is 7.5YR or 10YR. The B horizon has a mildly alkaline or moderately alkaline reaction.

Gerst Series

The Gerst series are shallow, well drained soils on hillslopes. They formed in alluvium and residuum derived dominantly from shale. Elevation is 5,700 to 6,300 feet. Average annual precipitation is 8 to 10 inches, the average annual air temperature is 45 to 48 degrees F,

and the frost-free period is 90 to 110 days. Slopes are 10 to 40 percent.

These soils are loamy, mixed (calcareous), mesic, shallow Ustic Torriorthents.

Typical pedon of Gerst loam in an area of Gerst-Strych complex, 10 to 40 percent slopes, 1,500 feet west and 2,500 feet south of the northeast corner of sec. 27, T. 2 S., R. 25 E., Daggett County, Utah.

A1—0 to 6 inches, very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; weak fine granular structure; slightly hard,friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; 10 percent channers; strongly effervescent; carbonate is disseminated; moderately alkaline; abrupt smooth boundary.

C1—6 to 13 inches; light brownish gray (2.5Y 6/2) channery loam, grayish brown (2.5Y 5/2) moist; weak fine subangular blocky structure parting to weak fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; 20 percent channers; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

C2—13 to 18 inches; light gray (5Y 7/2) channery loam, olive gray (5Y 5/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; 30 percent channers; slightly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

Cr—18 inches; fractured shale.

The depth to shale bedrock ranges from 10 to 20 inches. The content of rock fragments average 15 to 35 percent in the control section. The A horizon has hue of 10YR or 2.5Y. The C horizon has hue of 2.5Y or 5Y.

Goslin Series

The Goslin series are very deep, well drained soils on alluvial fans and toe slopes. They formed in alluvium derived from sandstone. Elevation is 6,000 to 6,700 feet. The average annual precipitation is 10 to 12 inches, the average annual air temperature is 42 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 3 to 10 percent.

These soils are coarse-loamy, mixed (calcareous), frigid Ustic Torriorthents.

Typical pedon of Goslin fine sandy loam, 6 to 10 percent slopes, 1,300 feet north of the southwest corner of sec. 33, T. 3 N., R. 20 E., Daggett County, Utah.

A1—0 to 1 inch; reddish brown (5YR 5/4) fine sandy loam, dark reddish brown (5YR 3/4) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine exped vesicular pores; strongly effervescent; 2 percent calcium carbonate equivalent, carbonate is disseminated; mildly alkaline; clear smooth boundary.

A2—1 to 6 inches; reddish brown (5YR 5/4) fine sandy loam, yellowish red (5YR 4/6) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine vesicular pores; strongly effervescent; 3 percent calcium carbonate equivalent, carbonate is disseminated; mildly alkaline; clear smooth boundary.

Bw—6 to 25 inches; yellowish red (5YR 5/6) fine sandy loam, yellowish red (5YR 4/6) moist; very weak, very coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine tubular pores; few 1/2 inch cicada borrows; strongly effervescent; 7 percent calcium carbonate equivalent, carbonate is disseminated; mildly alkaline; gradual smooth boundary.

C—25 to 60 inches; yellowish red (5YR 5/6) fine sandy loam, yellowish red (5YR 4/6) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine and few medium roots; strongly effervescent; 6 percent calcium carbonate equivalent, carbonate is disseminated; mildly alkaline.

Reaction is mildly alkaline or moderately alkaline. The content of rock fragments, mainly sandstone channers, commonly is less than 5 percent; however, it may range from 0 to 15 percent. The A horizon has hue of 5YR through 10YR. The Bw and C horizons have hue of 5YR or 7.5YR.

Grieves Series

The Grieves series are very deep, well drained soils on alluvial fans. They formed in alluvium. Elevation is 6,200 to 6,600 feet. The average annual precipitation is 9 to 12 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 1 to 5 percent.

These soils are coarse-loamy, mixed (calcareous), frigid Ustic Torriorthents.

Typical pedon of Grieves fine sandy loam in an area of Grieves-Tisworth fine sandy loams, 1 to 5 percent slopes, 1,400 feet east and 1,000 feet south of the northwest corner of sec. 27, T. 3 N., R. 24 E., Daggett County, Utah.

A—0 to 1 inch; pale brown (10YR 6/3) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, friable, very slightly sticky and nonplastic; strongly effervescent; carbonate is

disseminated; mildly alkaline; abrupt smooth boundary.
Bw—1 to 7 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; weak very fine subangular blocky structure; soft, friable, very slightly sticky and nonplastic; strongly effervescent; carbonate is disseminated; mildly alkaline; clear wavy boundary.
C—7 to 60 inches; light yellowish brown (10YR 6/4) fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; strongly effervescent; carbonate is disseminated; moderately alkaline.

The control section averages 8 to 18 percent clay. Gravel content is typically less than 5 percent, but ranges from 0 to 15 percent. The hue is 2.5Y or 10YR. The A horizon has a mildly alkaline or moderately alkaline reaction. The Bw and C horizons have a texture of fine sandy loam or sandy loam, with some pedons being stratified with a few thin lenses of loamy sand or loam.

Grobutte Family

The Grobutte Family soils are very deep, well drained and occur on breaks and mountain slopes. They formed in colluvium derived from sandstone. Elevation is 6,600 to 8,200 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 30 to 65 percent.

These soils are loamy-skeletal, mixed (calcareous), frigid Ustic Torriorthents.

Typical pedon of Grobutte Family very stony sandy loam in an area of Grobutte Family-Rentsac-Rock outcrop complex, 6 to 65 percent slopes, 1,300 feet east and 900 feet north of southwest corner of sec. 14, T. 3 N., R. 24 E., Daggett County, Utah.

A—0 to 3 inches; light brownish gray (10YR 6/2) very stony sandy loam, dark grayish brown (10YR 4/2) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; many very fine irregular pores; 15 percent gravel, 15 percent cobbles, 15 percent stones, and 5 percent boulders; mildly alkaline; clear smooth boundary.
C—3 to 60 inches; light brownish gray (10YR 6/2) very stony sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and fine and few medium and coarse roots in upper part and few in lower part; common very fine irregular pores; 15 percent gravel, 15 percent cobbles, 15 percent stones, and 5 percent boulders; slightly effervescent; carbonate is disseminated; mildly alkaline.

Rock fragments range in size from 2 mm to 10 feet and content ranges from 35 to 60 percent. The texture of the matrix of the control section is sandy loam or loam with 8 to 20 percent clay and more than 45 percent fine or coarser sand. The C horizon is not effervescent in some pedons.

Hagga Series

The Hagga series are very deep, poorly drained soils in depressions on flood plains and terraces. They formed in alluvium. Elevation is 6,000 to 7,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 0 to 2 percent.

These soils are fine-loamy, mixed (calcareous), frigid Typic Fluvaquents.

Typical pedon of Hagga loam in an area of Hagga-Cowestglen association, nearly level, 2,600 feet east and 1,300 feet north of southwest corner of sec. 22, T. 12 N., R. 112 W., Sweetwater County, Wyoming.

A—0 to 8 inches; dark brown (10YR 5/2) loam, very dark gray (10YR 3/1) moist; common distinct gray (5Y 5/1) mottles; massive; slightly hard, friable, sticky and plastic; many very fine and fine roots; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.
C—8 to 14 inches; gray (10YR 6/1) gravelly sandy loam, dark gray (10YR 4/1) moist; common distinct gray (5Y 5/1) and yellowish brown (10YR 5/6) mottles; massive; slightly hard, very friable, sticky and slightly plastic; few very fine and fine roots; 25 percent gravel; strongly effervescent; carbonate is disseminated; moderately alkaline; clear wavy boundary.
2C—14 to 60 inches; light gray (5Y 7/1) stratified sandy clay loam, loam, and sandy loam, gray (5Y 6/1) moist; grading to greenish gray (5GY 5/1) moist below 40 inches; few distinct brown mottles; massive; hard, friable, sticky and plastic; strongly effervescent; carbonate is disseminated; strongly alkaline.

A water table is between the surface and a depth of 1 foot in the spring and early summer, and above a depth of 2.5 feet the remainder of the year. The 10 to 40 inch control section averages 18 to 35 percent clay and 0 to 15 percent gravel. The surface is hummocky in most areas. The C horizon is stratified with the texture being dominantly loam, clay loam, sandy clay loam, or sandy loam with thin lenses of loamy sand and gravelly sandy loam. Reaction is moderately alkaline or strongly alkaline.

Handran Family

The Handran Family soils are very deep, well drained and are on steep mountain slopes. They formed in colluvium derived from quartzite and sandstone. Elevation is 7,500 to 8,500 feet. The average annual precipitation is about 16 to 20 inches, the average annual air temperature is 36 to 40 degrees F, and the frost-free period is 30 to 60 days. Slopes are 30 to 65 percent.

These soils are loamy-skeletal, mixed Typic Cryoborolls.

Typical pedon of Handran Family very stony sandy loam, in an area of Eyre-Handran Families complex, 20 to 65 percent slopes, 800 feet east and 1,500 feet south of the northwest corner of sec. 34, T. 3 N., R. 25 E., Daggett County, Utah.

A1—0 to 3 inches; dark reddish brown (5YR 3/2) very stony sandy loam, dark reddish brown (5YR 2/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; many very fine irregular pores; 45 percent gravel, cobbles, and stones; mildly alkaline; clear smooth boundary.

A2—3 to 12 inches; dark reddish brown (5YR 3/2) very stony sandy loam, dark reddish brown (5YR 2/2) moist; moderate medium subangular blocky structure parting to weak very fine subangular blocky; soft, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; common very fine irregular pores; 45 percent gravel, cobbles, and stones; mildly alkaline; clear wavy boundary.

C—12 to 60 inches; reddish brown (2.5YR 5/4) very stony sandy loam, dark reddish brown (2.5YR 3/4) moist; massive; soft, very friable, slightly sticky and nonplastic; few roots; 45 percent gravel, cobbles, and stones; mildly alkaline.

The content of rock fragments ranges from 35 to 60 percent. They are angular quartzite of all sizes, but are predominantly stones and boulders. Reaction is neutral or mildly alkaline. The C horizon has hue of 2.5YR or 5YR.

Hanly Family

The Hanly Family soils are very deep, somewhat poorly drained or moderately well drained, and are on nearly level flood plains. They formed in alluvium. Elevation is 5,900 to 6,300 feet. The average annual precipitation is 9 to 12 inches, the average annual air temperature is 40 to 46 degrees F, and the frost-free period is 60 to 90 days. Slopes are 1 to 3 percent.

These soils are sandy, mixed, frigid Ustic Torrifluvents.

Typical pedon of Hanly Family in an area of Hanly Family-Riverwash complex, 1 to 3 percent slopes, 2,500 feet southeast of the northwest corner of sec. 29, T. 3 N., R. 24 E., Daggett County, Utah.

C1—0 to 20 inches; brown (7.5YR 5/4) loamy sand, brown (7.5YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine to medium roots; few very fine to medium irregular pores; slightly effervescent; carbonate is disseminated; mildly alkaline; abrupt smooth boundary.

C2—20 to 60 inches; brown (7.5YR 5/4) stratified gravelly loamy sand, gravelly sand, and sand, brown (7.5YR 4/4) moist; single grain; loose, nonsticky and nonplastic; 25 percent gravel; slightly effervescent; mildly alkaline.

Textures range from loamy fine sand to sand and are stratified in some pedons with thin lenses of gravelly sand or very gravelly sand. The hue is 5YR or 7.5YR. Some pedons have distinct mottles in the lower part of the profile.

Haploborolls

Haploborolls soils are shallow to very deep, well drained, and are on mountain slopes. They formed in residuum and colluvium derived from quartzite, sandstone and other metamorphic and sedimentary rocks. Elevation is 6,000 to 8,000 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 10 to 70 percent.

Typical pedon of Haploborolls in an area of Haploborolls-Torriorthents complex, 10 to 70 percent slopes, 1,700 feet east and 1,800 feet south of the northwest corner of sec. 5, T. 2 N., R. 25 E., Daggett County, Utah.

A1—0 to 11 inches; reddish brown (5YR 5/4) very stony sandy loam, dark reddish brown (5YR 3/2) moist; weak fine granular to fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine and medium roots; many very fine irregular pores; 50 percent gravel, cobbles, and stones; neutral; clear wavy boundary.

A2—11 to 18 inches; reddish brown (5YR 5/4) very stony sandy loam, dark reddish brown (5YR 3/3) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine to coarse roots; common very fine irregular pores; 50 percent gravel, cobbles, and stones; neutral; clear wavy boundary.

C—18 to 26 inches; weak red (2.5YR 5/2) very stony sandy loam, weak red (2.5YR 4/2) moist; massive; soft, very friable, slightly sticky and nonplastic; many

very fine and fine roots; common very fine irregular pores; 50 percent gravel, cobbles, and stones; neutral; abrupt wavy boundary.
R—26 inches; hard sandstone.

The depth to bedrock ranges from 15 to more than 60 inches. The texture of the matrix of the control section is sandy loam or loam. Rock fragments in the control section are dominantly stones, but also include gravel, cobbles, and boulders with the content ranging from 30 to 60 percent. Reaction is neutral or mildly alkaline. Some pedons have free carbonates. The hue is 2.5YR through 10YR.

Harpole Series

The Harpole series are very deep, well drained soils on alluvial fans. They formed in alluvium. Elevation is 8,200 to 8,800 feet. The average annual precipitation is 15 to 20 inches, the average annual air temperature is 36 to 40 degrees F, and the frost-free period is 50 to 80 days. Slopes are 2 to 5 percent.

These soils are loamy-skeletal, mixed Typic Argiborolls.

Typical pedon of Harpole very stony sandy loam, 2 to 5 percent slopes, 2,200 feet west and 1,700 feet north of the southeast corner of sec. 26, T. 3 N., R. 15 E., Summit County, Utah.

A1—0 to 2 inches; brown (10YR 4/3) very stony sandy loam, dark brown (7.5YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; 15 percent gravel, 20 percent cobbles, and 15 percent stones; neutral; clear smooth boundary.
A2—2 to 8 inches; brown (10YR 4/3) very stony sandy loam, dark brown (7.5YR 3/2) moist; moderate coarse subangular blocky structure parting to moderate fine and very fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine to medium roots; 15 percent gravel, 20 percent cobbles, and 15 percent stones; neutral; clear smooth boundary.
Bt1—8 to 14 inches; reddish brown (5YR 4/3) very stony sandy clay loam, dark reddish brown (5YR 3/3) moist; moderate coarse subangular blocky structure parting to weak fine subangular blocky; slightly hard, very friable, sticky and plastic; common very fine to medium roots; 15 percent gravel, 20 percent cobbles, and 15 percent stones; neutral; clear smooth boundary.
Bt2—14 to 30 inches; reddish brown (5YR 4/3) very stony sandy clay loam, dark reddish brown (2.5YR 3/4) moist; moderate medium subangular blocky structure parting to moderate very fine subangular blocky; slightly hard, friable, sticky and plastic; few roots; 15 percent gravel, 20 percent cobbles, and 15 percent stones; neutral; gradual smooth boundary.
C—30 to 60 inches; reddish brown (5YR 4/3) very stony sandy loam, dark reddish brown (2.5YR 3/4) moist; massive; soft, friable slightly sticky and nonplastic; 15 percent gravel, 20 percent cobbles, and 15 percent stones; mildly alkaline.

Rock fragments in the control section and C horizon are rounded gravel, cobbles, and stones with the total content ranging from 35 to 60 percent. The A horizon has hue of 7.5YR or 10YR. The Bt horizon has hue of 2.5YR or 5YR. The C horizon has hue of 2.5YR or 5YR. Clay content is 5 to 15 percent. Reaction is neutral or mildly alkaline.

Harpole Family

The Harpole Family soils are deep, well drained, and are on mountain slopes and ridges. They formed in colluvium and residuum derived from sandstone and quartzite. Elevation is 6,400 to 8,100 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 60 to 90 days. Slopes are 20 to 60 percent.

These soils are loamy-skeletal, mixed Typic Argiborolls.

Typical pedon of Harpole Family very gravelly loam in an area of Harpole-Worfstone Families, 20 to 60 percent slopes, 700 feet south and 200 feet west of the northeast corner of sec. 28, T. 3 N., R. 23 W., Daggett County, Utah.

A1—0 to 8 inches; reddish brown (5YR 4/3) very gravelly loam, dark reddish brown (5YR 3/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine to medium roots; many very fine irregular pores; about 25 percent gravel and 10 percent cobbles; neutral; clear smooth boundary.
A2—8 to 13 inches; reddish brown (5YR 4/4) very gravelly loam, dark reddish brown (5YR 3/3) moist; moderate fine angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine to medium roots; about 30 percent gravel and 5 percent cobbles; neutral; gradual wavy boundary.
Bt1—13 to 25 inches; reddish brown (2.5YR 5/4) very gravelly clay loam, reddish brown (2.5YR 4/4) moist; strong fine angular blocky structure; very hard, firm, sticky and plastic; many very fine to medium roots; common distinct clay films on faces of peds and in pores; about 50 percent gravel; neutral; gradual wavy boundary.
Bt2—25 to 36 inches; reddish brown (2.5YR 5/4) very gravelly clay loam, reddish brown (2.5YR 4/4) moist; strong fine angular blocky structure; very hard, firm, sticky and plastic; common very fine roots; common

distinct clay films on faces of peds and in pores; about 50 percent gravel and 10 percent cobbles; neutral; gradual irregular boundary.

C—36 to 60 inches; reddish brown (2.5YR 5/4) extremely gravelly clay loam, reddish brown (2.5YR 4/4) moist; massive; hard, firm, sticky and plastic; few fine roots; 45 percent gravel and 15 percent cobbles; neutral.

The depth to the C horizon ranges from 30 to 40 inches. Rock fragments are angular and mostly gravel with some cobbles and a few stones, with total content ranging from 35 to 60 percent throughout the profile. A weak K horizon occurs in some pedons just below the Bt horizon. The A horizon has hue of 5YR or 7.5YR. The Bt horizon has hue of 2.5YR or 5YR. The C horizon has hue of 2.5YR or 5YR. Reaction is neutral or mildly alkaline.

Heath Series

The Heath series are very deep, well drained soils on glacial moraines. They formed in glacial till. Elevation is 8,200 to 8,800 feet. The average annual precipitation is 12 to 18 inches, the average annual air temperature is 36 to 42 degrees F, and the frost-free period is 50 to 80 days. Slopes are 6 to 15 percent.

These soils are fine, montmorillonitic Argic Cryoborolls.

Typical pedon of Heath loam in an area of Luhon-Hickey-Heath complex, 3 to 25 percent slopes, 1,700 feet west and 100 feet south of northeast corner of sec. 20, T. 3 N., R. 15 E., Summit County, Utah.

A1—0 to 2 inches; brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; moderate very fine granular structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; many very fine irregular pores; 10 percent gravel, cobbles, and stones; mildly alkaline; clear smooth boundary.

A2—2 to 12 inches; brown (10YR 4/3) loam, dark brown (7.5YR 3/2) moist; moderate coarse and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine irregular and tubular pores; 10 percent gravel, cobbles, and stones; mildly alkaline; clear smooth boundary.

Bt—12 to 24 inches; brown (7.5YR 5/4) clay loam, brown (7.5YR 4/4) moist; strong medium prismatic structure parting to moderate medium subangular blocky; common very fine roots; common very fine tubular pores; many prominent clay films on faces of peds; mildly alkaline; clear wavy boundary.

Btk—24 to 40 inches; brown (7.5YR 5/4) clay loam, brown (7.5YR 4/4) moist; moderate coarse prismatic structure parting moderate medium subangular blocky; hard, friable, sticky and plastic; few roots; strongly effervescent; calcium carbonate is disseminated and also occurs as masses and filaments; moderately alkaline; gradual smooth boundary.

Bk—40 to 60 inches; brown (7.5YR 5/4) clay loam, brown (7.5YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; strongly effervescent; calcium carbonate is disseminated and also occurs as filaments; moderately alkaline.

The depth to horizons containing calcium carbonate is 12 to 36 inches except for a few pedons that have been recharged and are slightly effervescent in the A horizon. Rock fragments in the Bt and Bk horizons are dominantly gravel, but also include cobbles and stones with the total content ranging from 0 to 35 percent. The Bt horizon has hue of 7.5YR or 10YR. Clay content is 35 to 40 percent. The Btk horizon has hue of 7.5YR or 10YR. Clay content is 27 to 40 percent.

Henrieville Series

The Henrieville series are very deep, well drained soils on alluvial fans. They formed in alluvium. Elevation is 5,600 to 5,800 feet. Average annual precipitation is 8 to 10 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Slopes are 0 to 5 percent.

These soils are coarse-loamy, mixed (calcareous), mesic Ustic Torriorthents.

Typical pedon of Henrieville sandy loam, 0 to 5 percent slopes, 2,500 feet east and 800 feet north of the southwest corner of sec. 27, T. 2 N., R. 25 E., Daggett County, Utah.

A1—0 to 7 inches, very pale brown (10YR 7/3) sandy loam, brown (10YR 5/3) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; strongly effervescent; carbonate is disseminated; strongly alkaline; clear smooth boundary.

AC—7 to 23 inches; very pale brown (10YR 7/3) sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure parting to weak fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; few very fine tubular pores; strongly effervescent; carbonate is disseminated; strongly alkaline; clear smooth boundary.

C1—23 to 34 inches; very pale brown (10YR 7/4) sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; few fine tubular pores; strongly effervescent; carbonate is disseminated; strongly alkaline; abrupt smooth boundary.

C2—34 to 60 inches; very pale brown (10YR 7/3) sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; strongly effervescent; carbonate is disseminated; moderately alkaline.

The C horizon has hue of 2.5Y or 10YR. Texture is sandy loam or fine sandy loam, with some pedons being stratified with a few thin lenses of loamy sand or loamy fine sand.

Henrysfork Series

The Henrysfork series are very deep, somewhat poorly drained to moderately well drained soils on alluvial fans. They formed in alluvium. The wetness and high carbonate content is partially from seepage from higher lying soils. Elevation is 7,400 to 8,300 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 36 to 43 degrees F, and the frost-free period is 30 to 60 days. Slopes are 0 to 2 percent.

These soils are fine-loamy, carbonatic Aquic Cryorthents.

Typical pedon of Henrysfork clay loam in an area of Henrysfork-Borofibrists complex, 0 to 2 percent slopes, 1,500 feet east and 900 feet south of the northwest corner of sec. 4, T. 12 N., R. 113 W., Uinta County, Wyoming.

A—0 to 3 inches; very pale brown (10YR 7/3) clay loam, grayish brown (10YR 5/2) moist; weak thick platy structure; soft, friable, sticky and plastic; few very fine roots; strongly effervescent; 45 percent calcium carbonate equivalent, calcium carbonate is disseminated; electroconductivity of 1.5 mmhos/cm; moderately alkaline; clear wavy boundary.

C—3 to 50 inches; very pale brown (10YR 7/3) and light gray (10YR 7/2) clay loam, light brownish gray (10YR 5/2) moist; few fine faint brown mottles; massive; slightly hard, friable, sticky and plastic; strongly effervescent; 50 percent calcium carbonate equivalent, carbonate is disseminated; moderately alkaline; clear smooth boundary.

2C—50 to 60 inches; light brownish gray (2.5Y 6/2) very cobbly sandy clay loam, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, friable, sticky and slightly plastic; 20 percent gravel, 20 percent cobbles; slightly effervescent; carbonate is disseminated; mildly alkaline.

The depth to the seasonal high water table is 2 to 5 feet. The depth to an intermittent 2C horizon is 40 inches or more. The A horizon has a moderately alkaline through very strongly alkaline reaction. Electrical conductivity ranges from 1 to 5 mmhos/cm. The C horizon has hue of 5Y through 7.5YR. Mottles of high chroma occur in the lower part of this horizon in some pedons. Texture is clay loam or sandy clay loam with 20 to 35 percent noncarbonate clay. Reaction is mildly alkaline or moderately alkaline. Calcium carbonate equivalent is 40 to 70 percent. The 2C horizon has a rock fragment content of 35 to 60 percent consisting of gravel and cobbles. The texture of the matrix is sandy clay loam or sandy loam with 15 to 25 percent clay. This horizon is absent in some pedons.

Hickey Series

The Hickey series are very deep, well drained soils on glacial moraines. They formed in glacial till. Elevation is 7,500 to 8,800 feet. The average annual precipitation is 10 to 18 inches, the average annual air temperature is 36 to 42 degrees F, and the frost-free period is 50 to 80 days. Slopes are 0 to 40 percent.

These soils are fine-loamy, mixed Borollic Haplargids.

Typical pedon of Hickey gravelly sandy clay loam in an area of Hickey loam-Hickey gravelly sandy clay loam complex, 2 to 10 percent slopes, 2,500 feet north and 50 feet east of the southwest corner of sec. 13, T12N, R114W, Uinta County, Wyoming.

A1—0 to 2 inches; reddish brown (5YR 5/3) gravelly sandy clay loam, dark reddish brown (5YR 3/3) moist; weak coarse platy structure parting to weak fine granular; soft, friable, sticky and plastic; 20 percent gravel and 5 percent cobbles; mildly alkaline; abrupt smooth boundary.

A2—2 to 4 inches; reddish brown (5YR 5/3) gravelly clay loam, dark reddish brown (5YR 3/3) moist; moderate very fine granular structure; soft, friable, sticky and plastic; many very fine roots; many very fine irregular pores; 10 percent gravel, 5 percent cobbles and stones; mildly alkaline; abrupt wavy boundary.

Bt—4 to 8 inches; reddish brown (5YR 4/3) clay loam, dark reddish brown (5YR 3/4) moist; moderate coarse and medium subangular blocky structure parting to moderate very fine subangular blocky; slightly hard, friable, very sticky and plastic; common very fine and fine roots; common very fine tubular pores; 10 percent gravel and cobbles; mildly alkaline; clear wavy boundary.

Btk—8 to 30 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; weak medium and fine subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; common very fine tubular pores; 10 percent gravel and cobbles; strongly effervescent; 16 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as seams, lenses, and threads; mildly alkaline; clear wavy boundary.

Bk—30 to 60 inches; brown (7.5YR 5/4) sandy clay loam,

brown (7.5YR 4/4) moist; massive; soft, friable, sticky and plastic; very few roots; 10 percent gravel and cobbles; strongly effervescent; 8 percent calcium carbonate equivalent, carbonate is disseminated; mildly alkaline.

The depth to horizons containing calcium carbonate ranges from 6 to 10 inches. The content of rock fragments in the B horizons is 5 to 20 percent and consists dominantly of gravel with a few cobbles and stones. The A horizon has hue of 5YR through 10YR. The Bt horizon has hue of 5YR or 7.5YR. The texture of the matrix is loam, clay loam, or sandy clay loam with 25 to 35 percent clay and more than 35 percent fine or coarser sand. The Btk horizon has hue of 5YR or 7.5YR. The texture of the matrix is clay loam or sandy clay loam with 20 to 35 percent clay and more than 35 percent fine or coarser sand. Calcium carbonate equivalent ranges from 15 to 30 percent. Reaction is mildly alkaline or moderately alkaline. The Bk horizon has hue of 5YR or 7.5YR. The texture of the matrix is clay loam or sandy clay loam. Reaction is mildly alkaline or moderately alkaline.

Hoodle Family

The Hoodle Family soils are very deep, well drained, and are on glacial moraines. They formed in glacial drift. Elevation is 8,500 to 9,500 feet. The average annual precipitation is 18 to 24 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 30 to 60 days. Slopes are 4 to 30 percent.

These soils are loamy-skeletal, mixed Argic Cryoborolls.

Typical pedon of Hoodle Family cobbly clay loam in an area of Hoodle-Namon dry-Namon Families association, 4 to 60 percent slopes, 2,500 feet north and 1,200 feet east of the southwest corner of sec. 32, T. 3 N., R. 15 E., Summit County, Utah.

Oi—2 inches to 1 inch; forest duff of needles and twigs.

Oe—1 inch to 0; partially decomposed organic litter.

A1—0 to 2 inches; brown (10YR 4/3) cobbly clay loam, dark brown (7.5YR 3/2) moist; moderate thin platy structure parting to moderate very fine granular; slightly hard, firm, sticky and plastic; many very fine and fine, common medium and few coarse roots; many very fine and fine tubular pores; 10 percent gravel, 10 percent cobbles, and 5 percent stones; slightly acid; abrupt smooth boundary.

A2—2 to 5 inches; brown (7.5YR 5/4) cobbly clay loam, dark brown (7.5YR 3/2) moist; weak medium platy structure parting to moderate fine and very fine subangular blocky; slightly hard, friable, sticky and plastic; many very fine and fine, common medium and few coarse roots; common very fine and fine and few medium pores; 10 percent gravel, 10 percent cobbles, and 5 percent stones; slightly acid; abrupt wavy boundary.

Bt—5 to 13 inches; brown (7.5YR 4/4) very cobbly clay loam, dark brown (7.5YR 3/3) moist; moderate medium subangular blocky structure parting to strong very fine subangular blocky; very hard, firm, sticky and plastic; many very fine and fine and common medium roots; many very fine and fine and few medium tubular pores; common distinct clay films on faces of peds and in pores; 25 percent gravel, 20 percent cobbles, and 5 percent stones; neutral; abrupt irregular boundary.

Btk—13 to 31 inches; light brown (7.5YR 6/4) extremely cobbly clay loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure parting to moderate fine and very fine subangular blocky; very hard, firm, sticky and plastic; common very fine and fine and few medium roots; many very fine and fine and few medium tubular pores; 30 percent gravel, 30 percent cobbles, and 5 percent stones; strongly effervescent; carbonate is disseminated, and also occurs as veins and coatings on rock fragments; moderately alkaline; gradual wavy boundary.

2Bk1—31 to 49 inches; light brown (7.5YR 6/4) extremely cobbly sandy clay loam, strong brown (7.5YR 4/6) moist; moderate fine and very fine subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores; 30 percent gravel, 30 percent cobbles, and 5 percent stones; strongly effervescent; carbonate is disseminated, and also occurs as veins and coatings on rock fragments; moderately alkaline; gradual wavy boundary.

2Bk2—49 to 60 inches; light brown (7.5YR 6/4) extremely cobbly sandy clay loam, strong brown (7.5YR 4/6) moist; weak medium and fine subangular blocky structure; hard, firm, sticky and slightly plastic; many very fine and fine and few medium intermittent pores; 30 percent gravel, 30 percent cobbles, and 5 percent stones; slightly effervescent; carbonate is disseminated, and also occurs as coatings on rock fragments; moderately alkaline.

The depth to horizons containing calcium carbonate ranges from 10 to 20 inches. The A horizon has hue of 7.5YR or 10YR. The B and C horizons have textures of very cobbly sandy clay loam, very cobbly clay loam, extremely cobbly clay loam, or extremely cobbly sandy clay loam.

Iyers Series

The Iyers series are moderately deep, well drained soils on hills. They formed in residuum and colluvium

derived from shale. Elevation is 7,500 to 8,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 42 degrees F, and the frost-free period is 60 to 90 days. Slopes are 10 to 25 percent.

These soils are fine, montmorillonitic (calcareous) Typic Cryorthents.

Typical pedon of lyers clay loam in an area of Delphill-lyers-Poposhia complex, 3 to 25 percent slopes, 700 feet west and 650 feet south of the northeast corner of sec. 3, T. 12 N., R. 114 W., Uinta County, Wyoming.

A1—0 to 1 inch; light brownish gray (10YR 6/2) clay loam, brown (10YR 4/3) moist; moderate very fine granular structure; slightly hard, friable, very sticky and plastic; few very fine root; common fine exped vesicular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; abrupt smooth boundary.

Bw—1 to 6 inches; brown (10YR 5/3) clay loam, brown (10YR 5/3) moist; weak to moderate medium subangular blocky structure; slightly hard, friable, very sticky and plastic; common very fine and fine roots; common fine exped vesicular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

C—6 to 39 inches; light gray (5Y 7/2) clay loam, olive gray (5Y 5/2) moist; massive; soft, friable, very sticky and plastic; few very fine and fine roots; violently effervescent; carbonate is disseminated; moderately alkaline; gradual wavy boundary.

Cr—39 inches; soft shale.

The depth to shale ranges from 20 to 40 inches. The texture of the control section is clay loam or clay, with the clay content ranging from 35 to 45 percent. The content of shale channers commonly is less than 5 percent, but ranges from 0 to 15 percent. Reaction is mildly alkaline or moderately alkaline. The A and B horizons have hue of 10YR through 5Y.

Joebas Series

The Joebas series are shallow, well drained soils on mountaintops and plateaus. They formed in residuum derived from quartzite and sandstone. Elevation is 7,600 to 8,000 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 42 degrees F, and the frost-free period is 60 to 90 days. Slopes are 3 to 15 percent.

These soils are loamy, mixed Borollic Lithic Haplargids.

Typical pedon of Joebas gravelly sandy loam, 3 to 15 percent slopes, 3,500 feet west and 300 feet south of the northeast corner of sec. 6, T. 2 N., R. 25 E., Daggett County, Utah.

A—0 to 2 inches; reddish brown (5YR 4/3) gravelly sandy loam, dark reddish brown (5YR 3/3) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular pores; 30 percent gravel; mildly alkaline; clear wavy boundary.

Bt—2 to 13 inches; reddish brown (5YR 4/4) gravelly sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate coarse subangular blocky structure parting to moderate medium subangular blocky; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; common thin clay films on faces of peds; 25 percent gravel; mildly alkaline; clear wavy boundary.

Bk—13 to 19 inches; light reddish brown (5YR 6/3) gravelly sandy clay loam, reddish brown (5YR 5/3) moist; weak very fine angular blocky structure; soft, friable, sticky and plastic; few very fine roots; 30 percent gravel; violently effervescent; 20 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as coatings on gravel; moderately alkaline; clear wavy boundary.

R—19; hard quartzite.

The depth to bedrock ranges from 10 to 20 inches. The content of gravel throughout the profile ranges from 15 to 35 percent and consists of angular fragments less than 3/4 inch in diameter. The Bk horizon is gravelly sandy loam or gravelly sandy clay loam with 18 to 25 percent clay.

These soils are outside the range of the Joebas series because they contain more calcium carbonate than the Joebas series.

Kappes Series

The Kappes series are moderately deep, well drained soils on plains. They formed in residuum derived from sandstone. Elevation is 6,400 to 7,300 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 0 to 25 percent.

These soils are coarse-loamy, mixed Borollic Calciorthids.

Typical pedon of Kappes sandy loam in an area of Blackhall-Kappes-Rentsac complex, 0 to 8 percent slopes, 1,300 feet south and 1,300 feet east of the northwest corner of sec. 20, T. 12 N., R. 110 W., Sweetwater County, Wyoming.

A—0 to 2 inches; brown (10YR 5/3) sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine

irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

BA—2 to 10 inches; brown (10YR 5/3) sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common very fine irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

Bw—10 to 17 inches; pale brown (10YR 6/3) sandy loam, yellowish brown (10YR 5/4) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine irregular and tubular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; abrupt wavy boundary.

Bk—17 to 28 inches; very pale brown (10YR 8/3) sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable; slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; violently effervescent; carbonate is disseminated, and also occurs as a few soft white masses; about 20 percent soft sandstone fragments; moderately alkaline; gradual wavy boundary.

Cr—28 inches; soft sandstone.

The depth to bedrock ranges from 20 to 40 inches. The texture of the control section is fine sandy loam or sandy loam with the content of channers and rounded gravel commonly less than 5 percent, but ranging from 0 to 15 percent. The depth to Bk horizon ranges from 4 to 17 inches. The A horizon has a mildly alkaline or moderately alkaline reaction. The Bw horizon has hue of 10YR or 7.5YR. Reaction is mildly alkaline or moderately alkaline. The Bk horizon has hue of 10YR or 7.5YR. Reaction is mildly alkaline through strongly alkaline.

Lail Series

The Lail series are very deep, well drained soils on steep mountain slopes. They formed in colluvium derived from sedimentary rocks. Elevation is 8,000 to 8,900 feet. The average annual precipitation is 15 to 19 inches, the average annual air temperature is 36 to 42 degrees F, and the frost-free period is 50 to 80 days. Slopes are 10 to 25 percent.

These soils are fine, montmorillonitic Typic Cryoboralfs.

Typical pedon of Lail loam in an area of Bookcliff-Lail-Rabbitex complex, 10 to 25 percent slopes, 600 feet north and 500 feet west of the southeast corner of sec. 4, T. 12 N., R. 114 W., Uinta County, Wyoming.

Oi—1 inch to 0; leaves, twigs and partially decomposed organic material.

A1—0 to 1 inch; very dark brown (10YR 2/2) loam, black (10YR 2/1) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine irregular pores; 5 percent gravel and 5 percent cobbles; neutral; abrupt smooth boundary.

A2—1 to 2 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; moderate thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine to coarse roots; common very fine irregular pores; 5 percent gravel and 5 percent cobbles; neutral; abrupt smooth boundary.

E—2 to 8 inches; reddish gray (5YR 5/2) sandy loam, dark reddish gray (5YR 4/2) moist; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine to medium roots; common very fine tubular pores; 5 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.

Bt1—8 to 20 inches; reddish brown (5YR 5/4) clay, reddish brown (5YR 4/4) moist; moderate coarse prismatic structure parting to moderate medium and fine angular blocky; very hard, very firm, very sticky and very plastic; common very fine to medium roots; common very fine tubular pores; many prominent clay films on faces of peds; 5 percent gravel and 5 percent cobbles; neutral; gradual smooth boundary.

Bt2—20 to 28 inches; reddish brown (5YR 5/4) clay loam, reddish brown (5YR 4/4) moist; moderate coarse prismatic structure; few very fine and fine roots; few very fine and fine tubular pores; many prominent clay films on faces of peds; 5 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.

Btk—28 to 46 inches; light reddish brown (5YR 6/3) clay loam, reddish brown (5YR 5/3) moist; moderate very coarse prismatic structure; very hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; common distinct clay films on faces of peds; 5 percent gravel and 5 percent cobbles; strongly effervescent; 13 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as masses; moderately alkaline; clear smooth boundary.

Bk—46 to 60 inches; reddish brown (5YR 5/3) clay loam, reddish brown (5YR 4/3) moist; massive; hard, friable, sticky and plastic; 5 percent gravel and 5 percent cobbles; strongly effervescent; 14 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as masses; moderately alkaline.

The content of rock fragments ranges from 5 to 15 percent. The depth to top of the argillic horizon ranges from 6 to 15 inches. The depth to horizons containing calcium carbonate ranges from 28 to 56 inches. The A horizon has hue of 5YR through 10YR. The E horizon has hue of 5YR through 10YR. Texture is loam or sandy loam. The Bt horizon has a texture of clay or clay loam with 35 to 45 percent clay.

Lanver Series

Lanver series are moderately deep, well drained soils on fan terraces. They formed in alluvium derived from sandstone and quartzite over residuum derived from sandstone. Elevation is 5,600 to 6,200 feet. Average annual precipitation is 8 to 12 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Slope are 3 to 15 percent.

The soils are loamy-skeletal, mixed, mesic Ustollic Calciorthids.

Typical pedon of Lanver gravelly sandy loam, 3 to 15 percent slopes, 2,700 feet south and 1,700 feet west of northeast corner of sec. 23, T. 2 N., R. 25 E., Daggett County, Utah.

A1—0 to 6 inches; brown (10YR 5/3) gravelly sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic, many very fine and fine and few medium roots; 25 percent gravel; slightly effervescent; carbonate is disseminated; moderately alkaline; abrupt smooth boundary.

Bw—6 to 17 inches, pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; few very fine vesicular pores; 20 percent cobbles and 20 percent gravel; strongly effervescent; carbonate is disseminated, and also occurs as coatings on the undersides of cobbles and gravel; moderately alkaline; clear smooth boundary.

Bk—17 to 38 inches, very pale brown (10YR 7/3) very cobbly sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and nonplastic; common very fine and few roots; few very fine vesicular pores; 30 percent gravel and 20 percent cobbles; strongly effervescent; carbonate is disseminated, and also occurs as crusts and pendants on the undersides of gravel and cobbles; moderately alkaline; abrupt smooth boundary.

2R—38 inches; sandstone.

The A horizon has hue of 10YR or 7.5YR. The Bk horizon has a rock fragment content of 35 to 60 percent.

Ledgefork Series

The Ledgefork series are very deep, somewhat excessively drained soils on alluvial fans. They formed in alluvium. Elevation is 8,200 to 8,700 feet. The average annual precipitation is 15 to 20 inches, the average annual air temperature is 36 to 40 degrees F, and the frost-free period is 50 to 80 days. Slopes are 3 to 5 percent.

These soils are sandy-skeletal, mixed Typic Cryoborolls.

Typical pedon in an area of Ledgefork cobbly sandy loam, 3 to 5 percent slopes, 400 feet south and 700 feet west of the northeast corner of sec. 19, T. 3 N., R. 5 E., Summit County, Utah.

A1—0 to 1 inch; reddish brown (5YR 4/3) cobbly sandy loam, dark reddish brown (5YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine to medium roots; many very fine irregular pores; 15 percent gravel and 10 percent cobbles; mildly alkaline; clear smooth boundary.

A2—1 to 7 inches; reddish brown (5YR 4/3) cobbly sandy loam, dark reddish brown (5YR 3/2) moist; moderate coarse subangular blocky structure parting to weak very fine subangular blocky; soft, very friable, slightly sticky and slightly plastic; many very fine to medium roots; common very fine irregular and tubular pores; 15 percent gravel and 10 percent cobbles; mildly alkaline; clear smooth boundary.

C1—7 to 17 inches; reddish brown (5YR 5/3) extremely cobbly sandy loam, reddish brown (5YR 4/3) moist; weak fine and very fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine to medium roots; common very fine irregular and tubular pores; 40 percent gravel and 30 percent cobbles; mildly alkaline; clear wavy boundary.

C2—17 to 60 inches; reddish brown (5YR 5/4) extremely cobbly sand, dark reddish brown (2.5YR 3/4) moist; single grain; loose, nonsticky and nonplastic; few very fine to medium roots; many very fine irregular pores; 30 percent gravel, 30 percent cobbles, and 10 percent stones; mildly alkaline.

Rock fragments in the control section are rounded gravel, cobbles, and stones, with the content ranging from 35 to 75 percent. The texture of the matrix of the control section averages loamy sand or sand. The A horizon has hue of 5YR or 7.5YR. The C horizon has hue of 2.5YR through 7.5YR.

Lilsnake Series

The Lilsnake series are shallow, well drained soils on plateaus and hillsides. They formed residuum derived from

sandstone. Elevation is 6,100 to 7,500 feet. The average annual precipitation is 10 to 12 inches. The average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 2 to 10 percent.

These soils are loamy, mixed, frigid Lithic Calciorthids.

Typical pedon of Lilsnake loam in an area of Blazon thin solum-Blazon-Lilsnake complex, 2 to 40 percent slopes, 200 feet west and 2,600 feet south of the northeast corner of sec. 15, T. 12 N., R. 109 W., Sweetwater County, Wyoming.

A1—0 to 1 inch; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; abrupt wavy boundary.

A2—1 to 3 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; weak medium and fine platy structure; soft, very friable, slightly sticky and plastic; common very fine roots; common very fine irregular pores; strongly effervescent; carbonate is disseminated; mildly alkaline; abrupt smooth boundary.

Bw—3 to 6 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/6) moist; weak very coarse subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine to medium roots; common very fine irregular and tubular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

Bk—6 to 13 inches; light yellowish brown (10YR 6/4) loam, brownish yellow (10YR 6/6) moist; massive; soft, friable, sticky and plastic; few very fine to medium roots; few very fine tubular pores; violently effervescent; carbonate is disseminated; moderately alkaline; abrupt smooth boundary.

R—13 inches; hard sandstone.

The depth to bedrock is 10 to 20 inches. Rock fragments consist of channers and a few flagstones, with the content ranging from 0 to 35 percent.

Lotex Series

These very shallow or shallow and well drained soils are on mountain plateaus. They formed in residuum derived from quartzite and sandstone. Elevation is 8,000 to 8,700 feet. The average annual precipitation is 16 to 20 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 30 to 60 days. Slopes are 0 to 6 percent.

These soils are loamy, mixed Lithic Cryoborolls.

Typical pedon of Lotex sandy loam in an area of Lotex sandy loam-Chittum-Lotex stony loam complex, 0 to 6 percent slopes, 1,800 feet west and 2,400 feet north of the southeast corner of sec. 2, T. 2 N., R. 25 E., Daggett County, Utah.

A—0 to 2 inches; reddish brown (5YR 4/3) sandy loam, dark reddish brown (5YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine irregular pores; neutral; clear smooth boundary.

Bw—2 to 7 inches; reddish brown (5YR 5/3) loam, dark reddish brown (5YR 3/3) moist; weak coarse subangular blocky structure; soft, very friable, sticky and plastic; common very fine and fine roots; common very fine irregular and tubular pores; neutral; abrupt smooth boundary.

R—7 inches; hard quartzite.

The depth to lithic contact is 4 to 20 inches. The hue is 5YR or 2.5YR. The texture of the matrix of the control section is loam or sandy loam with 8 to 18 percent clay. Gravel content ranges from 0 to 15 percent. Some pedons have 5 to 15 percent cobbles, stones, and boulders.

Luhon Series

The Luhon series are very deep, well drained soils on alluvial fans, glacial moraines, terraces, terrace escarpments, pediments, hills and breaks. They formed in alluvium, colluvium and glacial till. Elevation is 6,200 to 8,800 feet. The average annual precipitation is 10 to 18 inches, the average annual air temperature is 36 to 45 degrees F, and the frost-free period is 50 to 90 days. Slopes are 0 to 30 percent.

These soils are fine-loamy, mixed Borollic Calciorthids.

Typical pedon of Luhon loam in an area of Luhon-Rockinchair loams, 1 to 4 percent slopes, 1,500 feet east and 750 north of southwest corner of sec. 17, T. 12 N., R. 110 W., Sweetwater County, Wyoming.

A1—0 to 1 inch; yellowish brown (10YR 5/4) loam, brown (10YR 4/3) moist; moderate very fine granular structure; soft, very friable, slightly sticky and plastic; few very fine roots; common very fine irregular pores; 1 inch vesicular crust on surface; strongly effervescent; carbonate is disseminated; moderately alkaline; abrupt smooth boundary.

A2—1 to 8 inches; yellowish brown (10YR 5/4) loam, brown (10YR 4/3) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and plastic; common very fine and fine roots; common very fine irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

Bk1—8 to 14 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 4/4) moist; weak medium and fine subangular blocky structure; soft, very friable, sticky and plastic; common very fine, fine, medium, and coarse roots; common very fine tubular and irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear wavy boundary.

Bk2—14 to 30 inches; pinkish white (7.5YR 8/2) loam, pink (7.5YR 7/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; few very fine tubular pores; violently effervescent; carbonate is disseminated, and also occurs as soft masses; moderately alkaline; clear wavy boundary.

C—30 to 60 inches; reddish yellow (7.5YR 7/6) sandy loam, strong brown (7.5YR 5/6) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; violently effervescent; carbonate is disseminated; strongly alkaline.

The depth to the calcic horizon ranges from 5 to 21 inches. The texture of the matrix of the control section is dominantly loam or clay loam, with some pedons having a sandy loam layer below a depth of 30 inches. The control section averages 18 to 30 percent clay. The content of rock fragments in the control section ranges from 0 to 35 percent and consists of dominantly gravel and channers, but may include some cobbles and flagstones. Some pedons have a weak Bw horizon. The A horizon has hue of 10YR or 7.5YR. Reaction is mildly alkaline or moderately alkaline. The Bk and C horizons have hue of 2.5Y through 7.5YR. Reaction is moderately alkaline or strongly alkaline.

McFadden Series

The McFadden series are very deep, well drained soils on plains, alluvial fans, foot slopes, mountain slopes, and terraces. They formed in alluvium and colluvium derived from various sources. Elevation is 6,100 to 8,800 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 0 to 45 percent.

These soils are coarse-loamy, mixed Borollic Calciorthids.

Typical pedon of McFadden gravelly sandy loam, 2 to 6 percent slopes, center of sec. 2, T. 12 N., R. 111 W., Sweetwater County, Wyoming.

A—0 to 3 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; weak 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; strongly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

Bw—3 to 11 inches; pale brown (10YR 6/3) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine exped vesicular and few very fine tubular pores; 15 percent gravel; strongly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

Bk1—11 to 20 inches; very pale brown (10YR 7/3) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few vesicular pores; 15 percent gravel; violently effervescent; 35 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as coatings on gravel; moderately alkaline; abrupt wavy boundary.

Bk2—20 to 60 inches; variegated white (10YR 8/2) and very pale brown (10YR 8/4) gravelly sandy loam, variegated very pale brown (10YR 7/4), light brownish gray (10YR 6/2) and brownish yellow (10YR 6/6) moist; massive; soft, very friable, slightly sticky and slightly plastic; 15 percent gravel and 5 percent cobbles; strongly effervescent; 6 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as few thin coatings on gravel; moderately alkaline.

Texture of the matrix of the control section is sandy loam or fine sandy loam. Rock fragment content of the control section ranges from 0 to 35 percent. The A horizon has a mildly alkaline or moderately alkaline reaction. The Bw horizon is not present in all pedons. Reaction is mildly alkaline or moderately alkaline. The Bk horizon has a moderately alkaline or strongly alkaline reaction.

Menbar Series

The Menbar series are very deep, somewhat poorly drained soils on flood plains. They formed in alluvium. Elevation is 7,300 to 8,400 feet. The average annual precipitation is 10 to 16 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 50 to 80 days. Slopes are 0 to 2 percent.

These soils are fine-loamy, mixed Cumulic Cryoborolls.

Typical pedon of Menbar clay loam in an area of Turson-Menbar clay loams, 1 to 2 percent slopes, 400 feet west of northeast corner of sec. 34, T. 13 N., R. 113 W., Uinta County, Wyoming.

A1—0 to 2 inches; very dark grayish brown (10YR 3/2) clay loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, friable,

sticky and plastic; many very fine roots; many very fine irregular pores; mildly alkaline; clear smooth boundary.

A2—2 to 9 inches; very dark grayish brown (10YR 3/2) clay loam, very dark brown (10YR 2/2) moist; weak very coarse prismatic structure parting to moderate very fine subangular blocky; hard, friable, very sticky and plastic; common very fine roots; common very fine irregular and few very fine, fine, and medium tubular pores; slight effervescent; carbonate is disseminated; mildly alkaline; clear wavy boundary.

A3—9 to 20 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; few small distinct dark yellowish brown (10YR 4/6) mottles; weak fine and very fine subangular blocky structure; hard, friable, very sticky and plastic; few very fine roots; few very fine irregular and few very fine and fine tubular pores; slightly effervescent; carbonate is disseminated, and also occurs as common fine masses; mildly alkaline; abrupt wavy boundary.

C—20 to 60 inches; brown (10YR 5/3) and grayish brown (10YR 5/2) stratified sandy loam, sandy clay loam and clay loam, dark brown (10YR 4/3) and dark grayish brown (10YR 4/2) moist; common fine faint (10YR 4/6) mottles; 1 to 2 inch black lenses in lower part; massive; slightly hard, friable, slightly sticky to sticky and slightly plastic to plastic; mildly alkaline.

The control section is stratified with textures of sandy loam, loam, clay loam, silty clay loam, or sandy clay loam and averages of 18 to 35 percent clay. The content of rounded gravel and cobbles in the control section commonly is less than 5 percent, but ranges from 0 to 15 percent. Some pedons have a very gravelly or cobbly loamy sand layer below a depth of 40 inches. These soils commonly are effervescent throughout the profile, but noneffervescent layers are common. Reaction is mildly alkaline or moderately alkaline. The C horizon has hue of 2.5Y or 10YR.

Middlewood Series

The Middlewood series are shallow, well drained soils on plateaus and dip slopes. They formed in residuum derived from shale. Elevation is 6,400 to 6,900 feet. The average annual precipitation is 12 to 14 inches, the average annual air temperature is 40 to 44 degrees F, and the frost-free period is 60 to 90 days. Slopes are 2 to 10 percent.

These soils are clayey, montmorillonitic Borollic Lithic Haplargids.

Typical pedon of Middlewood sandy loam in an area of Middlewood-Boettcher complex, 2 to 10 percent slopes, 500 feet west and 2,000 feet north of the southeast corner of sec. 29, T. 3 N., R. 22 E., Daggett County, Utah.

A1—0 to 2 inches; brown (10YR 5/3) sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine platy structure parting to moderate very fine granular; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine irregular pores; mildly alkaline; clear smooth boundary.

A2—2 to 5 inches; dark yellowish brown (10YR 4/4) loam, dark yellowish brown (10YR 3/4) moist; moderate medium and coarse platy structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; mildly alkaline; clear smooth boundary.

Bt—5 to 12 inches; dark yellowish brown (10YR 4/4) clay loam, dark yellowish brown (10YR 3/4) moist; moderate to strong medium prismatic structure parting to moderate fine to medium subangular blocky; very hard, friable, very sticky and very plastic; common very fine and fine roots; common very fine tubular pores; common distinct clay films on faces of peds; mildly alkaline; clear smooth boundary.

Bk—12 to 18 inches; light gray (10YR 7/2) clay loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; few roots; strongly effervescent; 8 percent calcium carbonate equivalent, carbonate is disseminated; moderately alkaline; clear smooth boundary.

R—18 inches; hard shale.

The depth to bedrock ranges from 10 to 20 inches. The content of shale fragments is 0 to 15 percent.

Milok Series

The Milok series are very deep, well drained soils on fan terraces. They formed in alluvium derived from quartzite and sedimentary rocks. Elevation is 5,400 to 6,000 feet. The average annual precipitation is 8 to 12 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Slopes are 2 to 15 percent.

These soils are coarse-loamy, mixed, mesic Ustollic Calciorthids.

Typical pedon of Milok sandy loam, 2 to 6 percent slopes, 300 feet north and 2,300 feet east of the southwest corner of sec. 15, T. 2 N., R. 24 E., Daggett County, Utah.

A—0 to 2 inches; reddish brown (5YR 5/3) sandy loam, dark reddish brown (5YR 3/3) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; 10 percent gravel; mildly alkaline; clear smooth boundary.

Bw—2 to 11 inches; reddish brown (5YR 5/3) sandy loam,

dark reddish brown (5YR 3/4) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; 10 percent gravel; slightly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

Bk1—11 to 18 inches; pink (5YR 7/4) gravelly sandy loam, light reddish brown (5YR 6/4) moist; massive; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; 15 percent gravel; strongly effervescent; 30 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as crusts on the undersides of gravel; moderately alkaline; clear smooth boundary.

Bk2—18 to 28 inches; pink (5YR 7/4) gravelly loam, light reddish brown (5YR 6/4) moist; massive; soft, friable, sticky and plastic; common very fine roots; 20 percent gravel; strongly effervescent; 25 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as crusts on the undersides of gravel; moderately alkaline; clear smooth boundary.

C—28 to 60 inches; reddish brown (2.5YR 5/4) gravelly sandy loam, reddish brown (2.5YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine roots; 20 percent gravel; strongly effervescent; 10 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as a few thin coatings on gravel; moderately alkaline.

Rock fragment content in the control section averages 0 to 20 percent. The hue is 5Y or 7.5YR. The Bk horizon has a texture of sandy loam, gravelly sandy loam, or fine sandy loam.

Moyerson Series

The Moyerson series are shallow, well drained soils on hills. They formed in residuum derived from shale. Elevation is 6,100 to 7,000. The average annual precipitation is about 10 to 14 inches, the average annual air temperature is 42 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 6 to 25 percent.

These soils are clayey, montmorillonitic (calcareous), frigid, shallow Ustic Torriorthents.

Typical pedon of Moyerson clay in an area of Dollard-Moyerson complex, 6 to 25 percent slopes, 2,200 feet east and 700 feet south of the northwest corner of sec. 29, T. 3 N., R. 22 E., Daggett County, Utah.

A—0 to 2 inches; olive (5Y 5/3) clay, olive (5Y 4/3) moist; moderate very fine granular structure; slightly hard, friable, very sticky and very plastic; many very fine irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; abrupt smooth boundary.

Ac—2 to 6 inches; olive (5Y 5/3) clay, olive (5Y 4/3) moist; weak medium prismatic structure; hard, friable, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

C—6 to 12 inches; olive gray (5Y 5/3) silty clay, olive (5Y 4/3) moist; moderate very fine angular block-like rock structure; hard, firm, very sticky and very plastic; few very fine and fine roots; slightly effervescent; carbonate is disseminated; moderately alkaline; gradual smooth boundary.

Cr—12 inches; shale bedrock.

The depth to shale ranges from 10 to 20 inches. The texture of the control section is clay, clay loam, or silty clay with clay content ranging from 35 to 50 percent. Rock fragment content in the control section commonly is less than 5 percent. Some pedons have 5 to 20 percent channers or gravel on the surface. Reaction is mildly alkaline through strongly alkaline. The hue is 2.5Y or 5Y. The C horizon has white gypsum threads, streaks, and masses in some pedons.

Namon Family

The Namon Family soils are very deep, well drained and are on glacial moraines. They formed in glacial drift. Elevation is 8,500 to 9,500 feet. The average annual precipitation is 18 to 24 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 30 to 60 days. Slopes are 10 to 60 percent.

These soils are loamy-skeletal, mixed Mollic Cryoboralfs.

Typical pedon of Namon Family cobbly loam in an area of Hoodle-Namon dry-Namon Families association, 4 to 60 percent slopes, 400 feet north and 1,600 feet west of the southeast corner of sec. 20, T. 3 N., R. 15 E., Summit County, Utah.

Oi—3 inches to 1 inch; forest duff of needles and twigs.

Oe—1 inch to 0; partially decomposed organic matter.

A—0 to 2 inches; dark reddish brown (5YR 3/2) cobbly loam, black (5YR 2/1) moist; moderate very fine subangular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; common very fine and fine tubular pores; 10 percent gravel and 10 percent cobbles; mildly alkaline; abrupt smooth boundary.

E—2 to 4 inches; light reddish brown (5YR 6/4) cobbly loam, dark reddish brown (5YR 3/3) moist; weak fine platy structure parting to moderate very fine subangular blocky; slightly hard, friable, sticky and

slightly plastic; common very fine and fine and few medium and coarse roots; common very fine and fine tubular pores; 10 percent gravel and 10 percent cobbles; mildly alkaline; abrupt smooth boundary.

Bt—4 to 13 inches; reddish brown (5YR 5/4) very cobbly clay loam, brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to fine and very fine subangular blocky; hard, very firm, sticky and plastic; common very fine to coarse roots; common very fine to medium tubular pores; many distinct clay films on faces of peds; 25 percent gravel and 20 percent cobbles; mildly alkaline; gradual smooth boundary.

Btk—13 to 50 inches; reddish yellow (7.5YR 6/6) very cobbly clay loam, brown (7.5YR 5/4) moist; weak medium platy structure parting to moderate fine and very fine subangular blocky; hard, firm, sticky and plastic; few very fine to medium roots; common very fine and fine tubular pores; few distinct clay films on faces of peds in upper part; 20 percent gravel and 15 percent cobbles; slightly effervescent; carbonate is disseminated, and also occurs as veins, masses, and coatings; moderately alkaline; gradual irregular boundary.

Bk—50 to 60 inches; reddish yellow (7.5YR 6/6) cobbly clay loam, brown (7.5YR 5/4) moist; weak medium platy structure parting to weak medium subangular blocky; hard, firm, sticky and plastic; few very fine roots; common very fine and fine tubular pores; 15 percent gravel and 15 percent cobbles; slightly effervescent; carbonate is disseminated, and also occurs as veins and coatings; moderately alkaline.

The depth to horizons containing calcium carbonate ranges from 10 to 32 inches. The A horizon has hue of 5YR or 7.5YR. The E horizon has hue of 5YR or 7.5YR. The texture of the matrix is loam or sandy loam. The content of gravel, cobbles, and stones ranges from 15 to 50 percent. The Bt horizon has hue of 5YR or 7.5YR. Clay content is 27 to 35 percent. The content of gravel, cobbles, and stones ranges from 35 to 75 percent. A C horizon is present in some pedons and has a matrix texture of sandy loam.

Ouray Series

The Ouray series are very deep, well drained soils on alluvial fans. They formed in alluvium derived from sandstone and quartzite. Elevation is 6,600 to 7,100 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 3 to 10 percent.

These soils are sandy, mixed Torriorthentic Haploborolls.

Typical pedon of Ouray loamy sand, 3 to 10 percent slopes, 2,500 feet east and 400 feet north of the southwest corner of sec. 20, T. 3 N., R. 23 E., Daggett County, Utah.

A1—0 to 3 inches; brown (7.5YR 5/2) loamy sand, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine roots; 5 percent gravel; neutral; clear smooth boundary.

A2—3 to 16 inches; dark brown (7.5YR 4/2) loamy sand, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine tubular pores; 5 percent gravel; neutral; gradual wavy boundary.

Bw—16 to 42 inches; brown (7.5YR 5/4) loamy sand, dark brown (7.5YR 4/4) moist; weak medium and coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine tubular pores; 5 percent gravel; neutral; gradual wavy boundary.

C—42 to 60 inches; light brown (7.5YR 6/4) sand, dark brown (7.5YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; 5 percent gravel; mildly alkaline.

Rock fragments commonly are less than 5 percent, but range from 0 to 15 percent. Reaction is neutral or mildly alkaline. The hue is 7.5YR or 10YR. The Bw and C horizons have a texture of loamy sand or sand.

Parkay Family

The Parkay Family soils are very deep, well drained, and are on mountain slopes. They formed in colluvium and residuum derived from granite and from metamorphic and sedimentary rocks. Elevation is 7,500 to 9,000 feet. The average annual precipitation is about 14 to 19 inches, the average annual air temperature is 36 to 40 degrees F, and the frost-free period is 50 to 80 days. Slopes are 10 to 40 percent.

These soils are loamy-skeletal, mixed Argic Pachic Cryoborolls.

Typical pedon of Parkay Family very gravelly loam in an area of Rogert-Parkay Family-Davtone complex, 10 to 55 percent slopes, 1,400 feet north and 1,400 feet west of the southeast corner of sec. 27, T. 3 N., R. 25 E., Daggett County, Utah.

A—0 to 6 inches; dark reddish gray (5YR 4/2) very gravelly loam, dark reddish brown (5YR 3/3) moist; weak to moderate fine granular structure; soft, very friable, slightly sticky and plastic; many very fine and fine roots; many very fine irregular pores; 35 percent gravel; mildly alkaline; clear wavy boundary.

Bt—6 to 20 inches; reddish brown (5YR 5/3) very gravelly loam, dark reddish brown (5YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine to coarse roots; common very fine tubular pores; few distinct clay films on faces of peds; 45 percent gravel; mildly alkaline; clear wavy boundary.

Bk—20 to 40 inches; light reddish brown (5YR 6/3) very gravelly sandy clay loam, reddish brown (5YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine to coarse roots; 45 percent gravel; strongly effervescent; 7 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as thin coatings on gravel; mildly alkaline; gradual boundary.

C—40 to 60 inches; reddish brown (5YR 5/3) very gravelly sandy clay loam, dark reddish brown (5YR 3/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; very few roots; 50 percent gravel; slightly effervescent; carbonate is disseminated; mildly alkaline.

Some pedons have a 1/2-inch-thick layer of leaves and twigs on the surface. The mollic epipedon is 16 to 24 inches thick. Rock fragments are both angular granitic and rounded quartzite, and are mainly gravel. A few cobbles, stones, and boulders commonly are present. The A horizon has hue of 5YR through 10YR. The Bt horizon has hue of 2.5YR or 5YR. Rock fragment content ranges from 35 to 45 percent. The texture of the matrix is loam or sandy clay loam with a clay content of 18 to 27 percent. The Bk and C horizons have hue of 2.5YR or 5YR. Rock fragment content is 35 to 50 percent. The texture of the matrix is sandy loam or sandy clay loam. The Bk horizon is not present in all pedons.

Pesmore Series

The Pesmore series are moderately deep, well drained soils on mountain slopes. They formed in colluvium and residuum derived from metamorphic rocks. Elevation is 6,600 to 7,800 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 60 to 90 days. Slopes are 25 to 70 percent.

These soils are loamy-skeletal, mixed, Typic Haploborolls.

Typical pedon of Pesmore very stony loam in an area of Pesmore-Garlips complex, 25 to 70 percent slopes, 1,500 feet west and 300 feet north of the southeast corner of sec. 23, T. 3 N., R. 23 E., Daggett County, Utah.

A—O to 4 inches; dark brown (7.5YR 4/2) very stony loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic, many very fine, few fine roots; many very fine tubular pores; 15 percent stones, 15 percent cobbles, and 20 percent gravel; neutral; clear smooth boundary.

AB—4 to 10 inches; brown (7.5YR 5/2) very stony loam, dark brown (7.5YR 3/2) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine, few fine roots; many very fine tubular pores; 15 percent stones, 15 percent cobbles, and 20 percent gravel; neutral; gradual wavy boundary.

Bk—10 to 25 inches; pink (7.5YR 7/4) very stony loam, light brown (7.5YR 6/4) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; 15 percent stones, 15 percent cobbles, and 20 percent gravel; strongly effervescent; carbonate is disseminated, and also occurs as many distinct veins and masses; moderately alkaline; gradual wavy boundary.

C—25 to 34 inches; light brown (7.5YR 6/4) extremely stony loam, brown (7.5YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 35 percent stones, 20 percent cobbles, and 20 percent gravel; strongly effervescent; carbonate is disseminated; moderately alkaline; abrupt irregular boundary.

R—34 inches; quartzite.

The depth to bedrock ranges from 20 to 40 inches. The content of rock fragments in the control section ranges from 35 to 75 percent. In some pedons the rock fragments are predominantly gravel or cobbles with only a few stones. The B horizon has hue of 7.5YR or 10YR. Reaction is mildly alkaline through strongly alkaline. The C horizon has hue of 7.5YR or 10YR.

Poposhia Series

The Poposhia series are very deep, well drained soils on alluvial fans and foot slopes. They formed in alluvium and colluvium derived from shale and sandstone. Elevation is 6,200 to 8,000 feet. The average annual precipitation is 9 to 14 inches, the average annual air temperature is 38 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 0 to 15 percent.

These soils are fine-loamy, mixed (calcareous), frigid Ustic Torriorthents.

Typical pedon of Poposhia loam, 6 to 10 percent slopes, 1,000 feet north and 1,200 feet west of the southeast corner of sec. 15, T. 12 N., R. 111 W., Sweetwater County, Wyoming.

A1—0 to 1 inch; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate fine granular structure; slightly hard, friable, sticky and plastic; strongly effervescent; calcium carbonate is disseminated; moderately alkaline; abrupt smooth boundary.

A2—1 to 3 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; weak thin platy structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots; many very fine and fine tubular pores; strongly effervescent; calcium carbonate is disseminated; moderately alkaline; abrupt smooth boundary.

Bw—3 to 27 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; weak very coarse prismatic structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots; many very fine and fine tubular pores; few cicada krotivinas; strongly effervescent; calcium carbonate is disseminated; moderately alkaline; gradual smooth boundary.

C—27 to 60 inches; light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, sticky and plastic; few very fine, fine, and medium roots; strongly effervescent; calcium carbonate is disseminated; moderately alkaline.

The content of rock fragments commonly is less than 5 percent, but may range from 0 to 15 percent. The hue is 2.5Y through 7.5YR. The A horizon has a moderately alkaline or strongly alkaline reaction. The Bw horizon has a texture of loam or clay loam. Reaction is moderately alkaline or strongly alkaline. The C horizon has a texture of loam, sandy clay loam, or clay loam. Reaction is moderately alkaline or strongly alkaline.

Rabbitex Series

The Rabbitex series are very deep, well drained soils on mountain slopes. They formed in colluvium derived from sedimentary rocks. Elevation is 8,000 to 8,900 feet. The average annual precipitation is 15 to 19 inches, the average annual air temperature is 36 to 42 degrees F, and the frost-free period is 50 to 80 days. Slopes are 10 to 25 percent.

These soils are fine-loamy, mixed Typic Calciborolls.

Typical pedon of Rabbitex gravelly loam in an area of Bookcliff-Lail-Rabbitex complex, 10 to 25 percent slopes, 2,500 feet west and 1,400 feet north of the southeast corner of sec. 34, T. 13 N., R. 114 W., Uinta County, Wyoming.

A1—0 to 2 inches; brown (7.5YR 4/2) gravelly loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores; 15 percent gravel and 5 percent cobbles; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

A2—2 to 9 inches; brown (7.5YR 4/2) gravelly loam, dark brown (7.5YR 3/2) moist; weak coarse prismatic structure parting to weak fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 15 percent gravel; strongly effervescent; carbonate is disseminated; moderately alkaline; clear wavy boundary.

Bk—9 to 30 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 5/4) moist; moderate coarse subangular blocky structure parting to moderate fine subangular blocky; slightly hard, friable, sticky and plastic; few roots; common very fine irregular and tubular pores; 10 percent gravel; violently effervescent; carbonate is disseminated, and also occur as white masses and coatings on gravel; moderately alkaline; clear wavy boundary.

C—30 to 60 inches; brown (7.5YR 5/4) clay loam, brown (7.5YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; few roots; 10 percent gravel; strongly effervescent; carbonate is disseminated, and also occurs as thin coatings on gravel; moderately alkaline.

The depth to the Bk horizon ranges from 7 to 10 inches. The rock fragments in the control section are dominantly gravel with smaller amounts of cobbles and a few stones ranging from 5 to 35 percent. The hue is 7.5YR or 10YR. The Bk and C horizons have a texture of clay loam, loam, or gravelly loam.

Recklor Series

The Recklor series are very deep, well drained soils on mountain ridges and slopes. They formed in colluvium derived from sedimentary rocks. Elevation is 7,500 to 9,000 feet. The average annual precipitation is 16 to 20 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 50 to 80 days. Slopes are 6 to 30 percent.

These soils are clayey-skeletal, montmorillonitic Mollic Cryoboralfs.

Typical pedon of Recklor gravelly loam in an area of Recklor-Amsden-Davtone complex, 6 to 40 percent slopes, 2,400 feet west and 5600 feet south of the northeast corner of sec. 14, T. 3 N., R. 25 E., Daggett County, Utah.

A—0 to 3 inches; reddish brown (5YR 4/3) gravelly loam, dark reddish brown (5YR 3/2) moist; weak medium

and fine subangular blocky structure parting to moderate fine granular; soft, friable, sticky and plastic; many very fine roots; many very fine irregular pores; 25 percent gravel; mildly alkaline; clear smooth boundary.

Bt—3 to 22 inches; reddish brown (5YR 4/4) very gravelly clay loam, reddish brown (5YR 4/3) moist; moderate coarse subangular blocky structure parting to strong very fine subangular blocky; hard, friable, very sticky and plastic; common very fine and fine roots; common very fine tubular pores; common distinct clay films on faces of peds and in pores; 25 percent gravel and 10 percent cobbles; mildly alkaline; gradual smooth boundary.

Btk—22 to 60 inches; reddish brown (5YR 4/4) very gravelly clay loam, reddish brown (5YR 4/4) moist; weak very fine angular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; few faint clay films on faces of peds; 1 to 5 inch diameter pockets of light olive brown (2.5Y 5/6) and variegated yellowish brown and olive partially weathered gravel and cobbles make up 15 percent of soil volume; 25 percent gravel and 15 percent cobbles; slightly effervescent; 5 percent calcium carbonate equivalent, carbonate occurs as segregated masses and specks; mildly alkaline.

The depth to horizons containing calcium carbonate ranges from 12 to 30 inches. Rock fragments are rounded gravel, cobbles, or stones. The A horizon has hue of 5YR through 10YR. 1The Bt horizon has hue of 2.5YR or 5YR. Clay content ranges from 35 to 40 percent. Rock fragment content ranges from 35 to 50 percent. The Btk horizon has hue of 2.5YR or 5YR. The texture of the matrix is clay loam or sandy clay loam with 20 to 35 percent clay. Rock fragment content ranges from 35 to 50 percent. Reaction is mildly alkaline or moderately alkaline.

Redcreek Series

The Redcreek series are very shallow or shallow and well drained soils on breaks. They formed in residuum derived from sandstone. Elevation is 6,100 to 7,000 feet. The average annual precipitation is about 10 to 12 inches, the average annual air temperature is 42 to 46 degrees F, and the frost-free period is 60 to 90 days. Slopes are 6 to 35 percent.

These soils are loamy, mixed (calcareous), frigid Lithic Ustic Torriorthents.

Typical pedon of Redcreek channery fine sandy loam in an area of Redcreek-Blackhall-Rock outcrop complex, 6 to 35 percent slopes, 2,000 feet west and 2,200 feet north of the southeast corner of sec. 21, T. 12 N., R. 109 W., Sweetwater County, Wyoming.

A1—0 to 2 inches; light brown (7.5YR 6/4) channery fine sandy loam, brown (7.5YR 5/4) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; few to common very fine roots; many very fine irregular pores; 20 percent channers; strongly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

A2—2 to 6 inches; light brown (7.5YR 6/4) channery fine sandy loam, brown (7.5YR 5/4) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine irregular pores; 20 percent channers; strongly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

C—6 to 16 inches; light brown (7.5YR 6/4) channery fine sandy loam, brown (7.5YR 5/4) moist; massive; soft, very friable, slightly sticky and nonplastic; few roots; strongly effervescent; carbonate is disseminated; moderately alkaline; abrupt wavy boundary.

R—16 inches; hard sandstone.

The depth to bedrock ranges from 4 to 20 inches. The texture of the matrix of the control section is fine sandy loam or sandy loam. The content of channers in the control section ranges from 0 to 35 percent. Reaction is mildly alkaline or moderately alkaline. The A horizon has hue of 5YR through 10YR. The C horizon has hue of 5YR or 7.5YR.

Rencot Series

The Rencot series are shallow, well drained soils on ridges. They formed in residuum derived from limestone. Elevation is 6,500 to 7,000. The average annual precipitation is 9 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 1 to 10 percent.

These soils are loamy-skeletal, mixed Borollic Lithic Calciorthids.

Typical pedon of Rencot very channery loam in an area of Roto-Rockingchair-Rencot complex, 1 to 10 percent slopes, 500 feet northwest of the southeast corner of sec. 15, T. 3 N., R. 19 E., Daggett County, Utah.

A1—0 to 1 inch; pale brown (10YR 6/3) very channery loam, brown (10YR 4/3) moist; moderate very fine granular structure; soft, friable, slightly sticky and plastic; few very fine roots; many very fine irregular pores; 40 percent channers; strongly effervescent; carbonate is disseminate; moderately alkaline; abrupt smooth boundary.

A2—1 to 3 inches; pale brown (10YR 6/3) very channery loam, brown (10YR 4/3) moist; moderate fine granular structure; soft, friable, slightly sticky and plastic; many very fine and fine roots; many very fine irregular

pores; 40 percent channers; violently effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

Bk—3 to 12 inches; pale brown (10YR 6/3) very channery loam, brown (10YR 5/3) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; few roots; 55 percent channers 1 to 3 inches in diameter; violently effervescent; carbonate is disseminated, and also occurs as crusts on the undersides of channers; moderately alkaline; gradual smooth boundary.

R—12 inches; limestone.

The depth to bedrock ranges from 10 to 20 inches. Rock fragments are channers and flagstones or angular gravel and cobbles. The content of rock fragments in the control section averages 35 to 60 percent. The texture of the matrix of the control section is loam or sandy loam with a clay content of 15 to 27 percent. The A horizon has a mildly alkaline or moderately alkaline reaction.

Rentsac Series

The Rentsac series are very shallow or shallow and well drained soils on dip slopes, plains, ridge crests, breaks, and mountain slopes. They formed in residuum derived from limestone and sandstone. Elevation is 6,200 to 8,200 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 0 to 35 percent.

These soils are loamy-skeletal, mixed (calcareous), frigid Lithic Ustic Torriorthents.

Typical pedon of Rentsac very channery sandy loam in an area of Rentsac very channery sandy loam-Rentsac channery sandy loam-Rock outcrop complex, 15 to 35 percent slopes, 200 feet south and 800 feet east of the northwest corner of sec. 5, T. 2 N., R. 20 E., Daggett County, Utah.

A—0 to 2 inches; yellowish brown (10YR 5/4) very channery sandy loam, dark yellowish brown (10YR 4/4) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine irregular pores; 35 percent channers (2mm to 3 inches); strongly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

Bk1—2 to 5 inches; yellowish brown (10YR 5/4) very channery sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine irregular pores; 50 percent channers; strongly effervescent; carbonate is disseminated, and also occurs as 1/16 inch crusts on the undersides of channers; mildly alkaline; abrupt wavy boundary.

Bk2—5 to 10 inches; yellowish brown (10YR 5/4) extremely flaggy sandy loam, brown (7.5YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine roots; 70 percent channers and flagstones which are 3/4 to 2 inches thick and 2 to 7 inches in length and width; strongly effervescent; carbonate is disseminated, and also occurs as 1/8 to 1/4 inch crusts on the undersides of channers and flagstones and as thin coatings on vertical faces; mildly alkaline; gradual boundary.

R—10 inches; hard gray limestone, 1 to 3 feet between fractures.

The depth to bedrock ranges from 4 to 20 inches. The texture of the matrix of the control section is loam, sandy loam, or fine sandy loam. The content of channers and flagstones in the control section averages 35 to 70 percent. The hue is 7.5YR or 10YR. An O horizon 1/8 to 6 inches thick occurs on the surface under juniper and pinyon pine. The Bk horizon has a mildly alkaline or moderately alkaline reaction.

Rhoamett Series

The Rhoamett series are very deep, well to moderately well drained soils on valley floors, valley toe slopes, and in draws. They formed in alluvium derived from shale. Elevation is 6,000 to 7,900 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 0 to 5 percent.

These soils are fine, montmorillonitic (calcareous), frigid Ustic Torriorthents.

Typical pedon of Rhoamett silty clay, 0 to 5 percent slopes, 1,300 feet south of the northeast corner of sec. 20, T. 3 N., R. 20 E., Daggett County, Utah.

A1—0 to 1 inch; pale olive (5Y 6/3) silty clay, olive (5Y 5/3) moist; moderate very fine granular structure; 1/4 inch crust on surface; soft, friable, very sticky and plastic; few very fine roots; many very fine irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

A2—1 to 7 inches; light olive brown (2.5Y 5/4) silty clay, olive brown (2.5Y 4/4) moist; weak medium platy structure; soft, friable, very sticky and plastic; few very fine roots; common very fine tubular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

C1—7 to 18 inches; light olive brown (2.5Y 5/4) silty clay, olive brown (2.5Y 4/4) moist; massive; hard, firm,

very sticky and plastic; few very fine, fine, and medium roots; common very fine tubular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; gradual smooth boundary.

C2—18 to 60 inches; olive (5Y 5/4) silty clay, olive (5Y 4/3) moist; common fine faint dark gray (5Y 4/1) and light olive brown (2.5Y 5/6) mottles resulting from irrigation; massive; hard, firm, very sticky and plastic; few roots; few very fine tubular pores; strongly effervescent; carbonate is disseminated; moderately alkaline.

The clay content in the control section ranges from 35 to 50 percent. The content of gravel commonly is less than 2 percent, but ranges from 0 to 10 percent. Reaction is moderately alkaline or strongly alkaline. Electrical conductivity ranges from 4 to 16 mmhos/cm. The A horizon has hue of 10YR through 5Y. The C horizon has hue of 2.5Y or 5Y. Mottling caused by irrigation occurs in many pedons. Texture is silty clay or silty clay loam. Small veins of gypsum occur in some pedons.

Rockinchair Series

The Rockinchair series are moderately deep, well drained soils on hillslopes, plains, and pediments. They formed in residuum and alluvium derived from limestone, sandstone, and shale. Elevation is 6,500 to 7,900 feet. The average annual precipitation is 9 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 1 to 30 percent.

These soils are fine-loamy, mixed Borollic Calciorthids.

Typical pedon of Rockinchair loam in an area of Luhon-Rockinchair loams, 1 to 6 percent slopes, 1,200 feet east and 600 feet north of the southwest corner of sec. 17, T. 12 N., R. 110 W., Sweetwater County, Wyoming.

A1—0 to 2 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, sticky and plastic; common very fine and fine roots; many very fine irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

A2—2 to 4 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, sticky and plastic; common very fine and fine roots; common very fine irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

Bw—4 to 11 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few roots; common very fine irregular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; clear wavy boundary.

Bk1—11 to 20 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; weak very fine and fine angular blocky structure; soft, friable, sticky and plastic; few roots; violently effervescent; 32 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as masses; moderately alkaline; gradual smooth boundary.

Bk2—20 to 32 inches; white (10YR 8/2) clay loam, pale brown (10YR 6/3) moist; massive; soft, friable, sticky and plastic; few roots; violently effervescent; carbonate is disseminated, and also occurs as soft masses; strongly alkaline; gradual smooth boundary.

Cr—32 inches; soft shale.

The depth to shale bedrock ranges from 20 to 40 inches. The Bw horizon is not present in all pedons. The depth to calcic horizon ranges from 4 to 18 inches. The A horizon has hue of 2.5Y or 10YR. Reaction is mildly alkaline or moderately alkaline. The Bw horizon has hue of 2.5Y through 7.5YR. The Bk horizon has hue of 2.5Y through 7.5YR. The texture of the matrix is loam or clay loam with 18 to 35 percent clay content. The content of gravel or channers commonly is less than 10 percent, but ranges from 0 to 25 percent. Reaction is moderately alkaline or strongly alkaline.

Rock River Series

The Rock River series are very deep, well drained soils on fan terraces and toe slopes. They formed in alluvium. Elevation is 6,200 to 7,200 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 2 to 15 percent.

These soils are fine-loamy, mixed Borollic Haplargids.

Typical pedon of Rock River loam, 2 to 8 percent slopes, 300 feet southeast of the northwest corner of sec. 33, T. 3 N., R. 24 E., Daggett County, Utah.

A—0 to 2 inches; yellowish brown (10YR 5/4) loam, dark brown (10YR 4/3) moist; moderate very fine granular structure; soft, very friable, slightly sticky and plastic; common very fine and fine roots; common very fine irregular pores; slightly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

Bt—2 to 14 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate coarse to fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; common distinct clay films on faces of peds; slightly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

Bk—14 to 28 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium and fine subangular blocky structure; hard, friable, sticky and plastic; strongly effervescent; 9 percent calcium carbonate equivalent, carbonate is disseminated; mildly alkaline; gradual smooth boundary.

C—28 to 60 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and plastic; few roots; slightly effervescent; carbonate is disseminated; mildly alkaline.

The content of rock fragments above a depth of 40 inches ranges from 0 to 15 percent; below 40 inches content may range to 35 percent in some pedons. The hue is 10YR or 7.5YR. The Bt horizon has a texture of loam, sandy clay loam, or fine sandy loam with 18 to 27 percent clay. The Bk horizon has a texture of loam or fine sandy loam. Reaction is mildly alkaline or moderately alkaline. The C horizon has a texture of loam, fine sandy loam, sandy loam, or gravelly sandy loam.

Rogert Series

The Rogert series are shallow, well drained soils on mountain crests and ridges. They formed in residuum derived from granite. Elevation is 7,500 to 8,600 feet. The average annual precipitation is 14 to 19 inches, the average annual air temperature is 36 to 40 degrees F, and the frost-free period is 50 to 80 days. Slopes are 10 to 55 percent.

These soils are loamy-skeletal, mixed Lithic Cryoborolls.

Typical pedon of Rogert very gravelly sandy loam in an area of Rogert-Parkay Family-Davtone complex, 10 to 55 percent slopes, 1,400 feet east and 1,300 feet north of the southwest sec. 26, T. 3 N., R. 25 E., Daggett County, Utah.

A1—0 to 2 inches; brown (7.5YR 4/2) very gravelly sandy loam, dark brown (7.5YR 3/2) moist; moderate fine and very fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores; 45 percent angular gravel; neutral; clear smooth boundary.

A2—2 to 5 inches; brown (7.5YR 4/2) very gravelly sandy loam, dark brown (7.5YR 3/2) moist; weak fine and fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores; 50 percent angular gravel; neutral; abrupt smooth boundary.

A3—5 to 13 inches; brown (7.5YR 4/2) very gravelly sandy loam, dark brown (7.5YR 3/2) moist; massive; soft, friable, slightly sticky and nonplastic; few very fine and fine roots; common very fine irregular pores; 55 percent angular gravel; neutral; gradual smooth boundary.

R—13 inches; fractured granite bedrock.

The depth to bedrock ranges from 10 to 20 inches. The content of rock fragments in the control section ranges from 35 to 70 percent, and the rock fragments are dominantly angular gravel with a few larger. The hue is 7.5YR or 10YR.

Rogrube Series

The Rogrube series are very deep, well drained soils on pediments. They formed in alluvium and residuum derived from shale. Elevation is 7,200 to 7,500 feet. The average annual precipitation is 9 to 12 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 3 to 5 percent.

These soils are fine-loamy, mixed, frigid Calcic Gypsiorthids.

Typical pedon of Rogrube gravelly loam in an area of Rogrube gravelly loam-Rogrube clay loam complex, 3 to 5 percent slopes, 700 feet south and 300 feet west of northeast corner of sec. 6, T. 12 N., R. 112 W., Uinta County, Wyoming.

A1—0 to 2 inches; brown (10YR 5/3) gravelly loam, brown (10YR 4/3) moist; weak thick platy structure; soft, friable, sticky and plastic; few roots; common very fine irregular pores; 25 percent gravel; strongly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

A2—2 to 6 inches; brown (10YR 5/3) gravelly loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; few very fine irregular and tubular pores; 25 percent gravel; violently effervescent; carbonate is disseminated, and also occurs as coatings on gravel; mildly alkaline; gradual smooth boundary.

Bk—6 to 17 inches; light yellowish brown (10YR 6/4) gravelly loam, yellowish brown (10YR 5/4) moist; weak medium and fine subangular blocky structure; slightly hard, friable, sticky and plastic; few roots; common very fine irregular pores; 25 percent gravel; silica pendants on gravel; violently effervescent; 25 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as crusts on gravel; moderately alkaline; clear wavy boundary.

Bky—17 to 24 inches; very pale brown (10YR 7/3) gravelly loam, yellowish brown (10YR 5/4) moist; massive; very soft and fluffy, very friable, sticky and slightly plastic; 20 percent gravel and 5 percent

cobbles; strongly effervescent; 20 percent calcium carbonate equivalent, carbonate is disseminated; 20 percent gypsum; mildly alkaline; clear wavy boundary.

Cky—24 to 60 inches; pink (7.5YR 7/4) cobbly sandy loam, brown (7.5YR 5/4) moist; massive; very soft and slightly fluffy, very friable, slightly sticky and slightly plastic; 15 percent gravel and 15 percent cobbles; strongly effervescent; 12 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as a few coatings on gravel; 15 percent gypsum; mildly alkaline.

The content of gravel and cobbles ranges from 0 to 35 percent. Some pedons have intermittent layers of fractured hard mudstone below a depth of 20 inches. Reaction is mildly alkaline or moderately alkaline. The A horizon has hue of 2.5Y or 10YR. The Bk horizon has hue of 7.5YR or 10YR. The texture of the matrix is loam, sandy clay loam, or clay loam. The Bky and Cky horizons have hue of 2.5Y through 7.5YR. The texture of the matrix is sandy loam, loam, sandy clay loam, or clay loam.

Roto Series

The Roto series are moderately deep, well drained soils on plains. They formed from residuum derived from limestone and shale. Elevation is 6,500 to 7,000 feet. The average annual precipitation is 9 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 0 to 10 percent.

These soils are loamy-skeletal, carbonatic Borollic Calciorthids.

Typical pedon of Roto channery loam in an area of Roto-Rockinchair-Rencot complex, 0 to 10 percent slopes, 1,900 feet south of the northwest corner of sec. 13, T. 12 N., R. 110 W., Sweetwater County, Wyoming.

A1—0 to 2 inches; pale brown (10YR 6/3) channery loam, dark yellowish brown (10YR 4/4) moist; weak medium platy structure parting to moderate fine granular; soft, friable, sticky and plastic; common very fine roots; many very fine and fine irregular pores; 15 percent channers and 1 percent flagstones; strongly effervescent; 7 percent calcium carbonate equivalent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

A2—2 to 7 inches; yellowish brown (10YR 5/4) channery loam, dark yellowish brown (10YR 4/4) moist; moderate coarse subangular blocky structure; soft, friable, sticky and plastic; common very fine to medium roots; common very fine irregular and tubular pores; 25 percent limestone channers and flagstones; strongly effervescent; 11 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as coatings on the undersides of channers and flagstones; moderately alkaline; clear wavy boundary.

Bk1—7 to 12 inches; yellowish brown (10YR 5/4) very channery loam, dark yellowish brown (10YR 4/4) moist; massive; soft, friable, sticky and plastic; few very fine and fine roots; many very fine irregular pores; 50 percent channers and flagstones; violently effervescent; 35 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as crusts on the undersides of channers and flagstones; moderately alkaline; abrupt wavy boundary.

Bk2—12 to 25 inches; white (10YR 8/2) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; soft, friable, slightly sticky and nonplastic; few very fine and fine roots; many very fine irregular pores; 35 percent angular gravel; violently effervescent; 60 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as crusts on gravel; few gypsum crystals; moderately alkaline; abrupt wavy boundary.

R—25 inches; hard shale.

The depth to bedrock ranges from 20 to 40 inches. The content of angular gravel, channers, and flagstones in the control section average 35 to 50 percent. The Bw horizon is not present in all pedons. The Bk horizon has a texture of the matrix that is loam, sandy loam, or fine sandy loam with a clay content of 10 to 25 percent. Segregated gypsum masses occur in some pedons. The calcium carbonate equivalent plus the percent gypsum in the less than 2mm portion of the soil averages 50 to 70 percent.

Sedillo Family

The Sedillo Family soils are very deep, well drained soils on piedmont slopes. They formed in alluvium and colluvium derived from quartzite and sedimentary rocks. Elevation is 5,600 to 6,000 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Slopes are 2 to 8 percent.

These soils are loamy-skeletal, mixed mesic Ustollic Haplargids.

Typical pedon of Sedillo Family very cobbly sandy loam in an area of Sedillo-Strych complex, 2 to 8 percent slopes, center of sec. 20, T. 2 N., R. 24 E., Daggett County, Utah.

A—0 to 2 inches; reddish brown (5YR 4/3) very cobbly sandy loam, dark reddish brown (5YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine roots; many very fine irregular pores; 20 percent gravel, 20

percent cobbles, and 5 percent stones; neutral; abrupt smooth boundary.

Bt—2 to 7 inches; reddish brown (5YR 4/4) very cobbly sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; many very fine and few medium roots; common very fine tubular and irregular pores; common distinct clay films on faces of peds; 20 percent gravel, 20 percent cobbles, and 5 percent stones; mildly alkaline; clear smooth boundary.

Btk—7 to 23 inches; pinkish white (5YR 8/2) very cobbly sandy clay loam, reddish brown (5YR 5/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; few faint clay films on faces of peds; 20 percent gravel, 20 percent cobbles, and 5 percent stones; violently effervescent; 25 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as masses and crusts on rock fragments; moderately alkaline; gradual smooth boundary.

Bk—23 to 34 inches; pink (7.5YR 7/4) very cobbly sandy loam, reddish brown (5YR 5/3 moist; massive; soft, friable, slightly sticky and nonplastic; few roots; 20 percent gravel, 20 percent cobbles, and 5 percent stones; violently effervescent; 20 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as coatings on rock fragments; moderately alkaline; gradual wavy boundary.

C—34 to 60 inches; light reddish brown (5YR 6/3) very cobbly sandy loam, reddish brown (5YR 4/3) moist; single grain; loose, very friable, slightly sticky and nonplastic; 20 percent gravel, 20 percent cobbles, and 5 percent stones; strongly effervescent; carbonate is disseminated, and also occurs as a few coatings on rock fragments; moderately alkaline.

The content of rock fragments in the control section range from 35 to 50 percent; this includes gravel, cobbles, and stones composed of mainly rounded red quartzite. The hue is 5YR or 7.5YR. The Bk horizon has a moderately alkaline or strongly alkaline reaction.

Sinkson Series

The Sinkson series are very deep, well drained soils on alluvial fans and foot slopes. They formed in alluvium and colluvium derived from sandstone and shale. Elevation is 6,400 to 8,400 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 0 to 20 percent.

These soils are fine-loamy, mixed (calcareous), frigid Ustic Torriorthents.

Typical pedon of Sinkson sandy clay loam, 1 to 8 percent slopes, 300 feet south and 2,600 feet west of the northeast corner of sec. 17, T. 3 N., R. 25 E., Daggett County, Utah.

A—0 to 9 inches; reddish brown (5YR 5/3) sandy clay loam, reddish brown (5YR 4/3) moist; moderate coarse granular structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine irregular pores; slightly effervescent; carbonate is disseminated; moderately alkaline; clear wavy boundary.

C—9 to 60 inches; light reddish brown (5YR 6/3) sandy clay loam, reddish brown (5YR 4/3) moist; massive; hard, firm, sticky and plastic; few very fine to medium roots; few very fine tubular pores; slightly effervescent; carbonate is disseminated; moderately alkaline.

Clay content of the control section averages 18 to 35 percent. The content of rock fragments commonly is less than 5 percent, but averages 0 to 15 percent. The C horizon has a texture of loam, clay loam, or sandy clay loam. Thin lenses of fine sandy loam and gravelly sandy loam occur in some pedons.

Spicerton Series

The Spicerton series are very deep, well drained soils on alluvial fans. They formed in alluvium derived from sandstone and shale. Elevation is 6,200 to 7,600 feet. The average annual precipitation is 9 to 12 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 0 to 3 percent.

These soils are fine, montmorillonitic Borollic Natrargids.

Typical pedon of Spicerton loam in an area of Spicerton-Poposhia complex, 0 to 3 percent slopes, 1,200 feet north of southeast corner of sec. 27, T. 13 N., R. 113 W., Uinta County, Wyoming.

E—0 to 1 inch; light brownish gray (2.5Y 6/2) loam, dark grayish brown (2.5Y 4/2) moist; weak coarse platy structure parting to weak very fine granular; slightly hard, friable, sticky and plastic; few very fine roots; common very fine irregular pores; slightly effervescent; 6 percent calcium carbonate equivalent, carbonate is disseminated; moderately alkaline; abrupt smooth boundary.

Btn1—1 to 6 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; strong fine columnar structure parting to moderate very fine subangular blocky with many moderately thick clay films on faces of peds; very hard, friable, very sticky and very plastic; common very fine and few fine and medium roots; common very fine tubular pores; slightly effervescent; 8 percent calcium carbonate

equivalent, carbonate is disseminated; very strongly alkaline; clear smooth boundary.

Btn2—6 to 11 inches; pale olive (5Y 6/3) clay loam, olive (5Y 5/3) moist; moderate coarse prismatic structure; slightly hard, friable, very sticky and very plastic; few very fine, fine, and medium roots; few very fine tubular pores; strongly effervescent; 15 percent calcium carbonate equivalent, carbonate is disseminated; very strongly alkaline; gradual smooth boundary.

C1—11 to 35 inches; pale olive (5Y 6/3) clay loam, olive (5Y 5/3) moist; massive; slightly hard, friable, very sticky and very plastic; few roots; strongly effervescent; 14 percent calcium carbonate equivalent, carbonate is disseminated; very strongly alkaline; gradual smooth boundary.

C2—35 to 60 inches; pale olive (5Y 6/3) clay loam, olive (5Y 5/3) moist; massive; slightly hard, friable, very sticky and very plastic; few roots; strongly effervescent; 11 percent calcium carbonate equivalent, carbonate is disseminated; strongly alkaline.

The depth to top of the natric horizon ranges from 1 to 6 inches; it is deepest under greasewood clumps. Electrical conductivity ranges from 2 to 16 mmhos/cm. The hue is 2.5Y or 5Y. The E horizon a texture of loam, clay loam, or very fine sandy loam with 10 to 35 percent clay. Reaction is moderately alkaline or strongly alkaline. The Btn horizons have a strongly alkaline or very strongly alkaline reaction. The C horizon has a moderately alkaline through very strongly alkaline reaction.

Spool Series

The Spool series are very shallow or shallow and excessively drained soils on hogbacks and breaks. They formed in residuum derived from sandstone. Elevation is 6,100 to 7,600 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 15 to 50 percent.

These soils are mixed, frigid Lithic Torripsamments.

Typical pedon of Spool loamy fine sand in an area of Spool-Rock outcrop-Blackhall complex, 15 to 50 percent slopes, 800 feet north of the southeast corner of sec. 21, T. 3 N., R. 20 E., Daggett County, Utah.

A1—0 to 2 inches; brown (10YR 5/3) loamy fine sand, dark grayish brown (10YR 4/2) moist; weak fine granular structure; loose, very friable, nonsticky and nonplastic; few very fine roots; many very fine and fine irregular pores; neutral; clear smooth boundary.

A2—2 to 7 inches; brown (10YR 5/3) loamy fine sand, dark grayish brown (10YR 4/2) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine and fine irregular pores; neutral; abrupt wavy boundary.

C—7 to 9 inches; yellowish brown (10YR 5/4) loamy fine sand, brown (10YR 4/3) moist; single grain; loose, very friable, nonsticky and nonplastic; few very fine roots; many very fine and fine irregular pores; neutral; abrupt wavy boundary.

R—9 inches; hard gray sandstone.

The depth to bedrock ranges from 4 to 20 inches. The content of channers and flagstones commonly is less than 10 percent, but ranges from 0 to 35 percent. The hue is 10YR or 7.5YR. Reaction is neutral or mildly alkaline.

Strych Series

The Strych series are very deep, well drained soils on alluvial fans, terraces, piedmont slopes, hillslopes, and ravine side slopes. They formed in alluvium derived from sandstone, shale, and quartzite. Elevation is 5,400 to 6,300 feet. The average annual precipitation is 8 to 14 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Slopes are 2 to 40 percent.

These soils are loamy-skeletal, mixed, mesic Ustollic Calciorthids.

Typical pedon of Strych gravelly sandy loam in an area of Strych gravelly sandy loam-Strych very cobbly sandy loam, 8 to 30 percent slopes, center of sec. 15, T. 2 N., R. 24 E., Daggett County, Utah.

A1—0 to 2 inches; brown (7.5YR 5/3) gravelly sandy loam, dark brown (7.5YR 4/4) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine irregular pores; 20 percent gravel; strongly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

A2—2 to 9 inches; brown (7.5YR 5/3) gravelly sandy loam, dark brown (7.5YR 4/4) moist; weak coarse and medium subangular structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine irregular pores; 25 percent gravel; strongly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

Bk1—9 to 18 inches; pink (7.5YR 7/4) very gravelly sandy loam, light brown (7.5YR 6/4) moist; weak very fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; common very fine and fine irregular pores; 30 percent gravel and 10 percent

cobbles; violently effervescent; 28 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as thin crusts on gravel; moderately alkaline; clear wavy boundary.

Bk2—18 to 30 inches; pinkish white (7.5YR 8/2) very gravelly sandy loam, pink (7.5YR 7/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine irregular pores; 25 percent gravel, 20 percent cobbles, and 5 percent stones; violently effervescent; 35 percent calcium carbonate equivalent, carbonate occurs as masses and pendants on rock fragments, and is disseminated; moderately alkaline; clear irregular boundary.

Bk3—30 to 50 inches; light brown (7.5YR 6/4) very gravelly sandy loam, brown (7.5YR 5/4) moist; massive; soft, very friable, slightly sticky and nonplastic; very few roots; common very fine and fine irregular pores; 30 percent gravel, 10 percent cobbles, and 10 percent stones; strongly effervescent; 8 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as coatings on rock fragments; moderately alkaline; gradual wavy boundary.

C—50 to 60 inches; reddish brown (5YR 5/4) extremely gravelly sandy loam, reddish brown (5YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; 40 percent gravel, 15 percent cobbles, and 15 percent stones; strongly effervescent; carbonate is disseminated; moderately alkaline.

Reaction is mildly alkaline or moderately alkaline. Rock fragments in the control section are rounded and 2mm to 2 feet in diameter, with the content ranging from 35 to 70 percent. The control section averages 8 to 18 percent clay. A cambic horizon occurs in some pedons. The hue is 5YR through 10YR.

Tally Series

The Tally series are very deep, well drained soils on mountain plateaus. They formed in alluvium and residuum derived from sandstone, shale, and quartzite. Elevation is 7,300 to 8,200 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 60 to 90 days. Slopes are 3 to 25 percent.

These soils are coarse-loamy, mixed, Typic Haploborolls.

Typical pedon of Tally fine sandy loam, 3 to 10 percent slopes, 2,200 feet west and 1,200 feet north of the southeast corner of sec. 27, T. 3 N., R. 23 E., Daggett County, Utah.

A—0 to 5 inches; dark brown (7.5YR 4/2) fine sandy loam, very dark brown (7.5YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine and medium roots; many very fine tubular pores; neutral; clear smooth boundary.

AB—5 to 14 inches; dark brown (7.5YR 4/3) fine sandy loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine tubular pores; neutral; gradual wavy boundary.

Bw—14 to 34 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine tubular pores; neutral; gradual wavy boundary.

Bk1—34 to 48 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; few very fine roots; many very fine tubular pores; strongly effervescent; carbonate is disseminated; moderately alkaline; gradual wavy boundary.

Bk2—48 to 60 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine tubular pores; 10 percent gravel; strongly effervescent; carbonate is disseminated, and also occurs as coatings on gravel; moderately alkaline.

Texture of the control section is fine sandy loam or sandy loam. The depth to the Bk horizon is 23 to 34 inches. The A and Bw horizons have neutral or mildly alkaline reactions. The Bk horizon has a reaction is moderately alkaline or strongly alkaline.

Teeler Series

The Teeler series are very deep, well drained soils on mountaintops. They formed in alluvium and residuum derived from conglomerate. Elevation is 7,900 to 9,500 feet. The average annual precipitation is 14 to 19 inches, the average annual air temperature is 35 to 40 degrees F, and the frost-free period is 50 to 80 days. Slopes are 1 to 25 percent.

These soils are loamy-skeletal, mixed Argic Cryoborolls.

Typical pedon of Teeler gravelly sandy loam, 1 to 10 percent slopes, 1,300 feet west and 700 feet north of the southeast corner of sec. 23, T. 13 N., R. 114 W., Uinta County, Wyoming.

A—0 to 3 inches; dark reddish gray (5YR 4/2) gravelly sandy loam, dark reddish brown (5YR 3/2) moist; moderate very fine granular structure; soft, friable, slightly sticky and plastic; many very fine and fine roots; common very fine and fine exped vesicular pores; 15 percent gravel and 5 percent cobbles; mildly alkaline; clear smooth boundary.

Bt—3 to 11 inches; dark reddish brown (5YR 3/3) very gravelly clay loam, dark reddish brown (5YR 3/3) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; common very fine tubular pores; many distinct dark reddish brown (5YR 2/2) clay films on faces of peds; 30 percent gravel and 10 percent cobbles; mildly alkaline; clear smooth boundary.

Btk—11 to 17 inches; brown (7.5YR 5/4) very gravelly sandy loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and nonplastic; many very fine and fine roots; few very fine tubular pores; few faint clay films on faces of peds; 30 percent gravel and 10 percent cobbles; soil matrix is dominantly noneffervescent, with thin calcium carbonate crusts on underside of gravel and cobbles; mildly alkaline; clear smooth boundary.

Bk—17 to 36 inches; variegated pink (5YR 7/3) and light brown (7.5YR 6/4) very cobbly sandy loam, brown (7.5YR 5/4) moist; massive; hard, friable, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; 20 percent gravel, 30 percent cobbles, and 5 percent stones; strongly effervescent; 8 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as 1/16 to 1/8 inch crusts on rock fragments; mildly alkaline; clear smooth boundary.

C—36 to 60 inches; reddish brown (5YR 5/3) very cobbly sandy loam, reddish brown (5YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; 20 percent gravel, 30 percent cobbles, and 5 percent stones; strongly effervescent; 6 percent calcium carbonate equivalent, carbonate is disseminated, and also occurs as a few thin coatings on rock fragments; mildly alkaline.

The mollic epipedon includes the A and Bt horizons, and is 10 to 15 inches thick. The rock fragments on the surface and throughout the profile include gravel, cobbles, and stones of rounded quartzite, limestone, and other rocks. The hue is 5YR or 7.5YR. The A and Bt horizons have neutral or mildly alkaline reactions. The Bk and C horizons have mildly alkaline or moderately alkaline reactions.

Thermopolis Series

The Thermopolis series are very shallow or shallow and well drained soils on breaks. They formed in residuum and colluvium derived from reddish shale. Elevation is 7,000 to 8,400 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 44 degrees F, and the frost-free period is 60 to 90 days. Slopes are 3 to 60 percent.

These soils are loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents.

Typical pedon of Thermopolis gravelly loam in an area of Thermopolis-Blazon-Sinkson loams, 3 to 60 percent slopes, 400 feet east and 1,500 feet south of the northwest corner of sec. 2, T. 2 N., R. 18 W., Daggett County, Utah.

A—0 to 5 inches; reddish brown (2.5YR 5/4) gravelly loam, reddish brown (2.5YR 4/4) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine irregular pores; 20 percent gravel; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

C—5 to 17 inches; reddish brown (2.5YR 5/4) gravelly loam, reddish brown (2.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine interstitial pores; 20 percent gravel; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

Cr—17 inches; shale bedrock.

The depth to bedrock ranges from 8 to 20 inches. The content of angular channers or rounded gravel and cobbles in the control section ranges from 0 to 35 percent. Reaction is mildly alkaline or moderately alkaline. The A horizon has hue of 2.5YR through 7.5YR. The C horizon has hue of 2.5YR through 5YR.

Tisworth Series

The Tisworth series are very deep, well drained soils on alluvial fans and terraces. They formed in alluvium. Elevation is 6,200 to 6,600 feet. The average annual precipitation is 9 to 12 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 1 to 5 percent.

These soils are fine-loamy, mixed Borollic Natrargids.

Typical pedon of Tisworth fine sandy loam in an area of Grieves-Tisworth fine sandy loams, 1 to 5 percent slopes, 1,800 feet north and 2,500 feet east of the southwest corner of sec. 19, T. 3 N., R. 24 E., Daggett County, Utah.

A—0 to 3 inches; yellowish brown (10YR 5/4) fine sandy loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, friable, sticky and slightly plastic; common very fine roots; common very fine irregular and tubular pores; strongly effervescent; carbonate is disseminated; very strongly alkaline; abrupt smooth boundary.

Btn1—3 to 12 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate coarse columnar structure parting to moderate medium subangular blocky; very hard, friable, sticky and plastic; common very fine tubular pores; many distinct clay films on faces of peds; strongly effervescent; carbonate is disseminated; very strongly alkaline; gradual smooth boundary.

Btn2—12 to 28 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse prismatic structure; hard, friable, sticky and plastic; few very fine to coarse roots; common very fine tubular pores; many distinct clay films on faces of peds; strongly effervescent; carbonate is disseminated; very strongly alkaline; gradual wavy boundary.

C1—28 to 45 inches; light yellowish brown (10YR 6/4) loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few roots; common very fine tubular pores; strongly effervescent; carbonate is disseminated; strongly alkaline; clear wavy boundary.

C2—45 to 60 inches; light yellowish brown (10YR 6/4) fine sandy loam, brown (10YR 4/3) moist; massive; soft, friable, slightly sticky and slightly plastic; strongly effervescent; carbonate is disseminated; strongly alkaline.

The depth to top of the Btn horizon ranges from 2 to 6 inches. The depth to the bottom of the Btn horizon ranges from 11 to 28 inches. Electrical conductivity ranges from 4 to 16 mmhos/cm. The content of rock fragments is 0 to 5 percent. The A horizon has a moderately alkaline through very strongly alkaline reaction. The Btn horizon has a texture of loam, clay loam, sandy clay loam, or fine sandy loam with 18 to 35 percent clay. Reaction is strongly alkaline or very strongly alkaline. The C horizon commonly has a texture of loam, fine sandy loam, or sandy loam. In some pedons thin layers of loamy sand, silt loam, or clay loam occur. Reaction is strongly alkaline or very strongly alkaline.

Tolman Series

The Tolman series are shallow, well drained soils on mountain plateaus. They formed in residuum and alluvium derived from sandstone and quartzite. Elevation is 7,300 to 8,200 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 60 to 90 days. Slopes are 3 to 25 percent.

These soils are loamy-skeletal, mixed, Lithic Argiborolls.

Typical pedon of Tolman very flaggy fine sandy loam in an area of Tally-Tolman complex, 3 to 25 percent slopes, 1,000 feet east and 400 feet north of the southwest corner of sec. 35, T. 3 N., R. 23 E., Daggett County, Utah.

A1—0 to 4 inches; dark brown (7.5YR 4/2) very flaggy fine sandy loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine, few fine and medium roots; many very fine tubular pores; 45 percent flagstones, gravel, and cobbles; neutral; clear smooth boundary.

A2—4 to 10 inches; dark brown (7.5YR 4/2) very flaggy fine sandy loam, dark brown (7.5YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, few fine, and medium roots; many very fine tubular pores; 55 percent flagstones, gravel, and cobbles; neutral; abrupt wavy boundary.

Bt—10 to 14 inches; brown (7.5YR 5/4) extremely flaggy sandy clay loam, dark brown (7.5YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine, few fine and medium roots; many very fine tubular pores; many distinct clay films on faces of peds and in pores; 75 percent flagstones and channers; neutral; abrupt irregular boundary.

R—14 inches; fractured sandstone bedrock.

The depth to bedrock ranges from 10 to 20 inches. The hue is 7.5YR to 10YR.

Torriorthents

The Torriorthents are shallow to very deep, well drained soils on mountain slopes. They formed in residuum and colluvium derived from quartzite, sandstone, and other metamorphic and sedimentary rocks. Elevation is 6,000 to 8,000 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 60 to 90 days. Slopes are 10 to 70 percent.

Representative profile of Torriorthents in an area of Haploborolls-Torriorthents complex, 10 to 70 percent slopes, 1,800 feet north and 600 feet west of the southeast corner of sec. 32, T. 3 N., R. 24 E., Daggett County, Utah.

A1—0 to 2 inches; reddish brown (2.5YR 5/4) very gravelly loam, reddish brown (2.5YR 4/4) moist; moderate very fine and fine granular structure; soft, friable, sticky and plastic; very few roots; many very

fine irregular pores; 40 percent gravel; slightly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

A2—2 to 4 inches; reddish brown (2.5YR 5/4) very gravelly loam, reddish brown (2.5YR 4/4) moist; weak medium subangular blocky structure; soft, friable, sticky and plastic; common very fine, fine, and medium roots; many very fine irregular pores; 40 percent gravel; slightly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.

2C—4 to 15 inches; light yellowish brown (10YR 6/4) very gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak fine to coarse subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine to coarse roots; 55 percent gravel; slightly effervescent; carbonate is disseminated; mildly alkaline; gradual smooth boundary.

Cr—15 to 24 inches; fractured weakly consolidated bedrock.

The depth to bedrock ranges from 10 to more than 60 inches. The texture of the matrix is sandy loam, loam, sandy clay loam, or clay loam. Rock fragments are mostly angular gravel and cobbles, but include some stones and an occasional boulder. The content of rock fragments ranges from 15 to 60 percent. The hue is 2.5YR through 10YR.

Tridell Series

The Tridell series are very deep, well drained soils on fan terraces. They formed in alluvium. Elevation is 8,100 to 8,500 feet. The average annual precipitation is 11 to 14 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 50 to 80 days. Slopes are 3 to 15 percent.

These soils are loamy-skeletal, mixed, Aridic Calciborolls.

Typical pedon of Tridell gravelly loam, 3 to 15 percent slopes, 100 feet east, and 2,800 feet north of the southwest corner of sec. 28, T. 3 N., R. 16 E., Summit County, Utah.

A1—0 to 2 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular and weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine vesicular pores; 25 percent gravel; slightly effervescent; carbonate is disseminated; mildly alkaline; abrupt smooth boundary.

A2—2 to 7 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few very fine interstitial pores; 25 percent gravel; slightly effervescent; mildly alkaline; clear smooth boundary.

Bw—7 to 13 inches; yellowish brown (10YR 5/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine interstitial pores; 30 percent gravel; strongly effervescent; carbonate is disseminated; moderately alkaline; clear smooth boundary.

Bk1—13 to 19 inches; light yellowish brown (10YR 6/4) very gravelly loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; 40 percent gravel; strongly effervescent; carbonate is disseminated, and also occurs as coatings on rock fragments; moderately alkaline; clear smooth boundary.

Bk2—19 to 60 inches; pale brown (10YR 6/3) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; 40 percent gravel and 15 percent cobbles; strongly effervescent; carbonate is disseminated, and also occurs as a few thin coatings on gravel and cobbles; moderately alkaline.

Rock fragments are mostly gravel with lesser amounts of cobbles. The hue is 7.5YR or 10YR. The Bk horizons have a texture of the matrix that is loam or sandy loam. The content of rock fragments ranges from 35 to 60 percent, and generally increases with depth.

Turson Series

The Turson series are very deep, somewhat poorly drained soils on flood plains. They formed in alluvium. Elevation is 7,300 to 8,400 feet. The average annual precipitation is 10 to 16 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 50 to 80 days. Slopes are 0 to 2 percent.

These soils are fine-loamy over sandy or sandy-skeletal, mixed Aquic Cryoborolls.

Typical pedon of Turson clay loam in an area of Turson-Menbar clay loams, 1 to 2 percent slopes, in NW1/4, NW1/4 sec. 32, T. 13 N., R. 113 W., Uinta County, Wyoming.

A1—0 to 6 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; many very fine and fine irregular pores; slightly effervescent; carbonate is disseminated; mildly alkaline; clear wavy boundary.

A2—6 to 12 inches; grayish brown (10YR 5/2) clay loam, dark brown (10YR 3/3) moist; weak thick and thin platy structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; many very fine and fine irregular pores; few very fine distinct rust stains in root channels; slightly effervescent; carbonate is disseminated; mildly alkaline; gradual wavy boundary.
C—12 to 32 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; few fine faint yellowish brown mottles; massive; slightly hard, friable, sticky and plastic; few very fine and fine roots; slightly effervescent; carbonate is disseminated; mildly alkaline; abrupt wavy boundary.
2C—32 to 60 inches; brown (10YR 5/3) very gravelly loamy sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; mildly alkaline.

The depth to the 2C horizon is 20 to 40 inches. A seasonal water table is at 3 to 5 feet. Reaction is mildly alkaline or moderately alkaline. The A horizon has hue to 2.5Y to 7.5YR. The C horizon has hue of 2.5Y through 7.5YR. Texture is clay loam, loam, or silty clay loam with 18 to 35 percent clay and 0 to 15 percent gravel. Faint or distinct mottles occur in most pedons. The 2C horizon contains 35 to 70 percent stream rounded gravel, cobbles, and stones. The texture of the matrix is loamy sand or sand.

Worfstone Family

The Worfstone Family soils are shallow, well drained, and are on mountain slopes. They formed in residuum derived from quartzite and sandstone. Elevation is 6,400 to 8,100 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 38 to 43 degrees F, and the frost-free period is 60 to 90 days. Slopes are 20 to 60 percent.

These soils are loamy-skeletal, mixed Borollic Lithic Haplargids.

Typical pedon of Worfstone Family very stony loam in an area of Harpole-Worfstone Families complex, 20 to 60 percent slopes, 400 feet east and 600 feet north of the southwest corner of sec. 29, T. 3 N., R. 23 W., Daggett County, Utah.

A—0 to 5 inches; reddish brown (5YR 4/3) very stony loam, dark reddish brown (5YR 3/3) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; about 25 percent gravel, 15 percent cobbles, and 10 percent stones; slightly acid; clear wavy boundary.
Bt—5 to 12 inches; reddish brown (2.5YR 4/4) very cobbly clay loam, dark reddish brown (2.5YR 3/4) moist; strong fine angular blocky structure; very hard, firm, sticky and plastic; many very fine and few fine roots; distinct clay films on faces of peds and in pores; 25 percent gravel, 20 percent cobbles, and 5 percent stones; slightly acid; abrupt irregular boundary.
Bc—12 to 15 inches; reddish brown (2.5YR 4/4) extremely cobbly clay loam, dark reddish brown (2.5YR 3/4) moist; moderate fine angular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; 40 percent gravel, 25 percent cobbles, and 5 percent stones; slightly acid; clear irregular boundary.
R—15 inches; hard fractured sandstone.

The depth to the lithic contact is 10 to 20 inches. Rock fragments are angular and range in size from gravel to stones. A weak k horizon occurs above the bedrock in some pedons. The A horizon has hue of 2.5YR or 5YR. Reaction is slightly acid or neutral. The Bt horizon has hue of 5YR through 10YR. Reaction is slightly acid through mildly alkaline.

Yarts Series

The Yarts series are very deep, well drained soils on alluvial fans. They formed in alluvium derived from quartzite and sandstone. Elevation is 5,400 to 6,000 feet. The average annual precipitation is 9 to 12 inches, the average annual air temperature is 45 to 48 degrees F, and the frost-free period is 90 to 110 days. Slopes are 1 to 6 percent.

The soils are coarse-loamy, mixed (calcareous), mesic, Ustic Torriorthents.

Typical pedon of Yarts fine sandy loam in an area of Yarts-Bunkwater fine sandy loams, 1 to 6 percent slopes, 1,400 feet east and 200 feet north of the southwest corner of sec. 24, T. 2 N., R. 24 E., Daggett County, Utah.

A1—0 to 1 inch; reddish brown (5YR 5/4) fine sandy loam, reddish brown (5YR 4.4) moist; moderate fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; strongly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.
A2—1 to 7 inches; reddish brown (5YR 5/4) fine sandy loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; strongly effervescent; carbonate is disseminated; mildly alkaline; clear smooth boundary.
Bw—7 to 25 inches; reddish brown (5YR 5/4) fine sandy loam, reddish brown (2.5YR 4/4) moist; weak coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots;

strongly effervescent; carbonate is disseminated; mildly alkaline; gradual smooth boundary.

C—25 to 60 inches; reddish brown (5YR 5/4) fine sandy loam, reddish brown (2.5YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; strongly effervescent; carbonate is disseminated; mildly alkaline.

The A horizon has hue of 5YR or 7.5YR. Reaction is mildly alkaline or moderately alkaline. The B and C horizons have hue of 2.5YR. Texture is fine sandy loam or sandy loam with 8 to 18 percent clay. Gravel content ranges from 0 to 15 percent. Reaction is mildly alkaline or moderately alkaline.

Formation of the Soils

The characteristics of a soil are determined by the parent material from which the soil was formed, the climate, the relief or landscape, the biological forces of plants and animals, and the amount of time that climate and biological forces had to exert their influence.

Parent Material

Parent material is the unconsolidated mass from which soil is formed. In this survey Area, the parent materials can be divided into 5 groups: residuum, material weathered from bedrock but not moved; alluvium, material moved by water; colluvium, material moved downslope by water and gravity; landslides, mass movement usually on a mountainside; and glacial drift, material moved by glaciers.

Residuum can be subdivided further by geologic types. Joebas and Lotex soils formed in residuum derived from Precambrian Red Creek quartzite, a metamorphic rock. Blazon and Dollard soils formed in residuum derived from soft sedimentary rocks. Rencot and Rentsac soils formed in residuum derived from hard sedimentary rocks. These soils are shallow or moderately deep to bedrock; the amount of soil lost to erosion is almost equal to the amount weathered from the underlying bedrock.

Alluvium is water-transported material. Much of it is texturally stratified and most alluvial soils are very deep. Cowestglen and Turson soils are on flood plains with recent deposits. Grieves and Poposhia soils are on alluvial fans and foot slopes. Brownsto, Luhon, and Strych soils are on higher alluvial fans and terraces.

Colluvium is water- and gravity-transported materials moved downslope. The soils, formed in colluvium, commonly are very deep. Grobutte Family and Amsden soils are examples.

Landslides are mass movements of small areas or whole mountain slopes. They usually occur when the sedimentary rock substratum becomes wet enough that gravity will cause it to slide. The material deposited as a result of a landslide is not homogeneous as related to the original rock strata, but not as stratified as alluvium. The soils formed in landslide deposits are very deep. Bookcliff, Lail, and Rabbitex soils are associated with this material.

Glacial drift occurs as moraines mainly in the southwest corner of the survey Area. This material contains variable amounts of rounded rock fragments. The soils are very deep. Hickey, Heath, and Condie soils were formed in this material.

Climate

The climate varies considerably with location in this survey Area. Areas with low precipitation amounts and high temperatures have formed light colored soils. Plant growth in these areas is sparse, and chemical reactions and biological activity is high. This combination results in low organic matter accumulation and light colored soils. Chroder soil is an example. Conversely, at the higher elevations where the precipitation amounts are greater and the temperature is lower, more plant growth occurs. The lower rate of chemical reactions and biological activity produce a greater accumulation of organic matter and darker soils. Amsden soil is an example.

Low precipitation means less water available for leaching of soil minerals and consequently a more alkaline reaction. High precipitation amounts result in the leaching of more minerals and may create a neutral reaction or, as under conifers, a more acid reaction. The Luhon soil is an example of the former, and the Condie soil of the latter.

Soil development differences caused by the variation of microclimate are also evident in this soil survey Area. Most noticeable is the difference in soil development between Haploborolls and Torriorthents soils. The Haploborolls soils are dark colored, with good vegetative cover on north- and east-facing slopes protected from the drying and high temperature effects of the sun. Torriorthents soils are light colored with significantly less vegetative cover on the drier and warmer south- and west-facing slopes.

The microclimates of windswept knolls and ridges exposed to the prevailing northwest wind have also influenced soil development. Snow accumulation on these areas is greatly reduced, and the wind has an increased drying effect on the soils. This results in sparse vegetation and less leaching of soil minerals. The Recklor soil on Willow Creek Butte is an example of a soil formed in this type of microclimate. Associated with the Recklor soil are the Amsden and Davtone soils. They are on leeward slopes and in protected draws that receive snow blown

from the knolls and ridges. They support considerably more vegetation and have thick dark surface layers.

Relief

Relief and landscape, or topography, influence soil formation through the effect on drainage and runoff. The Blazon soil is eroded as fast as the underlying rock weathers to soil material. This eroded material accumulates downslope on foot slopes and in draws where it produces the Poposhia soil. The mountainous, hilly, and upland areas have predominantly well drained soils because precipitation readily drains to lower lying flood plains. Soils such as Cowestglen, Menbar, and Hagga with moderately well drained, somewhat poorly drained, and poorly drained characteristics occur on these flood plains.

Living Organisms

Plants exert a great influence on soil formation. A good dense grass sod, such as occurs on the Evanston soil, protects the soil from erosion. Forested soils, such as Condie and Lail, also have very low erosion rates. Conversely, soils with less vegetative cover, such as Chroder and Poposhia, alkaline phase, are more susceptible to erosion. Soils well protected from erosion by vegetation, such as Evanston, Condie, and Lail, exhibit evidence of more soil development in the form of leaching of salts and other minerals to greater depths, and accumulation of clay in the formation an argillic horizon.

Animals such as coyotes, rabbits, and rodents burrow into the soil and mix surface and lower layers to influence soil formation. Earthworms are very beneficial in building porous soils, but their activity is limited by adequate moisture. The more moist soils, such as Cowestglen and Menbar, have more earthworm activity than the drier soils that lose water to runoff and are exposed to drying sun and wind, such as the Moyerson and Redcreek.

Ants make numerous small hills that mix the soil surface, usually on the well drained soils such as Luhon. Cicada burrows provide channels for air and water movement.

Time

The length of time that climatic and biological forces have acted on the parent material greatly influences soil formation. The Rock River soil, on stable gently sloping fan pediments with only slight erosion, has been in place for a long period of time and soil development is very evident. In this soil the surface layer and upper part of the subsoil have been leached of carbonates. Measurable amounts of clay have been removed from the surface layer by percolating water and redeposited in the upper part of the subsoil, forming the argillic horizon. The carbonates have been redeposited below the argillic horizon forming a horizon with carbonate accumulations. By contrast, the Hanly Family soils have little horizonation resulting from soil development, as they occur in recent alluvial deposits on the flood plain of Red Creek.

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Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

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.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Arroyo. The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in alluvium.

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 3.5
Low	3.5 to 5.0
Moderate	5.0 to7.5
High	more than 7.5

Back slope. The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Back slopes in profile are commonly steep, are linear, and may or may not include cliff segments.

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

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.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte. An isolated small mountain or hill with steep or precipitous sides and a top variously flat, rounded, or pointed that may be a residual mass isolated by erosion or an exposed volcanic neck.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche. A more or less cemented deposit of calcium carbonate in soils of warm-temperate, subhumid to arid areas. Caliche occurs as soft, thin layers in the soil or as hard, thick beds directly beneath the solum, or it is exposed at the surface by erosion.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Catsteps. Very small, irregular terraces on steep hillsides, especially in pasture, formed by the trampling of cattle or the slippage of saturated soil.

Cement rock. Shaly limestone used in the manufacture of cement.

Channery soil material. Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

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.

Coarse fragments. Mineral or rock particles larger than 2 millimeters in diameter.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 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 is 35 to 60 percent of these rock fragments, and extremely cobbly soil material is more than 60 percent.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. 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.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green-manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—Readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—Adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coppice dune. A small dune of fine grained soil material stabilized around shrubs or small trees.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cuesta. An asymmetric, homoclinal ridge capped by resistant rock layers of slight or moderate dip.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Desert pavement. On a desert surface, a layer of gravel or larger fragments that was emplaced by upward movement of the underlying sediments or that remains after finer particles have been removed by running water or the wind.

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.

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 for rice) unless a drainage system is installed.

Drainage, surface. Runoff, or surface flow of water, from an area.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

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.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

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.

Excess alkali (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess lime (in tables). Excess carbonates in the soil that restrict the growth of some plants.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Excess sulfur (in tables). Excessive amount of sulfur in the soil. The sulfur causes extreme acidity if the soil is drained, and the growth of most plants is restricted.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan terrace. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flaggy soil material. Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material is 35 to 60 percent flagstones, and extremely flaggy soil material is 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.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

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.

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.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not

prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green-manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water . Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head out. To form a flower head.

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.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The 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.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:
Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.
Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.
Contour ditch.—Water is applied by the use of field ditches placed approximately on the contour.
Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.
Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.
Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.
Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.
Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.
Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit . Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by the wind.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

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.

Mesa. A broad, nearly flat topped and commonly isolated upland mass characterized by summit widths that are more than the heights of bounding erosional scarps.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or

structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Moraine . An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

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 and a surface of considerably bare rock. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Muck. Dark colored, 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.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Outwash, glacial. Stratified sand and gravel produced by glaciers and carried, sorted, and deposited by glacial melt water.

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it is generally low in relief.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil.

Permafrost. Layers of soil, or even bedrock, occurring in arctic or subarctic regions, in which a temperature below freezing has existed continuously for a long time.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Playa. The generally dry and nearly level lake plain that occupies the lowest parts of closed depressional areas, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability or an impermeable layer near the surface, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Potential native plant community. (See Climax plant community.)

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs the growth of plants. A saline soil does not contain excess exchangeable sodium.

Salty water (in tables). Water that is too salty for consumption by livestock.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saprolite (soil science). Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell (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.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

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.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a

drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 3 percent
Gently sloping	3 to 6 percent
Moderately sloping	6 to 12 percent
Strongly sloping	12 to 16 percent
Moderately steep	16 to 30 percent
Steep	30 to 60 percent
Very steep	60 percent and higher

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Sloughed till. Water-saturated till that has flowed slowly downhill from its original place of deposit by glacial ice. It may rest on other till, on glacial outwash, or on a glaciolacustrine deposit.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium absorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to $Ca^{++} + Mg^{++}$. The degrees of sodicity and their respective ratios are:

Slight	less than 13:1
Moderate	13-30:1
Strong	more than 30:1

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	Less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual

precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

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. In hydraulics, the water directly downstream from a dam or similar structure.

Talus. Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Till plain. An extensive area of nearly level to undulating soils underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Too arid (in tables). The soil is dry most of the time, and vegetation is difficult to establish.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Toxicity (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland . Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

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.

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.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1A.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1962-90 at Allens Ranch, Utah)

Month	Temperature						Precipitation			
				2 years in 10 will have--		Average		2 years in 10 will have--		Average
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	number of growing degree days*	Average	Less than--	More than--	number of days with 0.10 inch or more
	°F	°F	°F	°F	°F	Units	In	In	In	
January-----	37.4	11.2	24.3	57	-19	5	0.30	0.15	0.45	1
February----	42.8	16.5	29.7	62	-11	8	0.36	0.10	0.60	1
March-------	50.0	23.0	36.5	70	4	41	0.72	0.33	1.06	2
April-------	60.2	29.8	45.0	79	12	180	1.04	0.43	1.56	3
May---------	71.3	38.0	54.7	88	23	467	1.02	0.34	1.57	3
June--------	82.1	45.0	63.6	97	32	697	0.92	0.27	1.50	2
July--------	90.2	51.7	70.9	103	39	951	0.71	0.21	1.12	2
August------	87.7	48.9	68.3	99	35	847	0.71	0.33	1.08	2
September---	78.0	40.4	59.2	93	20	558	0.89	0.33	1.35	2
October-----	65.0	30.9	47.9	82	12	247	0.96	0.29	1.56	2
November----	49.2	22.4	35.8	68	-4	44	0.48	0.24	0.73	1
December----	39.0	13.6	26.3	57	-12	4	0.58	0.20	0.94	2
Yearly:										
Average---	62.7	30.9	46.8	---	---	---	---	---	---	---
Extreme---	119	-35	---	104	-21	---	---	---	---	---
Total-----	---	---	---	---	---	4,049	8.69	4.54	11.15	23

* 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 (Threshold: 40 degrees F)

TABLE 1B.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1958-90 at Flaming Gorge, Utah)

Month	Temperature						Precipitation			
				2 years in 10 will have--		Average		2 years in 10 will have--		Average
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	number of growing degree days*	Average	Less than--	More than--	number of days with 0.10 inch or more
	°F	°F	°F	°F	°F	Units	In	In	In	
January-----	34.4	8.4	21.4	54	-23	1	0.44	0.20	0.64	1
February----	39.4	12.8	26.1	58	-18	4	0.55	0.20	0.84	2
March-------	45.6	19.8	32.7	66	-6	25	1.00	0.61	1.35	3
April-------	56.1	28.0	42.0	75	7	130	1.56	0.75	2.26	4
May---------	67.3	35.7	51.5	83	21	362	1.60	0.56	2.45	4
June--------	78.0	43.4	60.7	93	29	620	1.13	0.42	1.72	2
July--------	85.6	50.3	67.9	95	38	889	1.16	0.53	1.70	3
August------	83.4	48.1	65.7	94	34	798	1.15	0.39	1.78	3
September---	73.9	39.6	56.7	88	21	506	1.11	0.49	1.65	3
October-----	61.8	30.1	45.9	78	10	220	1.17	0.48	1.89	2
November----	45.5	20.7	33.1	67	-4	29	0.79	0.33	1.19	2
December----	36.0	11.9	24.0	54	-15	2	0.64	0.21	0.99	2
Yearly:										
Average---	58.9	29.1	44.0	---	---	---	---	---	---	---
Extreme---	100	-38	---	97	-25	---	---	---	---	---
Total-----	---	---	---	---	---	3,585	12.30	8.12	15.19	31

* 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 (Threshold: 40 degrees F)

TABLE 1C.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1952-90 at Manila, Utah)

Month	Temperature						Precipitation			
				2 years in 10 will have--				2 years in 10 will have--		
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more
	°F	°F	°F	°F	°F	Units	In	In	In	
January-----	34.9	11.8	23.4	56	-20	3	0.34	0.11	0.54	1
February----	39.3	15.6	27.4	59	-14	7	0.39	0.15	0.65	1
March-------	45.9	21.8	33.9	67	-2	32	0.63	0.25	0.96	2
April-------	56.0	29.9	42.9	76	12	143	1.04	0.44	1.60	2
May---------	66.9	38.3	52.6	83	23	383	1.36	0.49	2.14	4
June--------	77.3	46.4	61.9	93	31	639	1.06	0.41	1.72	3
July--------	84.7	53.1	68.9	94	41	862	0.95	0.35	1.44	3
August------	82.3	51.3	66.8	93	37	789	0.91	0.36	1.41	3
September---	73.7	42.2	58.0	88	24	512	0.88	0.32	1.44	2
October-----	62.2	33.0	47.6	80	13	246	0.83	0.21	1.40	2
November----	45.8	22.4	34.1	67	-3	38	0.54	0.23	0.86	1
December----	36.9	14.6	25.7	57	-11	4	0.34	0.09	0.62	1
Yearly:										
Average---	58.8	31.7	45.3	---	---	---	---	---	---	---
Extreme---	99	-33	---	96	-22	---	---	---	---	---
Total-----	---	---	---	---	---	3,657	9.25	4.74	11.85	25

* 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 (Threshold: 40 degrees F)

TABLE 2A.--GROWING SEASON

(Recorded in the period 1962-90 at Allens Ranch, Utah; 6 years from 1962 to 1990 have 25 days or more of missing data)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	168	146	77
8 years in 10	176	153	96
5 years in 10	191	165	133
2 years in 10	207	177	169
1 year in 10	214	184	189

TABLE 2B.--GROWING SEASON

(Recorded in the period 1958-90 at Flaming Gorge, Utah; 3 years from 1958 to 1990 have 25 days or more of missing data.)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	152	131	69
8 years in 10	159	138	86
5 years in 10	173	151	119
2 years in 10	186	165	152
1 year in 10	193	171	169

TABLE 2C.--GROWING SEASON

(Recorded in the period 1952-90 at Manila, Utah; 13 years from 1952 to 1990 have 25 days or more of missing data.)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	167	145	90
8 years in 10	174	153	106
5 years in 10	188	167	135
2 years in 10	202	182	165
1 year in 10	209	190	180

SOIL SURVEY HENRYS FORK AREA, UTAH-WYOMING

TABLE 3.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Daggett	Summit	Sweet-water	Uinta	Total	
						Area	Extent
		Acres	Acres	Acres	Acres	Acres	Pct
100	Babb-Teeler complex, 5 to 35 percent slopes	2,170	550	0	0	2,720	1.1
101	Badlands-Dollard complex, hilly	210	0	1,270	1,100	2,580	1.1
102	Bitton-Tally complex, 5 to 15 percent slopes	1,525	0	0	0	1,525	0.6
103	Blackhall-Kappes-Rentsac complex, 0 to 8 percent slopes	1,211	0	923	0	2,134	0.9
104	Blackhall-Rentsac complex, 6 to 25 percent slopes	1,162	300	357	0	1,819	0.7
105	Blazon thin solum-Blazon-Lilsnake complex, 2 to 40 percent slopes	1,574	0	10,668	0	12,242	5.1
106	Blazon-Delphill complex, 6 to 30 percent slopes	3,770	610	1,437	840	6,657	2.8
107	Bookcliff-Lail-Rabbitex complex, 10 to 25 percent slopes	0	0	0	3,610	3,610	1.5
108	Brownsto gravelly sandy loam, 0 to 3 percent slopes	600	0	1,406	137	2,143	0.9
109	Brownsto gravelly sandy loam, 3 to 6 percent slopes	277	0	322	0	599	0.2
110	Brownsto-Luhon complex, 10 to 35 percent slopes	2,650	1,260	1,512	530	5,952	2.5
111	Brownsto-Luhon-McFadden complex, 3 to 15 percent slopes	5,460	0	2,273	0	7,733	3.2
112	Chittum-Eyre Family complex, 10 to 30 percent slopes	1,000	0	0	0	1,000	0.4
113	Chroder fine sandy loam, 0 to 5 percent slopes	1,300	0	0	0	1,300	0.5
114	Condie gravelly loam, 6 to 50 percent slopes	3,700	50	0	0	3,750	1.6
115	Cowestglen fine sandy loam, 0 to 2 percent slopes	90	0	334	220	644	0.3
116	Coyet loamy fine sand, 3 to 6 percent slopes	366	0	20	0	386	0.2
117	Cryofluvents-Borofibrists complex, 0 to 2 percent slopes	30	0	161	0	191	0.1
118	Dahlquist very cobbly sandy loam, 1 to 3 percent slopes	0	2,773	0	4,580	7,353	3.1
119	Delphill-Iyers-Poposhia complex, 3 to 25 percent slopes	0	0	0	1,500	1,500	0.6
120	Dollard-Moyerson complex, 6 to 25 percent slopes	3,050	17	0	0	3,067	1.3
121	Eyre-Handran Families complex, 20 to 65 percent slopes	1,600	0	0	0	1,600	0.7
122	Flatnose loam, 0 to 3 percent slopes	430	0	0	0	430	0.2
123	Garlips loam, 0 to 2 percent slopes	0	490	0	710	1,200	0.5
124	Gerst-Strych complex, 10 to 40 percent slopes	6,843	0	0	0	6,843	2.8
125	Goslin fine sandy loam, 3 to 6 percent slopes	1,040	0	325	0	1,365	0.6
126	Goslin fine sandy loam, 6 to 10 percent slopes	167	0	237	0	404	0.2
127	Grieves-Tisworth fine sandy loams, 1 to 5 percent slopes	700	0	0	0	700	0.3
128	Grobutte Family-Rentsac-Rock outcrop complex, 6 to 65 percent slopes	3,100	0	0	0	3,100	1.3
129	Hagga-Cowestglen association, nearly level	0	0	2,195	0	2,195	0.9
130	Hanly Family-Riverwash complex, 1 to 3 percent slopes	250	0	0	0	250	0.1
131	Haploborolls-Torriorthents complex, 10 to 70 percent slopes	13,464	0	0	0	13,464	5.6
132	Harpole very stony sandy loam, 2 to 5 percent slopes	0	2,490	0	0	2,490	1.0
133	Harpole-Worfstone Families complex, 20 to 60 percent slopes	2,545	0	0	0	2,545	1.1
134	Henrieville sandy loam, 0 to 5 percent slopes	900	0	0	0	900	0.4
135	Henrysfork-Borofibrists complex, 0 to 2 percent slopes	0	32	200	1,030	1,262	0.5
136	Hickey loam, 0 to 2 percent slopes	0	0	0	942	942	0.4
137	Hickey cobbly sandy loam, 10 to 40 percent slopes	0	205	0	665	870	0.4

See footnote at end of table.

TABLE 3.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Daggett	Summit	Sweet-water	Uinta	Total	
						Area	Extent
		Acres	Acres	Acres	Acres	Acres	Pct
138	Hickey loam-Hickey gravelly sandy clay loam complex, 2 to 10 percent slopes	0	150	0	4,165	4,315	1.8
139	Hoodle-Namon dry-Namon Families association, 4 to 60 percent slopes	0	515	0	0	515	0.2
140	Joebas gravelly sandy loam, 3 to 15 percent slopes	500	0	0	0	500	0.2
141	Kappes-McFadden fine sandy loams, 2 to 6 percent slopes	968	27	5	0	1,000	0.4
142	Lanver gravelly sandy loam, 3 to 15 percent slopes	2,000	0	0	0	2,000	0.8
143	Ledgefork cobbly sandy loam, 3 to 5 percent slopes	0	810	0	0	810	0.3
144	Lotex sandy loam-Chittum-Lotex stony loam complex, 0 to 6 percent slopes	1,590	0	0	0	1,590	0.7
145	Luhon loam, 0 to 3 percent slopes	90	73	1,112	83	1,358	0.6
146	Luhon loam, 3 to 6 percent slopes	371	44	1,521	866	2,802	1.2
147	Luhon channery loam, 2 to 8 percent slopes	0	0	2,760	0	2,760	1.1
148	Luhon-Brownsto complex, 4 to 15 percent slopes	1,540	0	0	0	1,540	0.6
149	Luhon-Evanston complex, 3 to 30 percent slopes	3,470	6,300	615	6,769	17,154	7.1
150	Luhon-Hickey-Heath complex, 3 to 25 percent slopes	0	3,830	0	138	3,968	1.7
151	Luhon-Rockinchair loams, 1 to 6 percent slopes	625	137	1,073	0	1,835	0.8
152	McFadden fine sandy loam, 0 to 6 percent slopes	3,250	25	106	6	3,387	1.4
153	McFadden fine sandy loam, 6 to 10 percent slopes	440	48	0	0	488	0.2
154	McFadden gravelly sandy loam, 2 to 6 percent slopes	0	0	319	0	319	0.1
155	McFadden-Brownsto-Rock outcrop complex, 20 to 60 percent slopes	2,370	70	0	0	2,440	1.0
156	Middlewood-Boettcher complex, 2 to 10 percent slopes	440	0	0	0	440	0.2
157	Milok sandy loam, 2 to 6 percent slopes	2,000	0	0	0	2,000	0.8
158	Ouray loamy sand, 3 to 10 percent slopes	885	0	0	0	885	0.4
159	Pesmore-Garlips complex, 25 to 70 percent slopes	2,180	0	0	0	2,180	0.9
160	Pits	7	0	51	0	58	*
161	Poposhia loam, 0 to 3 percent slopes	2,040	0	1,086	110	3,236	1.3
162	Poposhia loam, 3 to 6 percent slopes	5,103	0	1,388	106	6,597	2.7
163	Poposhia loam, 6 to 10 percent slopes	726	0	1,042	55	1,823	0.8
164	Poposhia clay loam, 0 to 3 percent slopes	750	0	0	0	750	0.3
165	Poposhia clay loam, 3 to 6 percent slopes	500	0	1,210	0	1,710	0.7
166	Poposhia very fine sandy loam, strongly alkaline, 1 to 3 percent slopes	710	0	250	0	960	0.4
167	Recklor-Amsden-Davtone complex, 6 to 40 percent slopes	2,300	0	0	0	2,300	1.0
168	Redcreek-Blackhall-Rock outcrop complex, 6 to 35 percent slopes	2,000	180	1,260	0	3,440	1.4
169	Rentsac very channery sandy loam-Rentsac channery sandy loam-Rock outcrop complex, 20 to 35 percent slopes	1,360	0	0	0	1,360	0.6
170	Rhoamett silty clay, 0 to 5 percent slopes	2,436	0	61	513	3,010	1.3
171	Rockinchair-Luhon-Rentsac complex, 6 to 30 percent slopes	1,232	0	1,402	1,920	4,554	1.9
172	Rock outcrop-Blazon complex, 20 to 40 percent slopes	1,514	0	0	0	1,514	0.6
173	Rock outcrop-Coyet loamy sand-Coyet loamy fine sand complex, 6 to 20 percent slopes	1,250	0	0	0	1,250	0.5
174	Rock River loam, 2 to 8 percent slopes	2,600	0	0	0	2,600	1.1
175	Rock River-Brownsto complex, 8 to 15 percent slopes	1,650	0	0	0	1,650	0.7
176	Rogert-Parkay Family-Davtone complex, 10 to 55 percent slopes	1,930	0	0	0	1,930	0.8

See footnote at end of table.

TABLE 3.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Daggett	Summit	Sweet-water	Uinta	Total	
						Area	Extent
		Acres	Acres	Acres	Acres	Acres	Pct
177	Rogrube gravelly loam-Rogrube clay loam complex, 3 to 5 percent slopes	0	0	1,012	325	1,337	0.6
178	Roto-Rockinchair-Rencot complex, 1 to 10 percent slopes	250	32	6,923	0	7,205	3.0
179	Salt flats	234	0	0	0	234	0.1
180	Sedillo Family-Strych complex, 2 to 8 percent slopes	500	0	0	0	500	0.2
181	Sinkson sandy clay loam, 1 to 8 percent slopes	332	0	97	0	429	0.2
182	Spicerton-Poposhia complex, 0 to 3 percent slopes	290	0	557	636	1,483	0.6
183	Spool-Rock outcrop-Blackhall complex, 15 to 50 percent slopes	1,935	0	0	0	1,935	0.8
184	Strych gravelly sandy loam-Strych very cobbly sandy loam complex, 8 to 30 percent slopes	1,534	0	0	0	1,534	0.6
185	Strych-Milok complex, 0 to 15 percent slopes	3,100	0	0	0	3,100	1.3
186	Tally fine sandy loam, 3 to 10 percent slopes	610	0	0	0	610	0.3
187	Tally-Tolman complex, 3 to 25 percent slopes	2,760	0	0	0	2,760	1.2
188	Teeler gravelly sandy loam, 1 to 10 percent slopes	746	0	0	18	764	0.3
189	Thermopolis-Blazon-Sinkson complex, 3 to 60 percent slopes	581	292	818	0	1,691	0.7
190	Tridell gravelly loam, 3 to 15 percent slopes	0	1,220	0	0	1,220	0.5
191	Turson-Menbar clay loams, 0 to 2 percent slopes	490	2,660	947	6,837	10,934	4.6
192	Yarts-Bunkwater complex, 1 to 6 percent slopes	1,021	0	0	0	1,021	0.4
W	Water	300	50	300	100	750	0.3
	Total	126,694	25,240	49,555	38,511	240,000	100.0

* Less than 0.05 percent.

TABLE 4.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields in the N columns are for nonirrigated soils; those in the I columns are for irrigated soils. Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Barley		Oats		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	Bu	Bu	Bu	Bu	AUM*	AUM*
100**:												
Babb	VIe	---	---	---	---	---	---	---	---	---	2.3	---
Teeler	VIe	---	---	---	---	---	---	---	---	---	---	---
101**:												
Badlands	VIIIe	---	---	---	---	---	---	---	---	---	---	---
Dollard	VIe	---	---	---	---	---	---	---	---	---	---	---
102**:												
Bitton	VIs	---	---	---	---	---	---	---	---	---	---	---
Tally	VIe	---	---	---	---	---	---	---	---	---	---	---
103**:												
Blackhall	VIIe	---	---	---	---	---	---	---	---	---	---	---
Kappes	VIe	---	---	---	---	---	---	---	---	---	---	---
Rentsac	VIIs	---	---	---	---	---	---	---	---	---	---	---
104**:												
Blackhall	VIIe	---	---	---	---	---	---	---	---	---	---	---
Rentsac	VIIs	---	---	---	---	---	---	---	---	---	---	---
105**:												
Blazon, thin solum	VIIs	---	---	---	---	---	---	---	---	---	---	---
Blazon	VIIe	---	---	---	---	---	---	---	---	---	---	---
Lilsnake	VIIe	---	---	---	---	---	---	---	---	---	---	---
106**:												
Blazon	VIIe	---	---	---	---	---	---	---	---	---	---	---
Delphill	VIe	---	---	---	---	---	---	---	---	---	---	---
107**:												
Bookcliff	VIe	---	---	---	---	---	---	---	---	---	---	---
Lail	VIe	---	---	---	---	---	---	---	---	---	---	---
Rabbitex	VIe	---	---	---	---	---	---	---	---	---	---	---
108, 109 Brownsto	VIs	IVs	---	4.0	---	2.0	---	---	---	---	---	5.0
110**:												
Brownsto	VIe	---	---	---	---	---	---	---	---	---	---	---
110**:												
Luhon	VIe	---	---	---	---	---	---	---	---	---	---	---
111**:												
Brownsto	VIe	---	---	---	---	---	---	---	---	---	---	---

TABLE 4.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--CONTINUED

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Barley		Oats		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	Bu	Bu	Bu	Bu	AUM*	AUM*
Luhon	VIe	---	---	---	---	---	---	---	---	---	---	---
McFadden	VIe	---	---	---	---	---	---	---	---	---	---	---
112**:												
Chittum	VIIe	---	---	---	---	---	---	---	---	---	---	---
Eyre Family	VIIs	---	---	---	---	---	---	---	---	---	---	---
113--- Chroder	VIe	---	---	---	---	---	---	---	---	---	---	---
114--- Condie	VIe	---	---	---	---	---	---	---	---	---	---	---
115--- Cowestglen	IVw	IVw	---	---	---	1.5	---	---	---	---	---	4.0
116--- Coyet	VIs	IVs	---	3.5	---	2.0	---	50	---	70	---	6.0
117**:												
Cryofluvents	Vw	---	---	---	---	---	---	---	---	---	---	---
Borofibrists	Vw	---	---	---	---	---	---	---	---	---	---	---
118--- Dahlquist	VIs	IVs	---	3.5	---	2.0	---	---	---	---	---	4.0
119**:												
Delphill	VIe	---	---	---	---	---	---	---	---	---	---	---
Iyers	VIe	---	---	---	---	---	---	---	---	---	---	---
Poposhia	VIe	---	---	---	---	---	---	---	---	---	---	---
120**:												
Dollard	VIe	---	---	---	---	---	---	---	---	---	---	---
Moyerson	VIIe	---	---	---	---	---	---	---	---	---	---	---
121**:												
Eyre Family	VIIs	---	---	---	---	---	---	---	---	---	---	---
Handran Family	VIIs	---	---	---	---	---	---	---	---	---	---	---
122--- Flatnose	Vw	IIIw	---	5.0	---	3.0	---	---	---	---	---	---
123--- Garlips	VIe	---	---	---	---	---	---	---	---	---	---	---
124**:												
Gerst	VIIe	---	---	---	---	---	---	---	---	---	---	---
Strych	VIIe	---	---	---	---	---	---	---	---	---	---	---
125--- Goslin	VIe	IVe	---	5.0	---	2.5	---	60	---	---	---	8.0
126--- Goslin	VIe	IVe	---	4.5	---	2.2	---	50	---	---	---	7.0

TABLE 4.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--CONTINUED

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Barley		Oats		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	Bu	Bu	Bu	Bu	AUM*	AUM*
127**:												
Grieves	VIe	---	---	---	---	---	---	---	---	---	---	8.0
Tisworth	VIIs	---	---	---	---	---	---	---	---	---	---	---
128**:												
Grobutte Family	VIs	---	---	---	---	---	---	---	---	---	---	---
128**:												
Rentsac	VIIs	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop	VIIIs	---	---	---	---	---	---	---	---	---	---	---
129**:												
Hagga	Vw	Vw	---	---	1.0	1.5	---	---	---	---	3.0	4.0
Cowestglen	IVw	IVw	---	---	1.0	1.5	---	---	---	---	3.0	4.0
130**:												
Hanly Family	VIw	---	---	---	---	---	---	---	---	---	---	---
Riverwash	VIIIw	---	---	---	---	---	---	---	---	---	---	---
131**:												
Haploborolls	VIIe	---	---	---	---	---	---	---	---	---	---	---
Torriorthents	VIIe	---	---	---	---	---	---	---	---	---	---	---
132--- Harpole	VIIs	---	---	---	---	---	---	---	---	---	---	---
133**:												
Harpole Family	VIe	---	---	---	---	---	---	---	---	---	---	---
Worfstone Family	VIIs	---	---	---	---	---	---	---	---	---	---	---
134--- Henrieville	VIe	---	---	---	---	---	---	---	---	---	---	---
135**:												
Henrysfork	Vw	---	---	---	---	---	---	---	---	---	---	---
Borofibrists	Vw	---	---	---	---	---	---	---	---	---	---	---
136--- Hickey	VIe	IVe	---	4.0	---	2.2	---	5.0	---	---	---	6.0
137--- Hickey	VIe	---	---	---	---	---	---	---	---	---	---	---
138**:												
Hickey	VIe	---	---	---	---	---	---	---	---	---	---	---
139**:												
Hoodle Family	VIs	---	---	---	---	---	---	---	---	---	---	---
Namon Family, dry	VIs	---	---	---	---	---	---	---	---	---	---	---
Namon Family	VIIe	---	---	---	---	---	---	---	---	---	---	---
140--- Joebas	VIIe	---	---	---	---	---	---	---	---	---	---	---

TABLE 4.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--CONTINUED

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Barley		Oats		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	Bu	Bu	Bu	Bu	AUM*	AUM*
141**:												
Kappes	VIe	IVe	---	3.0	---	2.5	---	60	---	---	---	5.0
McFadden	VIe	IVe	---	5.0	---	2.5	---	60	---	---	---	8.0
142---------- Lanver	VIe	---	---	---	---	---	---	---	---	---	---	---
143---------- Ledgefork	VIIs	---	---	---	---	---	---	---	---	---	---	---
144**:												
Lotex sandy loam-	VIIs	---	---	---	---	---	---	---	---	---	---	---
Chittum	VIe	---	---	---	---	---	---	---	---	---	---	---
Lotex stony loam-	VIIs	---	---	---	---	---	---	---	---	---	---	---
145---------- Luhon	VIe	IVe	---	5.0	---	3.0	---	---	---	---	---	8.0
146---------- Luhon	VIe	IVe	---	5.0	---	3.0	---	---	---	---	---	8.0
147---------- Luhon	VIe	---	---	---	---	---	---	---	---	---	---	---
148**:												
Luhon	VIe	---	---	---	---	---	---	---	---	---	---	---
Brownsto	VIe	---	---	---	---	---	---	---	---	---	---	---
149**:												
Luhon	VIe	---	---	---	---	---	---	---	---	---	---	---
Evanston	IVe	---	---	---	---	---	---	---	---	---	---	---
150**:												
Luhon	VIe	---	---	---	---	---	---	---	---	---	---	---
Hickey	VIe	---	---	---	---	---	---	---	---	---	---	---
Heath	VIe	---	---	---	---	---	---	---	---	---	---	---
151**:												
Luhon	VIe	IVe	---	5.0	---	3.0	---	---	---	---	---	8.0
151**:												
Rockinchair	VIe	IVe	---	4.0	---	3.0	---	---	---	---	---	8.0
152, 153---------- McFadden	VIe	IVe	---	5.0	---	2.5	---	60	---	80	---	8.0
154---------- McFadden	VIe	IVe	---	5.0	---	2.5	---	60	---	80	---	8.0
155**:												
McFadden	VIIe	---	---	---	---	---	---	---	---	---	---	---
Brownsto	VIIe	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop	VIIIs	---	---	---	---	---	---	---	---	---	---	---

TABLE 4.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--CONTINUED

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Barley		Oats		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	Bu	Bu	Bu	Bu	AUM*	AUM*
156**:												
Middlewood	VIIe	---	---	---	---	---	---	---	---	---	---	---
Boettcher	VIe	---	---	---	---	---	---	---	---	---	---	---
157---------- Milok	VIe	---	---	---	---	---	---	---	---	---	---	---
158---------- Ouray	VIe	---	---	---	---	---	---	---	---	---	---	---
159**:												
Pesmore	VIIs	---	---	---	---	---	---	---	---	---	---	---
159**:												
Garlips	VIe	---	---	---	---	---	---	---	---	---	---	---
160---------- Pits	VIIIs	---	---	---	---	---	---	---	---	---	---	---
161, 162, 163----- Poposhia	VIe	IVe	---	5.0	---	2.5	---	60	---	80	---	8.0
164, 165---------- Poposhia	VIe	IVe	---	4.5	---	2.0	---	50	---	70	---	7.0
166---------- Poposhia	VIe	---	---	---	---	---	---	---	---	---	---	---
167**:												
Recklor	VIe	---	---	---	---	---	---	---	---	---	---	---
Amsden	VIe	---	---	---	---	---	---	---	---	---	---	---
Davtone	VIe	---	---	---	---	---	---	---	---	---	---	---
168**:												
Redcreek	VIIe	---	---	---	---	---	---	---	---	---	---	---
Blackhall	VIIe	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop	VIIIs	---	---	---	---	---	---	---	---	---	---	---
169**:												
Rentsac	VIIs	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop	VIIIs	---	---	---	---	---	---	---	---	---	---	---
170---------- Rhoamett	VIs	IVs	---	4.0	---	2.0	---	40	---	---	---	6.0
171**:												
Rockinchair	VIe	---	---	---	---	---	---	---	---	---	---	---
Luhon	VIe	---	---	---	---	---	---	---	---	---	---	---
Rentsac	VIIs	---	---	---	---	---	---	---	---	---	---	---
172**:												
Rock outcrop	VIIIs	---	---	---	---	---	---	---	---	---	---	---
Blazon	VIIe	---	---	---	---	---	---	---	---	---	---	---

TABLE 4.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--CONTINUED

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Barley		Oats		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	Bu	Bu	Bu	Bu	AUM*	AUM*
173**:												
Rock outcrop-----	VIIIs	---	---	---	---	---	---	---	---	---	---	---
Coyet----------	VIe	---	---	---	---	---	---	---	---	---	---	---
174---------- Rock River	VIe	---	---	---	---	---	---	---	---	---	---	---
175**:												
Rock River-------	VIe	---	---	---	---	---	---	---	---	---	---	---
Brownsto---------	VIe	---	---	---	---	---	---	---	---	---	---	---
176**:												
Rogert----------	VIIs	---	---	---	---	---	---	---	---	---	---	---
Parkay Family----	VIIs	---	---	---	---	---	---	---	---	---	---	---
Davtone----------	VIe	---	---	---	---	---	---	---	---	---	---	---
177**:												
Rogrube----------	VIe	---	---	---	---	---	---	---	---	---	---	---
178**:												
Roto----------	VIe	---	---	---	---	---	---	---	---	---	---	---
Rockinchair------	VIe	---	---	---	---	---	---	---	---	---	---	---
Rencot----------	VIIs	---	---	---	---	---	---	---	---	---	---	---
179---------- Salt flats	VIIIs	---	---	---	---	---	---	---	---	---	---	---
180**:												
Sedillo Family---	VIe	---	---	---	---	---	---	---	---	---	---	---
Strych----------	VIIe	---	---	---	---	---	---	---	---	---	---	---
181---------- Sinkson	VIe	---	---	---	---	---	---	---	---	---	---	---
182**:												
Spicerton--------	VIIs	VIs	---	---	---	1.5	---	---	---	---	---	4.0
Poposhia---------	VIe	IVe	---	---	---	2.0	---	---	---	---	---	7.0
183**:												
Spool----------	VIIs	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop-----	VIIIs	---	---	---	---	---	---	---	---	---	---	---
Blackhall--------	VIIe	---	---	---	---	---	---	---	---	---	---	---
184**:												
Strych----------	VIIe	---	---	---	---	---	---	---	---	---	---	---
185**:												
Strych----------	VIIe	---	---	---	---	---	---	---	---	---	---	---
Milok----------	VIe	---	---	---	---	---	---	---	---	---	---	---
186---------- Tally	VIe	---	---	---	---	---	---	---	---	---	---	---

TABLE 4.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--CONTINUED

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Barley		Oats		Pasture	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	Bu	Bu	Bu	Bu	AUM*	AUM*
187**:												
Tally	VIe	---	---	---	---	---	---	---	---	---	---	---
Tolman	VIIs	---	---	---	---	---	---	---	---	---	---	---
188 Teeler	VIe	---	---	---	---	---	---	---	---	---	---	---
189**:												
Thermopolis	VIIe	---	---	---	---	---	---	---	---	---	---	---
Blazon	VIIe	---	---	---	---	---	---	---	---	---	---	---
Sinkson	VIe	---	---	---	---	---	---	---	---	---	---	---
190 Tridell	VIe	---	---	---	---	---	---	---	---	---	---	---
191**:												
Turson	IVw	IVw	---	---	---	2.0	---	---	---	---	---	5.0
Menbar	IVw	IVw	---	---	---	2.0	---	---	---	---	---	5.0
192**:												
Yarts	VIe	IIIe	---	---	---	3.0	---	---	---	---	---	8.0
Bunkwater	VIIs	IVs	---	---	---	2.0	---	---	---	---	---	6.0

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES

(Only the soils that support rangeland vegetation suitable for grazing are listed)

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
100*:					
Babb	Mountain Windswept Ridge (Black Sagebrush).	Favorable	700	Bluebunch wheatgrass	25
		Normal	500	Muttongrass	15
		Unfavorable	300	Prairie junegrass	10
				Black sagebrush	10
				Needleandthread	5
Teeler	Mountain Very Steep Stony Loam (Browse).	Favorable	1,500	True mountainmahogany	20
		Normal	1,200	Utah serviceberry	20
		Unfavorable	800	Bluebunch wheatgrass	10
				Fescue	5
				Bluegrass	5
				Prairie junegrass	5
				Needleandthread	5
				Arrowleaf balsamroot	5
				Mountain big sagebrush	5
101*:					
Badlands.					
Dollard	Saline Upland 10-14 Foothills And Basins West.	Favorable	750	Gardners saltbush	35
		Normal	600	Western wheatgrass	15
		Unfavorable	400	Bottlebrush squirreltail	15
				Indian ricegrass	15
102*:					
Bitton	Mountain Windswept Ridge (Black Sagebrush).	Favorable	700	Bluebunch wheatgrass	25
		Normal	500	Muttongrass	15
		Unfavorable	300	Prairie junegrass	10
				Black sagebrush	10
				Needleandthread	5
				Fringed sagewort	5
Tally	Mountain Loam (Mountain Big Sagebrush).	Favorable	2,000	Western wheatgrass	15
		Normal	1,500	Columbia needlegrass	15
		Unfavorable	1,000	Mountain big sagebrush	15
				Bluegrass	10
				Needleandthread	5
				Prairie junegrass	5
				Mountain brome	5
103*:					
Blackhall	Shallow Sandy 10-14 Foothills And Basins West.	Favorable	1,200	Needleandthread	20
		Normal	900	Indian ricegrass	20
		Unfavorable	700	Thickspike wheatgrass	15
				Big sagebrush	5
Kappes	Sandy 10-14 Foothills And Basins West.	Favorable	1,500	Needleandthread	25
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Big sagebrush	10
Rentsac	Very Shallow 10-14 Foothills And Basins West.	Favorable	500	Bluebunch wheatgrass	30
		Normal	350	Indian ricegrass	10
		Unfavorable	200	Bottlebrush squirreltail	10
				Mountainmahogany	10

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
104*:					
Blackhall	Shallow Sandy 10-14 Foothills And Basins West.	Favorable	1,200	Needleandthread	20
		Normal	900	Indian ricegrass	20
		Unfavorable	700	Thickspike wheatgrass	15
				Big sagebrush	5
Rentsac	Very Shallow 10-14 Foothills And Basins West.	Favorable	500	Bluebunch wheatgrass	30
		Normal	350	Indian ricegrass	10
		Unfavorable	200	Bottlebrush squirreltail	10
				Mountainmahogany	10
105*:					
Blazon, thin solum	Shale 10-14 Foothills And Basins West.	Favorable	350	Western wheatgrass	30
		Normal	250	Bottlebrush squirreltail	15
		Unfavorable	150	Indian ricegrass	10
				Juniper	10
				Winterfat	5
Blazon	Shallow Loamy 10-14 Foothills And Basins West.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Thickspike wheatgrass	15
		Unfavorable	700	Indian ricegrass	10
				Bottlebrush squirreltail	5
				Big sagebrush	5
				Sandberg bluegrass	5
Lilsnake	Shallow Loamy 10-14 Foothills And Basins West.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Thickspike wheatgrass	15
		Unfavorable	700	Indian ricegrass	10
				Big sagebrush	10
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
106*:					
Blazon	Shallow Loamy 10-14 Foothills And Basins West.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Thickspike wheatgrass	15
		Unfavorable	700	Indian ricegrass	10
				Bottlebrush squirreltail	5
				Big sagebrush	5
				Sandberg bluegrass	5
Delphill	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass	20
		Normal	1,200	Bluebunch wheatgrass	10
		Unfavorable	700	Needleandthread	10
				Big sagebrush	10
107*:					
Bookcliff	Mountain Stony Loam (Browse)	Favorable	2,600	True mountainmahogany	20
		Normal	1,900	Utah serviceberry	20
		Unfavorable	1,400	Bluebunch wheatgrass	10
				Bluegrass	5
				Sedge	5
				Mountain snowberry	5
				Mountain big sagebrush	5

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
107*:					
Lail	High Mountain Loam (Douglas Fir).	Favorable	500	Mountain snowberry	20
		Normal	200	Oregongrape	15
		Unfavorable	100	Elk sedge	10
				Mountainlover	10
				Bearded wheatgrass	5
				Slender wheatgrass	5
				Bluegrass	5
				Quaking aspen	5
Rabbitex	Mountain Windswept Ridge (Black Sagebrush).	Favorable	700	Bluebunch wheatgrass	25
		Normal	500	Muttongrass	15
		Unfavorable	300	Prairie junegrass	10
				Black sagebrush	10
				Needleandthread	5
				Fringed sagewort	5
108, 109 Brownsto	Shallow Sandy 10-14 Foothills And Basins West.	Favorable	1,200	Needleandthread	20
		Normal	900	Indian ricegrass	20
		Unfavorable	700	Thickspike wheatgrass	15
				Big sagebrush	5
110*:					
Brownsto	Gravelly 10-14 Foothills And Basins West.	Favorable	650	Bluebunch wheatgrass	25
		Normal	450	Indian ricegrass	15
		Unfavorable	300	Needleandthread	10
				Thickspike wheatgrass	10
				Big sagebrush	5
Luhon	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass	20
		Normal	1,200	Bluebunch wheatgrass	10
		Unfavorable	700	Indian ricegrass	10
				Big sagebrush	10
				Needleandthread	10
111*:					
Brownsto	Shallow Sandy 10-14 Foothills And Basins West.	Favorable	1,200	Needleandthread	20
		Normal	900	Indian ricegrass	20
		Unfavorable	700	Thickspike wheatgrass	15
				Big sagebrush	5
Luhon	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass	20
		Normal	1,200	Bluebunch wheatgrass	10
		Unfavorable	700	Needleandthread	10
				Big sagebrush	10
McFadden	Sandy 10-14 Foothills And Basins West.	Favorable	1,500	Needleandthread	20
		Normal	1,200	Indian ricegrass	20
		Unfavorable	700	Thickspike wheatgrass	15
				Big sagebrush	5
112*:					
Chittum	Mountain Stony Loam (Browse)	Favorable	2,600	True mountainmahogany	20
		Normal	1,900	Utah serviceberry	20
		Unfavorable	1,400	Bluebunch wheatgrass	10
				Bluegrass	5
				Sedge	5

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
112*:					
Eyre Family-------	Mountain Windswept Ridge (Black Sagebrush).	Favorable	700	Bluebunch wheatgrass----------	25
		Normal	500	Muttongrass----------	15
		Unfavorable	300	Prairie junegrass----------	10
				Black sagebrush----------	10
				Needleandthread----------	5
113----------	Desert Sandy Loam (Indian Ricegrass).	Favorable	700	Indian ricegrass----------	20
Chroder		Normal	550	Galleta----------	10
		Unfavorable	350	Globemallow----------	10
				Fourwing saltbush----------	10
				Shadscale----------	10
				Sand dropseed----------	5
				Milkvetch----------	5
				Winterfat----------	5
114----------	High Mountain Loam (Douglas Fir).	Favorable	500	Mountain snowberry----------	20
Condie		Normal	200	Oregongrape----------	15
		Unfavorable	100	Elk sedge----------	10
				Mountainlover----------	10
				Bearded wheatgrass----------	5
				Slender wheatgrass----------	5
				Bluegrass----------	5
				Heartleaf arnica----------	5
				Quaking aspen----------	5
115----------	Lowland 10-14 Foothills And Basins West.	Favorable	3,000	Basin wildrye----------	15
Cowestglen		Normal	2,300	Needleandthread----------	15
		Unfavorable	1,600	Rhizome wheatgrasses----------	15
				Cottonwood----------	10
116----------	Sandy 10-14 Foothills And Basins West.	Favorable	1,500	Needleandthread----------	25
Coyet		Normal	1,200	Thickspike wheatgrass----------	20
		Unfavorable	700	Indian ricegrass----------	15
				Big sagebrush----------	10
117*:					
Cryofluvents------	Wet Fresh Meadow----------	Favorable	3,500	Sedge----------	25
		Normal	3,000	Baltic rush----------	10
		Unfavorable	2,500	Tufted hairgrass----------	10
				Redtop----------	10
				Willow----------	5
				Shrubby cinquefoil----------	5
				White clover----------	5
				Spikerush----------	5
Borofibrists------	Wet Fresh Meadow----------	Favorable	3,500	Sedge----------	25
		Normal	3,000	Baltic rush----------	10
		Unfavorable	2,500	Tufted hairgrass----------	10
				Redtop----------	10
				Spikerush----------	5
				White clover----------	5
				Willow----------	5
				Shrubby cinquefoil----------	5

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
118---------- Dahlquist	Coarse Upland 10-14 Foothills And Basins West.	Favorable	1,400	Bluebunch wheatgrass----------	30
		Normal	1,000	Needleandthread----------	15
		Unfavorable	600	Letterman needlegrass----------	10
				Antelope bitterbrush----------	5
				Big sagebrush----------	5
119*:					
Delphill----------	Rocky Hills 10-14 Foothills And Basins West.	Favorable	1,200	Mountainmahogany----------	30
		Normal	900	Bluebunch wheatgrass----------	20
		Unfavorable	700	Needleandthread----------	10
				Rhizome wheatgrasses----------	10
				Big sagebrush----------	5
Iyers----------	Very Shallow 10-14 Foothills And Basins West.	Favorable	500	Bluebunch wheatgrass----------	30
		Normal	350	Bottlebrush squirreltail------	10
		Unfavorable	200	Indian ricegrass----------	10
				Mountainmahogany----------	10
Poposhia----------	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass---------	20
		Normal	1,200	Bluebunch wheatgrass----------	10
		Unfavorable	700	Needleandthread----------	10
				Big sagebrush----------	10
120*:					
Dollard----------	Saline Upland 10-14 Foothills And Basins West.	Favorable	750	Gardner saltbush----------	35
		Normal	600	Western wheatgrass----------	15
		Unfavorable	400	Bottlebrush squirreltail------	15
				Indian ricegrass----------	15
Moyerson----------	Shallow Clayey 10-14 Foothills And Basins West.	Favorable	1,000	Western wheatgrass----------	30
		Normal	750	Indian ricegrass----------	10
		Unfavorable	500	Bottlebrush squirreltail------	10
				Low sagebrush----------	10
				Muttongrass----------	5
121*:					
Eyre Family-------	High Mountain Very Steep Loam (Douglas Fir).	Favorable	500	Mountain snowberry----------	15
		Normal	200	Elk sedge----------	10
		Unfavorable	100	True mountainmahogany---------	10
				Bluegrass----------	5
				Blue wildrye----------	5
				Engelmann aster----------	5
				Quaking aspen----------	5
				Oregongrape----------	5
Handran Family----	Mountain Stony Loam (Browse)	Favorable	2,600	True mountainmahogany---------	20
		Normal	1,900	Utah serviceberry----------	20
		Unfavorable	1,400	Bluebunch wheatgrass----------	10
				Bluegrass----------	5
				Sedge----------	5
				Mountain snowberry----------	5
				Mountain big sagebrush--------	5
122---------- Flatnose	Loamy Bottom (Basin Big Sagebrush).	Favorable	2,000	Basin wildrye----------	25
		Normal	1,500	Basin big sagebrush----------	15
		Unfavorable	1,000	Needleandthread----------	10
				Muttongrass----------	10
				Western wheatgrass----------	10
				Indian ricegrass----------	5
				Rubber rabbitbrush----------	5

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
123---------- Garlips	Lowland 10-14 Foothills And Basins West.	Favorable	3,000	Basin wildrye----------	15
		Normal	2,300	Rhizome wheatgrasses----------	15
		Unfavorable	1,600	Needleandthread----------	15
				Cottonwood----------	10
124*:					
Gerst----------	Semidesert Shallow Loam (Utah Juniper-Pinyon).	Favorable	350	Saline wildrye----------	20
		Normal	250	Black sagebrush----------	20
		Unfavorable	150	Bluebunch wheatgrass----------	10
				Mormon tea----------	10
				Galleta----------	5
Strych----------	Semidesert Gravelly Sandy Loam (Wyoming Big Sagebrush).	Favorable	600	Spiny hopsage----------	10
		Normal	400	Bottlebrush squirreltail------	5
		Unfavorable	250	Indian ricegrass----------	5
				Bluegrass----------	5
				Wyoming big sagebrush---------	5
125, 126---------- Goslin	Sandy 10-14 Foothills And Basins West.	Favorable	1,500	Needleandthread----------	25
		Normal	1,200	Thickspike wheatgrass---------	20
		Unfavorable	700	Indian ricegrass----------	15
				Big sagebrush----------	10
127*:					
Grieves----------	Sandy 10-14 Foothills And Basins West.	Favorable	1,500	Needleandthread----------	25
		Normal	1,200	Thickspike wheatgrass---------	20
		Unfavorable	700	Indian ricegrass----------	15
				Big sagebrush----------	10
Tisworth----------	Saline Lowland-Drained 10-14 Foothills And Basins West.	Favorable	1,600	Western wheatgrass----------	20
		Normal	1,300	Black greasewood----------	20
		Unfavorable	800	Indian ricegrass----------	15
				Bottlebrush squirreltail------	10
				Gardner saltbush----------	10
				Basin wildrye----------	5
128*:					
Grobutte Family---	Upland Stony Loam (Pinyon-Utah Juniper).	Favorable	800	Indian ricegrass----------	15
		Normal	600	Needleandthread----------	15
		Unfavorable	400	True mountainmahogany---------	15
				Saskatoon serviceberry--------	10
				Black sagebrush----------	10
				Bluebunch wheatgrass----------	5
				Buckwheat----------	5
				Mormon tea----------	5
				Slenderbush eriogonum---------	5
Rentsac----------	Semidesert Shallow Loam (Utah Juniper-Pinyon).	Favorable	350	Saline wildrye----------	20
		Normal	250	Black sagebrush----------	20
		Unfavorable	150	Bluebunch wheatgrass----------	10
				Mormon tea----------	10
				Galleta----------	5
Rock outcrop.					

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
129*:					
Hagga	Subirrigated 10-14 Foothills And Basins West.	Favorable	4,300	Basin wildrye	20
		Normal	3,700	Tufted hairgrass	15
		Unfavorable	3,000	Nebraska sedge	10
				Rhizome wheatgrasses	10
				Shrubby cinquefoil	10
				Willow	10
Cowestglen	Lowland 10-14 Foothills And Basins West.	Favorable	3,000	Basin wildrye	15
		Normal	2,300	Needleandthread	15
		Unfavorable	1,600	Rhizome wheatgrasses	15
				Cottonwood	10
130*:					
Hanly Family	Subirrigated 10-14 Foothills And Basins West.	Favorable	4,300	Basin wildrye	20
		Normal	3,700	Tufted hairgrass	15
		Unfavorable	3,000	Nebraska sedge	10
				Rhizome wheatgrasses	10
				Shrubby cinquefoil	10
				Willow	10
Riverwash.					
131*:					
Haploborolls	Upland Stony Loam (Pinyon-Utah Juniper).	Favorable	800	Indian ricegrass	15
		Normal	600	Needleandthread	15
		Unfavorable	400	True mountainmahogany	15
				Saskatoon serviceberry	10
				Black sagebrush	10
				Bluebunch wheatgrass	5
				Buckwheat	5
				Mormon tea	5
				Slenderbush eriogonum	5
Torriorthents	Semidesert Shallow Loam (Utah Juniper-Pinyon).	Favorable	350	Saline wildrye	20
		Normal	250	Black sagebrush	20
		Unfavorable	150	Bluebunch wheatgrass	10
				Mormon tea	10
				Galleta	5
132 Harpole	Upland Stony Loam (Black Sagebrush).	Favorable	800	Bluebunch wheatgrass	40
		Normal	650	Black sagebrush	20
		Unfavorable	450	Stemless goldenweed	10
				Bluegrass	5
				Prairie junegrass	5
133*:					
Harpole Family	Mountain Very Steep Stony Loam (Browse).	Favorable	1,500	True mountainmahogany	20
		Normal	1,200	Utah serviceberry	20
		Unfavorable	800	Bluebunch wheatgrass	10
				Fescue	5
				Bluegrass	5
				Needleandthread	5
				Arrowleaf balsamroot	5
				Mountain big sagebrush	5

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
133*:					
Worfstone Family--	Mountain Windswept Ridge (Black Sagebrush).	Favorable	700	Bluebunch wheatgrass----------	25
		Normal	500	Muttongrass----------	15
		Unfavorable	300	Prairie junegrass----------	10
				Black sagebrush----------	10
				Needleandthread----------	5
				Fringed sagewort----------	5
134----------	Desert Alkali Sand (Fourwing Saltbush).	Favorable	600	Fourwing saltbush----------	20
Henrieville		Normal	450	Indian ricegrass----------	15
		Unfavorable	350	Sand dropseed----------	10
				Spiny hopsage----------	10
				Shadscale----------	10
				Bud sagebrush----------	5
				Spiny horsebrush----------	5
135*:					
Henrysfork--------	Saline Subirrigated 10-14 Foothills And Basins West.	Favorable	3,400	Alkali sacaton----------	40
		Normal	3,000	Basin wildrye----------	15
		Unfavorable	2,500	Nuttall alkaligrass----------	10
				Alkali bluegrass----------	5
				Black greasewood----------	5
Borofibrists------	Wet Fresh Meadow----------	Favorable	3,500	Sedges----------	25
		Normal	3,000	Baltic rush----------	10
		Unfavorable	2,500	Tufted hairgrass----------	10
				Redtop----------	10
				Spikerush----------	5
				White clover----------	5
				Willow----------	5
				Shrubby cinquefoil----------	5
136----------	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass----------	20
Hickey		Normal	1,200	Bluebunch wheatgrass----------	10
		Unfavorable	700	Needleandthread----------	10
				Big sagebrush----------	10
137----------	Shallow Loamy 10-14 Foothills And Basins West.	Favorable	1,200	Bluebunch wheatgrass----------	20
Hickey		Normal	900	Thickspike wheatgrass----------	15
		Unfavorable	700	Indian ricegrass----------	10
				Big sagebrush----------	10
138*:					
Hickey loam-------	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass----------	20
		Normal	1,200	Bluebunch wheatgrass----------	10
		Unfavorable	700	Needleandthread----------	10
				Big sagebrush----------	10
Hickey gravelly sandy clay loam--	Shallow Loamy 10-14 Foothills And Basins West.	Favorable	1,200	Bluebunch wheatgrass----------	20
		Normal	900	Thickspike wheatgrass----------	15
		Unfavorable	700	Indian ricegrass----------	10
				Big sagebrush----------	10

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
139*:					
Hoodle Family-----	Mountain Very Steep Loam (Douglas Fir).	Favorable	500	Mountain snowberry----------	15
		Normal	200	Elk sedge----------	10
		Unfavorable	100	True mountainmahogany---------	10
				Bluegrass----------	5
				Blue wildrye----------	5
				Engelmann aster----------	5
				Heartleaf arnica----------	5
				Mountainlover----------	5
				Quaking aspen----------	5
				Oregongrape----------	5
				Pearhip rose----------	5
				Gooseberry----------	5
Namon Family, dry-	Mountain Very Steep Loam (Douglas Fir).	Favorable	500	Mountain snowberry----------	15
		Normal	200	Elk sedge----------	10
		Unfavorable	100	True mountainmahogany---------	10
				Bluegrass----------	5
				Blue wildrye----------	5
				Quaking aspen----------	5
Namon Family------	Mountain Very Steep Loam (Engelmann Spruce).	Favorable	500	Mountain snowberry----------	15
		Normal	200	Elk sedge----------	10
		Unfavorable	100	True mountainmahogany---------	10
				Bluegrass----------	5
				Blue wildrye----------	5
				Quaking aspen----------	5
140---------- Joebas	Upland Shallow Loam (Black Sagebrush).	Favorable	600	Bluebunch wheatgrass----------	30
		Normal	450	Black sagebrush----------	20
		Unfavorable	350	Sandberg bluegrass----------	15
				Prairie junegrass----------	10
				Stemless goldenweed----------	5
141*:					
Kappes----------	Sandy 10-14 Foothills And Basins West.	Favorable	1,500	Needleandthread----------	25
		Normal	1,200	Thickspike wheatgrass---------	20
		Unfavorable	700	Indian ricegrass----------	15
				Big sagebrush----------	10
McFadden----------	Sandy 10-14 Foothills And Basins West.	Favorable	1,500	Needleandthread----------	25
		Normal	1,200	Thickspike wheatgrass---------	20
		Unfavorable	700	Indian ricegrass----------	15
				Big sagebrush----------	10
142---------- Lanver	Semidesert Sandy Loam (Fourwing Saltbush).	Favorable	800	Indian ricegrass----------	20
		Normal	650	Needleandthread----------	15
		Unfavorable	450	Galleta----------	10
				Fourwing saltbush----------	10
				Torrey mormon tea----------	5
143---------- Ledgefork	Mountain Stony Loam (Browse)	Favorable	2,600	True mountainmahogany---------	20
		Normal	1,900	Utah serviceberry----------	20
		Unfavorable	1,400	Bluebunch wheatgrass----------	10
				Bluegrass----------	5
				Sedge----------	5
				Mountain snowberry----------	5
				Mountain big sagebrush--------	5

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
144*:					
Lotex sandy loam--	Mountain Windswept Ridge (Black Sagebrush).	Favorable	700	Bluebunch wheatgrass----------	25
		Normal	500	Muttongrass----------	15
		Unfavorable	300	Prairie junegrass----------	10
				Black sagebrush----------	10
				Needleandthread----------	5
				Fringed sagewort----------	5
Chittum----------	Mountain Loam (Mountain Big Sagebrush).	Favorable	2,000	Western wheatgrass----------	15
		Normal	1,500	Columbia needlegrass----------	15
		Unfavorable	1,000	Bluegrasses----------	10
				Needleandthread----------	10
				Prairie junegrass----------	5
				Mountain big sagebrush--------	5
Lotex stony loam--	Mountain Stony Loam (Curlleaf Mountainmahogany).	Favorable	2,500	Curlleaf mountainmahogany-----	35
		Normal	1,800	Bluebunch wheatgrass----------	10
		Unfavorable	1,300	Mountain snowberry----------	10
				Sandberg bluegrass----------	5
				Utah serviceberry----------	5
				Common chokecherry----------	5
145---------- Luhon	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass---------	20
		Normal	1,200	Bluebunch wheatgrass----------	10
		Unfavorable	700	Big sagebrush----------	10
				Needleandthread----------	10
146---------- Luhon	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass---------	20
		Normal	1,200	Bluebunch wheatgrass----------	10
		Unfavorable	700	Needleandthread----------	10
				Big sagebrush----------	10
147---------- Luhon	Sandy 10-14 Foothills And Basins West.	Favorable	1,500	Needleandthread----------	25
		Normal	1,200	Thickspike wheatgrass---------	20
		Unfavorable	700	Indian ricegrass----------	15
				Big sagebrush----------	10
				Prairie junegrass----------	5
				Bluegrass----------	5
148*:					
Luhon----------	Upland Stony Loam (Black Sagebrush).	Favorable	800	Bluebunch wheatgrass----------	40
		Normal	650	Black sagebrush----------	20
		Unfavorable	450	Prairie junegrass----------	10
				Stemless goldenweed----------	10
				Bluegrass----------	5
Brownsto----------	Upland Stony Loam (Black Sagebrush).	Favorable	800	Bluebunch wheatgrass----------	40
		Normal	650	Black sagebrush----------	20
		Unfavorable	450	Prairie junegrass----------	10
				Stemless goldenweed----------	10
				Bluegrass----------	5
149*:					
Luhon----------	Shallow Loamy 10-14 Foothills And Basins West.	Favorable	1,200	Bluebunch wheatgrass----------	20
		Normal	900	Thickspike wheatgrass---------	15
		Unfavorable	700	Indian ricegrass----------	10
				Big sagebrush----------	10

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
149*:					
Evanston	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass	20
		Normal	1,200	Bluebunch wheatgrass	10
		Unfavorable	700	Needleandthread	10
				Big sagebrush	10
150*:					
Luhon	Mountain Windswept Ridge (Black Sagebrush).	Favorable	700	Bluebunch wheatgrass	25
		Normal	500	Needleandthread	10
		Unfavorable	300	Muttongrass	15
				Black sagebrush	10
Hickey	Upland Shallow Loam (Black Sagebrush).	Favorable	600	Bluebunch wheatgrass	30
		Normal	450	Black sagebrush	20
		Unfavorable	350	Bluegrass	15
				Prairie junegrass	10
				Stemless goldenweed	5
				Slenderbush eriogonum	5
Heath	Mountain Loam (Mountain Big Sagebrush).	Favorable	2,000	Western wheatgrass	15
		Normal	1,500	Columbia needlegrass	15
		Unfavorable	1,000	Mountain big sagebrush	15
				Bluegrasses	10
				Needleandthread	5
				Prairie junegrass	5
				Mountain brome	5
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
151*:					
Luhon	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass	20
		Normal	1,200	Bluebunch wheatgrass	10
		Unfavorable	700	Needleandthread	10
				Big sagebrush	10
Rockinchair	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass	20
		Normal	1,200	Bluebunch wheatgrass	10
		Unfavorable	700	Needleandthread	10
				Big sagebrush	10
152, 153 McFadden	Sandy 10-14 Foothills And Basins West.	Favorable	1,500	Needleandthread	25
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Big sagebrush	10
154 McFadden	Sandy 10-14 Foothills And Basins West.	Favorable	1,500	Needleandthread	20
		Normal	1,200	Indian ricegrass	20
		Unfavorable	700	Thickspike wheatgrass	15
				Big sagebrush	5
155*:					
McFadden	Upland Stony Loam (Mountain Big Sagebrush).	Favorable	1,200	Antelope bitterbrush	20
		Normal	1,000	Needleandthread	15
		Unfavorable	700	Mountain big sagebrush	15
				Bluebunch wheatgrass	5
				Bluegrass	5
				Prairie junegrass	5
				Western wheatgrass	5

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
155*:					
Brownsto	Upland Stony Loam (Mountain Big Sagebrush).	Favorable	1,200	Antelope bitterbrush	20
		Normal	1,000	Needleandthread	15
		Unfavorable	700	Mountain big sagebrush	15
				Bluebunch wheatgrass	5
				Bluegrass	5
				Prairie junegrass	5
				Western wheatgrass	5
Rock outcrop.					
156*:					
Middlewood	Shallow Loamy 10-14 Foothills And Basins West.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Thickspike wheatgrass	15
		Unfavorable	700	Indian ricegrass	10
				Big sagebrush	10
Boettcher	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass	20
		Normal	1,200	Bluebunch wheatgrass	10
		Unfavorable	700	Needleandthread	10
				Big sagebrush	10
157 Milok	Semidesert Sandy Loam (Fourwing Saltbush).	Favorable	800	Indian ricegrass	20
		Normal	650	Needleandthread	15
		Unfavorable	450	Galleta	10
				Fourwing saltbush	10
				Torrey mormon tea	5
158 Ouray	Sandy 10-14 Foothills And Basins West.	Favorable	1,500	Needleandthread	25
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Big sagebrush	10
159*:					
Pesmore	Mountain Windswept Ridge (Black Sagebrush).	Favorable	700	Bluebunch wheatgrass	25
		Normal	500	Muttongrass	15
		Unfavorable	300	Prairie junegrass	10
				Black sagebrush	10
				Needleandthread	5
				Fringed sagewort	5
Garlips	Mountain Very Steep Stony Loam (Browse).	Favorable	3,000	True mountainmahogany	20
		Normal	2,300	Utah serviceberry	20
		Unfavorable	1,600	Bluebunch wheatgrass	10
				Needleandthread	5
				Bluegrass	5
				Mountain big sagebrush	5
161, 162, 163, 164, 165 Poposhia	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass	20
		Normal	1,200	Bluebunch wheatgrass	10
		Unfavorable	700	Needleandthread	10
				Big sagebrush	10
166 Poposhia, strongly alkaline	Saline Upland 10-14 Foothills And Basins West.	Favorable	750	Gardner saltbush	35
		Normal	600	Western wheatgrass	15
		Unfavorable	400	Indian ricegrass	15
				Bottlebrush squirreltail	15

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
167*:					
Recklor	Mountain Windswept Ridge (Black Sagebrush).	Favorable	700	Bluebunch wheatgrass	25
		Normal	500	Muttongrass	15
		Unfavorable	300	Prairie junegrass	10
				Black sagebrush	10
				Needleandthread	5
				Fringed sagewort	5
Amsden	Mountain Loam (Mountain Big Sagebrush).	Favorable	2,000	Western wheatgrass	15
		Normal	1,500	Columbia needlegrass	15
		Unfavorable	1,000	Mountain big sagebrush	15
				Bluegrass	10
				Needleandthread	5
				Prairie junegrass	5
				Mountain brome	5
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
Davtone	Mountain Loam (Mountain Big Sagebrush).	Favorable	2,000	Western wheatgrass	15
		Normal	1,500	Columbia needlegrass	15
		Unfavorable	1,000	Mountain big sagebrush	15
				Bluegrasses	10
				Needleandthread	5
				Prairie junegrass	5
				Mountain brome	5
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
168*:					
Redcreek	Very Shallow 10-14 Foothills And Basins West.	Favorable	500	Bluebunch wheatgrass	30
		Normal	350	Bottlebrush squirreltail	10
		Unfavorable	200	Indian ricegrass	10
				Mountainmahogany	10
Blackhall	Shallow Sandy 10-14 Foothills And Basins West.	Favorable	1,200	Needleandthread	20
		Normal	900	Indian ricegrass	20
		Unfavorable	700	Thickspike wheatgrass	15
				Big sagebrush	5
Rock outcrop.					
169*:					
Rentsac very channery sandy loam	Shallow Sandy 10-14 Foothills And Basins West.	Favorable	1,200	Needleandthread	20
		Normal	900	Indian ricegrass	20
		Unfavorable	700	Thickspike wheatgrass	15
				Big sagebrush	5
Rentsac channery sandy loam	Semidesert Shallow Loam (Utah Juniper-Pinyon).	Favorable	350	Saline wildrye	20
		Normal	250	Black sagebrush	20
		Unfavorable	150	Bluebunch wheatgrass	10
				Mormon tea	10
				Galleta	5
				True mountainmahogany	5
Rock outcrop.					
170 Rhoamett	Saline Upland 10-14 Foothills And Basins West.	Favorable	750	Gardner saltbush	35
		Normal	600	Western wheatgrass	15
		Unfavorable	400	Bottlebrush squirreltail	15
				Indian ricegrass	15

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
171*:					
Rockinchair--------	Very Shallow 10-14 Foothills And Basins West.	Favorable	500	Bluebunch wheatgrass----------	30
		Normal	350	Indian ricegrass--------------	10
		Unfavorable	200	Bottlebrush squirreltail------	10
				Mountainmahogany--------------	10
Luhon-------------	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Bluebunch wheatgrass----------	20
		Normal	1,200	Thickspike wheatgrass---------	15
		Unfavorable	700	Indian ricegrass--------------	10
				Needleandthread---------------	10
				Big sagebrush-----------------	10
Rentsac-----------	Very Shallow 10-14 Foothills And Basins West.	Favorable	500	Bluebunch wheatgrass----------	30
		Normal	350	Indian ricegrass--------------	10
		Unfavorable	200	Bottlebrush squirreltail------	10
				Mountainmahogany--------------	10
172*:					
Rock outcrop.					
Blazon------------	Shale 10-14 Foothills And Basins West.	Favorable	350	Western wheatgrass------------	30
		Normal	250	Bottlebrush squirreltail------	15
		Unfavorable	150	Indian ricegrass--------------	10
				Gardner saltbush--------------	10
				Winterfat---------------------	5
173*:					
Rock outcrop.					
Coyet loamy sand--	Semidesert Shallow Loam (Utah Juniper-Pinyon).	Favorable	250	Black sagebrush---------------	20
		Normal	200	Saline wildrye----------------	20
		Unfavorable	100	Mormon tea--------------------	20
				Bluebunch wheatgrass----------	10
				Galleta-----------------------	5
Coyet loamy fine sand-------------	Sandy 10-14 Foothills And Basins West.	Favorable	1,500	Needleandthread---------------	25
		Normal	1,200	Thickspike wheatgrass---------	20
		Unfavorable	700	Indian ricegrass--------------	15
				Big sagebrush-----------------	10
174---------------- Rock River	Sandy 10-14 Foothills And Basins West.	Favorable	1,500	Needleandthread---------------	25
		Normal	1,200	Thickspike wheatgrass---------	20
		Unfavorable	700	Indian ricegrass--------------	15
				Big sagebrush-----------------	10
175*:					
Rock River--------	Upland Shallow Loam (Utah Juniper-Pinyon).	Favorable	450	Bluebunch wheatgrass----------	30
		Normal	300	Black sagebrush---------------	15
		Unfavorable	200	Bluegrass---------------------	10
				Needleandthread---------------	5
				Stemless goldenweed-----------	5
Brownsto----------	Upland Shallow Loam (Utah Juniper-Pinyon).	Favorable	450	Bluebunch wheatgrass----------	30
		Normal	300	Prairie junegrass-------------	15
		Unfavorable	200	Black sagebrush---------------	15
				Bluegrass---------------------	10
				Needleandthread---------------	5
				Stemless goldenweed-----------	5

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
176*:					
Rogert	Mountain Windswept Ridge (Black Sagebrush).	Favorable	700	Bluebunch wheatgrass	25
		Normal	500	Muttongrass	15
		Unfavorable	300	Prairie junegrass	10
				Black sagebrush	10
				Needleandthread	5
				Fringed sagewort	5
Parkay Family	Mountain Stony Loam (Browse)	Favorable	2,600	True mountainmahogany	20
		Normal	1,900	Utah serviceberry	20
		Unfavorable	1,400	Bluebunch wheatgrass	10
				Bluegrass	5
				Sedge	5
				Mountain snowberry	5
				Mountain big sagebrush	5
Davtone	Mountain Loam (Mountain Big Sagebrush).	Favorable	2,000	Western wheatgrass	15
		Normal	1,500	Columbia needlegrass	15
		Unfavorable	1,000	Mountain big sagebrush	15
				Bluegrasses	10
				Needleandthread	5
				Prairie junegrass	5
				Mountain brome	5
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
177*:					
Rogrube gravelly loam	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass	20
		Normal	1,200	Bluebunch wheatgrass	10
		Unfavorable	700	Needleandthread	10
				Big sagebrush	10
Rogrube clay loam-	Very Shallow 10-14 Foothills And Basins West.	Favorable	500	Bluebunch wheatgrass	30
		Normal	350	Indian ricegrass	10
		Unfavorable	200	Bottlebrush squirreltail	10
				Mountainmahogany	10
178*:					
Roto	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass	20
		Normal	1,200	Bluebunch wheatgrass	10
		Unfavorable	700	Needleandthread	10
				Big sagebrush	10
Rockinchair	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass	20
		Normal	1,200	Bluebunch wheatgrass	10
		Unfavorable	700	Needleandthread	10
				Big sagebrush	10
Rencot	Shallow Loamy 10-14 Foothills And Basins West.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Thickspike wheatgrass	15
		Unfavorable	700	Indian ricegrass	10
				Big sagebrush	10

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
180*:					
Sedillo Family----	Upland Stony Loam (Pinyon-Utah Juniper).	Favorable	800	Black sagebrush----------	25
		Normal	600	Bluebunch wheatgrass----------	15
		Unfavorable	400	True mountainmahogany---------	15
				Indian ricegrass----------	5
				Needleandthread----------	5
				Prairie junegrass----------	5
				Slenderbush eriogonum---------	5
Strych----------	Upland Stony Loam (Pinyon-Utah Juniper).	Favorable	800	Black sagebrush----------	25
		Normal	600	Bluebunch wheatgrass----------	15
		Unfavorable	400	True mountainmahogany---------	15
				Indian ricegrass----------	5
				Bluegrass----------	5
				Needleandthread----------	5
181---------- Sinkson	Overflow 10-14 Foothills And Basins West.	Favorable	2,200	Thickspike wheatgrass---------	20
		Normal	1,800	Basin wildrye----------	20
		Unfavorable	1,200	Canby bluegrass----------	10
				Big sagebrush----------	10
182*:					
Spicerton---------	Saline Lowland-Drained 10-14 Foothills And Basins West.	Favorable	1,600	Western wheatgrass----------	20
		Normal	1,300	Black greasewood----------	20
		Unfavorable	800	Indian ricegrass----------	15
				Bottlebrush squirreltail------	10
				Gardner saltbush----------	10
				Basin wildrye----------	5
				Winterfat----------	5
Poposhia----------	Saline Lowland-Drained 10-14 Foothills And Basins West.	Favorable	1,600	Black greasewood----------	20
		Normal	1,300	Indian ricegrass----------	15
		Unfavorable	800	Western wheatgrass----------	15
				Bottlebrush squirreltail------	10
				Gardner saltbush----------	10
				Basin wildrye----------	5
183*:					
Spool----------	Upland Shallow Loam (Utah Juniper-Pinyon).	Favorable	450	Bluebunch wheatgrass----------	30
		Normal	300	Prairie junegrass----------	15
		Unfavorable	200	Black sagebrush----------	15
				Needleandthread----------	5
Rock outcrop.					
Blackhall---------	Upland Stony Loam (Pinyon-Utah Juniper).	Favorable	800	Black sagebrush----------	25
		Normal	600	True mountainmahogany---------	15
		Unfavorable	400	Bluebunch wheatgrass----------	10
				Indian ricegrass----------	5
				Bluegrasses----------	5
				Mormon tea----------	5
				Needleandthread----------	5
184*:					
Strych gravelly sandy loam-------	Semidesert Gravelly Sandy Loam (Wyoming Big Sagebrush).	Favorable	600	Spiny hopsage----------	10
		Normal	400	Bottlebrush squirreltail------	5
		Unfavorable	250	Indian ricegrass----------	5
				Bluegrass----------	5
				Wyoming big sagebrush---------	5

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
184*:					
Strych very cobbly sandy loam-------	Semidesert Stony Loam (Utah Juniper-Pinyon).	Favorable	650	Needleandthread----------	10
		Normal	500	Galleta----------	10
		Unfavorable	350	True mountainmahogany---------	10
				Black sagebrush----------	10
				Bottlebrush squirreltail------	5
				Indian ricegrass----------	5
				Bluebunch wheatgrass----------	5
				Saline wildrye----------	5
185*:					
Strych----------	Semidesert Gravelly Sandy Loam (Wyoming Big Sagebrush).	Favorable	600	Spiny hopsage----------	10
		Normal	400	Bottlebrush squirreltail------	5
		Unfavorable	250	Indian ricegrass----------	5
				Bluegrass----------	5
				Wyoming big sagebrush---------	5
Milok----------	Semidesert Sandy Loam (Fourwing Saltbush).	Favorable	800	Indian ricegrass----------	20
		Normal	650	Needleandthread----------	15
		Unfavorable	450	Galleta----------	10
				Fourwing saltbush----------	10
				Torrey mormon tea----------	5
186---------- Tally	Mountain Loam (Mountain Big Sagebrush).	Favorable	2,000	Western wheatgrass----------	15
		Normal	1,500	Columbia needlegrass----------	15
		Unfavorable	1,000	Mountain big sagebrush--------	15
				Bluegrass----------	10
				Needleandthread----------	5
				Prairie junegrass----------	5
				Mountain brome----------	5
187*:					
Tally----------	Mountain Loam (Mountain Big Sagebrush).	Favorable	2,000	Western wheatgrass----------	15
		Normal	1,500	Columbia needlegrass----------	15
		Unfavorable	1,000	Mountain big sagebrush--------	15
				Bluegrasses----------	10
				Needleandthread----------	5
				Prairie junegrass----------	5
				Mountain brome----------	5
Tolman----------	Mountain Windswept Ridge (Black Sagebrush).	Favorable	700	Bluebunch wheatgrass----------	25
		Normal	500	Muttongrass----------	15
		Unfavorable	300	Prairie junegrass----------	10
				Black sagebrush----------	10
				Needleandthread----------	5
				Fringed sagewort----------	5
188---------- Teeler	Mountain Windswept Ridge (Black Sagebrush).	Favorable	700	Bluebunch wheatgrass----------	25
		Normal	500	Muttongrass----------	15
		Unfavorable	300	Columbia needlegrass----------	10
				Black sagebrush----------	10
				Needleandthread----------	5
				Fringed sagewort----------	5
189*:					
Thermopolis-------	Shallow Breaks 10-14 Foothills And Basins West.	Favorable	1,400	Bluebunch wheatgrass----------	20
		Normal	1,200	Thickspike wheatgrass---------	10
		Unfavorable	900	Indian ricegrass----------	5
				Needleandthread----------	5

See footnote at end of table.

TABLE 5.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
189*:					
Blazon	Shallow Breaks 10-14 Foothills And Basins West.	Favorable	1,400	Bluebunch wheatgrass	20
		Normal	1,200	Thickspike wheatgrass	10
		Unfavorable	900	Indian ricegrass	5
				Needleandthread	5
Sinkson	Loamy 10-14 Foothills And Basins West.	Favorable	1,500	Thickspike wheatgrass	20
		Normal	1,200	Bluebunch wheatgrass	10
		Unfavorable	700	Needleandthread	10
				Big sagebrush	10
190 Tridell	Upland Stony Loam (Black Sagebrush).	Favorable	800	Bluebunch wheatgrass	40
		Normal	650	Black sagebrush	20
		Unfavorable	450	Prairie junegrass	10
				Stemless goldenweed	10
				Bluegrass	5
191*:					
Turson	Lowland 10-14 Foothills And Basins West.	Favorable	3,000	Basin wildrye	15
		Normal	2,300	Needleandthread	15
		Unfavorable	1,600	Rhizome wheatgrass	15
				Cottonwood	10
Menbar	Lowland 10-14 Foothills And Basins West.	Favorable	3,000	Basin wildrye	15
		Normal	2,300	Needleandthread	15
		Unfavorable	1,600	Rhizome wheatgrass	15
				Cottonwood	10
192*:					
Yarts	Semidesert Sandy Loam (Fourwing Saltbush).	Favorable	800	Indian ricegrass	20
		Normal	650	Needleandthread	15
		Unfavorable	450	Galleta	10
				Fourwing saltbush	10
				Sand dropseed	10
				Winterfat	5
				Torrey mormon tea	5
Bunkwater	Alkali Flat (Black Greasewood)	Favorable	1,000	Black greasewood	30
		Normal	700	Bottlebrush squirreltail	10
		Unfavorable	500	Alkali sacaton	10
				Shadscale	10
				Galleta	5
				Indian ricegrass	5
				Seepweed	5

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6A.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE I

(Dashes indicate that the species is not suited to the soils in the group)

Woody species	Group 1				Group 1K				Group 3				Group 4				Group 4C			
	Precipitation				Precipitation				Precipitation				Precipitation				Precipitation			
	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers+:																				
Austrian pine	---	---	**	22	---	---	---	---	---	---	*16	22	---	---	15	22	---	---	---	22
Blue spruce	---	*12	**	22	---	---	16	22	---	---	16	22	---	---	---	20	---	---	---	19
Eastern redcedar	---	15	**	23	---	15	17	22	---	10	13	21	---	10	12	20	---	8	11	20
Ponderosa pine	---	*16	**	22	---	*16	18	23	---	*14	16	22	---	*12	15	22	---	*10	12	21
Rocky Mountain juniper	---	10	**	21	---	10	14	21	---	8	10	18	---	8	10	18	---	8	10	18
Scotch pine	---	---	**	21	---	---	---	---	---	---	*15	20	---	---	---	20	---	---	---	20
Deciduous trees:																				
Boxelder	---	---	**	21	---	---	---	---	---	---	---	20	---	---	---	19	---	---	---	19
Golden willow	---	*20	**	31	---	*20	*24	31	---	---	---	29	---	---	---	29	---	---	---	29
Green ash	---	*14	**	28	---	*14	17	27	---	*13	16	28	---	*13	15	28	---	*10	12	25
Honeylocust	---	15	**	28	---	15	19	28	---	14	17	26	---	13	16	26	---	12	14	24
Plains cottonwood	---	*29	**	41	---	*29	31	41	---	---	---	41	---	---	---	41	---	---	---	41
Russian-olive	*12	15	**	24	*12	16	18	24	---	13	15	23	---	11	14	22	---	9	11	22
Siberian crabapple	---	*11	**	19	---	---	---	---	---	---	12	19	---	---	12	19	---	---	11	19
Siberian elm	---	*20	**	33	---	*20	24	33	---	*18	23	33	---	*17	21	33	---	*15	19	31
Shrubs:																				
American plum	---	---	**	10	---	---	*7	10	---	---	*7	10	---	---	*7	10	---	---	*7	10
Antelope bitterbrush	---	---	**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Basin big sagebrush	---	---	**	---	---	---	---	---	2	4	5	---	---	---	---	---	---	---	---	---
Common chokecherry	---	*7	**	11	---	*7	*7	11	---	*7	*8	11	---	*7	8	11	---	*7	8	11
Fourwing saltbush	2	2	**	---	2	2	---	---	2	2	---	---	2	2	2	3	2	2	---	---
Golden currant	---	---	**	6	---	---	---	---	---	---	*4	6	---	---	*4	6	---	---	---	6
Greasewood	---	---	**	---	3	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lilac	---	*5	**	10	---	*5	7	10	---	*5	7	10	---	*5	7	10	---	*4	5	9
Nanking cherry	---	*3	**	8	---	---	---	---	---	*3	5	8	---	*3	5	8	---	*3	5	8
Peking cotoneaster	---	*3	**	9	---	---	---	---	---	*3	4	8	---	*3	4	8	---	---	4	8
Redosier dogwood	---	---	**	8	---	---	---	---	---	---	---	8	---	---	---	8	---	---	---	7
Rubber rabbitbrush	---	---	**	---	2	3	---	---	---	---	---	---	---	---	---	---	2	2	---	---
Rugosa rose	---	2	**	6	---	---	---	---	---	3	4	6	---	3	4	6	---	---	3	5
Saskatoon serviceberry	---	---	**	7	---	---	---	---	---	---	---	5	---	---	---	5	---	---	---	5
Siberian peashrub	---	7	**	14	---	6	9	14	---	7	8	12	---	6	7	12	---	4	5	12
Silver buffaloberry	---	---	**	12	---	---	*7	12	---	---	*7	11	---	---	*7	10	---	---	---	10
Silver sagebrush	---	---	**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Skunkbush sumac	---	3	**	9	---	3	5	9	---	3	5	9	---	3	5	9	---	3	4	8
Tatarian honeysuckle	---	6	**	11	---	6	8	11	---	5	7	11	---	5	7	11	---	4	6	11
Western sandcherry	---	2	**	---	---	---	---	---	---	2	3	3	---	2	3	3	---	---	---	3
Yucca	---	---	**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 6A.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE I--Continued

Woody species	Group 5				Group 5K				Group 6				Group 6R			
	Precipitation				Precipitation				Precipitation				Precipitation			
	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers+:																
Austrian pine	---	---	**	22	---	---	---	---	---	---	---	16	---	---	*13	22
Blue spruce	---	---	**	21	---	---	---	21	---	---	---	21	---	---	---	21
Eastern redcedar	---	10	**	20	---	8	10	20	---	8	10	20	---	8	11	20
Ponderosa pine	---	*13	**	22	---	*10	13	22	---	*10	13	22	---	*11	13	22
Rocky Mountain juniper	---	8	**	17	---	8	10	17	---	8	10	18	---	8	10	18
Scotch pine	---	---	**	20	---	---	---	---	---	---	13	20	---	---	13	20
Deciduous trees:																
Boxelder	---	---	**	20	---	---	---	---	---	---	---	20	---	---	---	20
Golden willow	---	---	**	29	---	---	---	---	---	---	---	---	---	---	---	29
Green ash	---	*12	**	27	---	*11	13	28	---	---	*13	28	---	*11	14	28
Honeylocust	---	12	**	26	---	11	14	28	---	---	13	26	---	14	17	27
Plains cottonwood	---	---	**	41	---	---	---	41	---	---	---	35	---	---	---	35
Russian-olive	---	11	**	23	---	9	11	23	---	10	13	23	---	11	14	24
Siberian crabapple	---	---	**	19	---	---	---	---	---	---	---	19	---	---	*12	19
Siberian elm	---	*17	**	33	---	*16	20	33	---	*15	20	33	---	17	21	33
Shrubs:																
American plum	---	---	**	10	---	---	---	10	---	---	---	10	---	---	---	10
Antelope bitterbrush	---	---	**	---	---	---	---	---	---	2	3	---	---	2	3	---
Basin big sagebrush	2	4	**	---	2	3	---	---	2	3	4	---	2	3	4	---
Common chokecherry	---	*6	**	11	---	---	7	11	---	---	*7	11	---	---	*7	11
Fourwing saltbush	2	2	**	---	2	2	2	---	2	2	2	---	2	2	2	---
Golden currant	---	---	**	6	---	---	---	---	---	---	---	6	---	---	---	6
Greasewood	---	---	**	---	---	3	---	---	---	---	---	---	---	---	---	---
Lilac	---	*5	**	10	---	*4	5	10	---	---	*5	9	---	---	*4	9
Nanking cherry	---	---	**	8	---	---	---	---	---	---	---	7	---	---	*4	8
Peking cotoneaster	---	---	**	8	---	---	---	---	---	---	*4	8	---	---	*4	8
Redosier dogwood	---	---	**	8	---	---	---	---	---	---	---	7	---	---	---	7
Rubber rabbitbrush	---	---	**	---	2	2	---	---	2	2	3	---	2	3	3	---
Rugosa rose	---	2	**	6	---	---	---	---	---	2	3	6	---	2	3	6
Saskatoon serviceberry	---	---	**	5	---	---	---	5	---	---	---	5	---	---	---	5
Siberian peashrub	---	5	**	12	---	4	6	12	---	5	6	12	---	5	7	12
Silver buffaloberry	---	---	**	11	---	---	*6	11	---	---	*5	11	---	---	*7	11
Silver sagebrush	---	---	**	---	---	---	---	---	---	2	2	---	---	2	2	---
Skunkbush sumac	---	3	**	8	---	3	5	8	---	---	3	8	---	*3	5	8
Tatarian honeysuckle	---	5	**	11	---	4	6	11	---	---	6	11	---	*3	7	11
Western sandcherry	---	2	**	3	---	---	---	---	---	---	2	3	---	---	2	3
Yucca	---	---	**	---	---	---	---	---	1	1	2	---	1	1	2	---

See footnotes at end of table.

TABLE 6A.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE I--Continued

Woody species	Group 7				Group 8				Group 9G				Group 9N			
	Precipitation				Precipitation				Precipitation				Precipitation			
	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers:+																
Austrian pine	---	---	**	22	---	---	---	---	---	---	---	---	---	---	---	---
Blue spruce	---	---	**	21	---	---	---	21	---	---	---	---	---	---	---	---
Eastern redcedar	---	*7	**	20	---	8	10	20	---	---	10	17	---	---	*7	17
Ponderosa pine	---	---	**	22	---	*11	13	22	---	---	---	---	---	*9	11	21
Rocky Mountain juniper	---	*6	**	18	---	8	10	17	---	*7	9	18	---	*5	6	16
Scotch pine	---	---	**	20	---	---	---	---	---	---	---	---	---	---	---	---
Deciduous trees:																
Boxelder	---	---	**	20	---	---	---	---	---	---	---	---	---	---	---	---
Golden willow	---	---	**	---	---	---	---	---	---	---	---	---	---	---	---	---
Green ash	---	---	**	28	---	11	13	30	---	---	16	27	---	---	*11	24
Honeylocust	---	---	**	26	---	11	14	29	---	14	17	27	---	---	---	---
Plains cottonwood	---	---	**	30	---	---	---	41	---	---	27	41	---	---	---	---
Russian-olive	---	---	**	23	---	9	11	22	---	13	16	23	---	---	---	---
Siberian crabapple	---	---	**	19	---	---	---	---	---	---	---	---	---	---	---	---
Siberian elm	---	---	**	32	---	17	20	33	---	*16	21	32	---	*10	12	30
Shrubs:																
American plum	---	---	**	10	---	---	---	10	---	---	---	---	---	---	---	---
Antelope bitterbrush	---	---	**	---	---	---	---	---	---	---	---	---	---	---	---	---
Basin big sagebrush	---	---	**	---	2	3	---	---	---	---	---	---	---	3	---	---
Common chokecherry	---	---	**	11	---	---	7	11	---	---	---	---	---	---	---	---
Fourwing saltbush	---	---	**	---	2	2	---	---	2	2	2	---	2	2	---	---
Golden currant	---	---	**	6	---	---	---	---	---	3	4	---	---	---	---	---
Greasewood	---	---	**	---	---	---	---	---	2	3	2	---	2	2	---	---
Lilac	---	---	**	9	---	4	5	10	---	*5	6	10	---	---	5	10
Nanking cherry	---	---	**	7	---	---	---	---	---	---	---	---	---	---	---	---
Peking cotoneaster	---	---	**	8	---	---	---	---	---	---	---	---	---	---	---	---
Redosier dogwood	---	---	**	7	---	---	---	---	---	---	---	---	---	---	---	---
Rubber rabbitbrush	---	*2	**	---	2	2	---	---	2	2	3	---	---	2	---	---
Rugosa rose	---	*2	**	6	---	---	---	---	---	---	---	---	---	---	---	---
Saskatoon serviceberry	---	---	**	5	---	---	---	---	---	---	---	---	---	---	---	---
Siberian peashrub	---	*4	**	12	---	5	6	12	---	5	8	12	---	4	5	10
Silver buffaloberry	---	---	**	11	---	---	6	12	---	---	7	11	---	---	---	---
Silver sagebrush	2	2	**	---	---	---	---	---	---	---	---	---	---	---	---	---
Skunkbush sumac	---	---	**	---	---	3	5	8	---	3	5	9	---	3	4	9
Tatarian honeysuckle	---	---	**	11	---	5	7	11	---	6	7	11	---	4	5	11
Western sandcherry	---	---	**	3	---	---	---	---	---	---	---	---	---	---	---	---
Yucca	1	1	**	---	---	---	---	---	---	---	---	---	---	---	---	---

* Supplemental water is needed during the 3- to 5-year establishment period.

\+ New plantings in areas that are prone to high wind need protection from the wind during the 3- to 5-year establishment period. A midwinter watering is also recommended to prevent foliar desiccation.

** Data were not available.

TABLE 6B.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE II

(Dashes indicate that the species is not suited to the soils in the group)

Woody species	Group 1			Group 1K			Group 3			Group 4			Group 4C		
	Precipitation			Precipitation			Precipitation			Precipitation			Precipitation		
	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers+:															
Austrian pine	---	---	23	---	---	---	---	---	23	---	---	23	---	---	---
Blue spruce	---	*11	22	---	---	22	---	---	23	---	---	20	---	---	19
Eastern redcedar	---	16	22	---	15	22	---	10	22	---	10	22	---	8	20
Ponderosa pine	---	*13	24	---	*16	24	---	*14	24	---	12	24	---	*10	22
Rocky Mountain juniper	---	10	20	---	10	20	---	9	20	---	9	20	---	9	19
Scotch pine	---	---	21	---	---	---	---	---	20	---	---	20	---	---	---
Deciduous trees:															
Boxelder	---	---	21	---	---	---	---	---	21	---	---	21	---	---	21
Golden willow	---	*20	31	---	*20	31	---	---	29	---	---	29	---	---	29
Green ash	---	14	30	---	*14	30	---	12	30	---	*12	30	---	*10	27
Honeylocust	---	15	30	---	15	30	---	14	30	---	14	30	---	12	28
Plains cottonwood	---	*28	41	---	---	41	---	---	41	---	---	42	---	---	42
Russian-olive	*12	15	25	*12	16	25	---	14	25	---	11	25	---	9	22
Siberian crabapple	---	*11	19	---	---	---	---	---	19	---	---	19	---	---	19
Siberian elm	---	*20	36	---	*20	36	---	*18	36	---	*17	36	---	*15	32
Shrubs:															
American plum	---	*7	10	---	---	11	---	---	11	---	---	10	---	---	10
Antelope bitterbrush	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Basin big sagebrush	2	4	---	---	---	---	2	4	---	2	4	---	---	---	---
Common chokecherry	---	*7	12	---	*7	12	---	*7	12	---	7	12	---	*7	10
Fourwing saltbush	2	3	---	2	3	---	2	3	---	2	3	---	2	3	---
Golden currant	---	---	6	---	---	---	---	---	6	---	---	6	---	---	6
Greasewood	---	---	---	3	3	---	---	---	---	---	---	---	---	---	---
Lilac	---	*5	10	---	5	10	---	*5	10	---	*5	10	---	*4	9
Nanking cherry	---	*3	9	---	---	---	---	*5	8	---	*3	8	---	*3	8
Peking cotoneaster	---	*4	---	---	---	---	---	*4	8	---	*4	8	---	---	8
Redosier dogwood	---	---	7	---	---	---	---	---	8	---	---	8	---	---	7
Rubber rabbitbrush	---	---	---	2	3	---	---	---	---	---	---	---	2	3	---
Rugosa rose	---	3	7	---	---	---	---	4	6	---	4	6	---	---	6
Saskatoon serviceberry	---	---	7	---	---	---	---	---	5	---	---	5	---	---	5
Siberian peashrub	---	8	13	---	5	12	---	7	14	---	6	13	---	4	9
Silver buffaloberry	---	---	12	---	---	11	---	---	12	---	---	11	---	---	11
Silver sagebrush	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Skunkbush sumac	---	4	9	---	4	10	---	4	8	---	4	8	---	---	7
Tatarian honeysuckle	---	7	11	---	5	11	---	5	11	---	5	11	---	4	10
Western sandcherry	---	2	3	---	---	---	---	2	3	---	2	3	---	---	3
Yucca	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 6B.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE II--Continued

Woody species	Group 5			Group 5K			Group 6G			Group 6R		
	Precipitation			Precipitation			Precipitation			Precipitation		
	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers+:												
Austrian pine	---	---	23	---	---	---	---	---	23	---	---	23
Blue spruce	---	---	21	---	---	22	---	---	21	---	---	21
Eastern redcedar	---	10	20	---	8	20	---	8	18	---	8	20
Ponderosa pine	---	*10	22	---	*10	22	---	*10	22	---	*10	22
Rocky Mountain juniper	---	9	19	---	8	18	---	8	17	---	9	17
Scotch pine	---	---	22	---	---	---	---	---	---	---	---	---
Deciduous trees:												
Boxelder	---	---	21	---	---	---	---	---	21	---	---	21
Golden willow	---	---	29	---	---	---	---	---	---	---	---	29
Green ash	---	*11	28	---	*10	26	---	---	26	---	*11	26
Honeylocust	---	13	28	---	12	27	---	---	26	---	14	26
Plains cottonwood	---	---	42	---	---	42	---	---	35	---	---	35
Russian-olive	---	9	23	---	8	23	---	10	22	---	10	23
Siberian crabapple	---	---	19	---	---	---	---	---	---	---	---	19
Siberian elm	---	*17	33	---	16	32	---	*15	30	---	*17	31
Shrubs:												
American plum	---	---	10	---	---	10	---	---	10	---	---	10
Antelope bitterbrush	---	---	---	---	---	---	---	2	---	---	2	---
Basin big sagebrush	2	4	---	2	4	---	2	3	---	2	4	---
Common chokecherry	---	*7	11	---	---	11	---	---	10	---	---	11
Fourwing saltbush	2	3	---	2	3	---	2	3	---	2	3	---
Golden currant	---	---	6	---	---	---	---	---	6	---	---	6
Greasewood	---	---	---	---	3	---	---	---	---	---	---	---
Lilac	---	*4	9	---	*4	9	---	---	8	---	---	8
Nanking cherry	---	---	8	---	---	---	---	---	7	---	---	8
Peking cotoneaster	---	---	8	---	---	---	---	---	6	---	---	6
Redosier dogwood	---	---	8	---	---	---	---	---	7	---	---	7
Rubber rabbitbrush	3	4	---	2	3	---	2	4	---	2	4	---
Rugosa rose	---	3	6	---	---	---	---	3	6	---	3	6
Saskatoon serviceberry	---	---	5	---	---	5	---	---	5	---	---	5
Siberian peashrub	---	5	12	---	5	10	---	5	10	---	5	10
Silver buffaloberry	---	---	12	---	---	12	---	---	12	---	---	11
Silver sagebrush	---	---	---	---	---	---	---	3	---	---	3	---
Skunkbush sumac	---	3	9	---	3	8	---	4	8	---	*4	9
Tatarian honeysuckle	---	5	11	---	5	11	---	---	10	---	*5	10
Western sandcherry	---	2	3	---	---	---	---	---	3	---	---	3
Yucca	---	---	---	---	---	---	1	1	---	1	1	---

See footnotes at end of table.

TABLE 6B.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE II--Continued

Woody species	Group 7			Group 8			Group 9G			Group 9N		
	Precipitation			Precipitation			Precipitation			Precipitation		
	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers+:												
Austrian pine	---	---	20	---	---	---	---	---	---	---	---	---
Blue spruce	---	---	21	---	---	21	---	---	---	---	---	---
Eastern redcedar	---	*7	18	---	8	22	---	---	18	---	---	18
Ponderosa pine	---	---	20	---	*10	24	---	---	---	---	*9	22
Rocky Mountain juniper	---	*7	17	---	8	20	---	*7	15	---	*5	15
Scotch pine	---	---	---	---	---	---	---	---	---	---	---	---
Deciduous trees:												
Boxelder	---	---	21	---	---	---	---	---	---	---	---	---
Golden willow	---	---	---	---	---	---	---	---	---	---	---	---
Green ash	---	---	26	---	10	30	---	---	28	---	---	26
Honeylocust	---	---	26	---	12	30	---	13	28	---	13	22
Plains cottonwood	---	---	30	---	---	42	---	---	40	---	---	32
Russian-olive	---	---	23	---	8	25	---	12	23	---	8	23
Siberian crabapple	---	---	19	---	---	---	---	---	---	---	---	---
Siberian elm	---	---	30	---	16	36	---	16	33	---	*10	30
Shrubs:												
American plum	---	---	10	---	---	11	---	---	---	---	---	---
Antelope bitterbrush	---	---	---	---	---	---	---	---	---	---	---	---
Basin big sagebrush	---	---	---	2	4	---	---	---	---	---	4	---
Common chokecherry	---	---	10	---	---	11	---	---	---	---	---	---
Fourwing saltbush	---	---	---	2	3	---	2	3	---	2	3	---
Golden currant	---	---	6	---	---	---	---	---	---	---	---	---
Greasewood	---	---	---	---	---	---	2	5	---	2	3	---
Lilac	---	---	8	---	4	9	---	*5	9	---	---	9
Nanking cherry	---	---	7	---	---	---	---	---	---	---	---	---
Peking cotoneaster	---	---	8	---	---	---	---	---	---	---	---	---
Redosier dogwood	---	---	7	---	---	---	---	---	---	---	---	---
Rubber rabbitbrush	2	4	---	2	4	---	---	4	---	---	3	---
Rugosa rose	---	---	6	---	---	---	---	---	---	---	---	---
Saskatoon serviceberry	---	---	5	---	---	---	---	---	---	---	---	---
Siberian peashrub	---	---	10	---	5	10	---	5	10	---	4	8
Silver buffaloberry	---	---	11	---	---	11	---	---	11	---	---	10
Silver sagebrush	---	3	---	---	---	---	---	---	---	---	---	---
Skunkbush sumac	---	---	10	---	4	8	---	4	8	---	3	8
Tatarian honeysuckle	---	---	10	---	5	11	---	5	10	---	4	10
Western sandcherry	---	---	3	---	---	---	---	---	---	---	---	---
Yucca	1	1	---	---	---	---	---	---	---	---	---	---

+ New plantings in areas that are prone to high wind need protection from the wind during the 3- to 5-year establishment period. A midwinter watering is also recommended to prevent foliar desiccation.

* Supplemental water is needed during the 3- to 5-year establishment period.

TABLE 6C.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE III

(Dashes indicate that the species is not suited to the soils in the group)

Woody species	Group 1				Group 1K				Group 3				Group 4			
	Precipitation				Precipitation				Precipitation				Precipitation			
	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers:																
Austrian pine	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Blue spruce	*14	16	20	22	*13	16	20	22	---	16	18	22	---	14	16	22
Eastern redcedar	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lodgepole pine	---	---	---	---	---	---	---	---	---	20	25	26	---	16	20	26
Ponderosa pine	---	---	---	---	---	---	---	---	*12	16	18	24	*12	15	17	24
Rocky Mountain juniper	---	---	---	---	---	---	---	---	9	10	12	20	9	11	13	20
Scotch pine	---	---	---	---	---	---	---	---	---	15	18	22	---	---	15	20
Deciduous trees:																
Boxelder	---	16	18	22	---	---	---	---	---	14	16	22	---	*13	15	20
Golden willow	*21	24	26	32	*19	23	26	32	---	---	---	32	---	---	---	32
Green ash	14	18	22	30	14	18	20	30	12	16	18	30	13	15	17	30
Honeylocust	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Plains cottonwood	*22	27	36	42	*20	25	38	42	---	---	---	---	42	---	---	36
Russian-olive	15	18	20	25	15	18	20	25	11	13	16	25	11	13	16	25
Siberian crabapple	*11	12	15	19	---	---	---	---	---	12	15	19	---	---	---	---
Siberian elm	*20	27	28	36	*20	27	28	35	*20	26	28	35	*19	24	26	36
Shrubs:																
American plum	---	*6	6	11	---	*6	7	11	---	*6	7	11	---	*6	7	11
Antelope bitterbrush	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Basin big sagebrush	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Common chokecherry	*7	8	8	12	*7	8	8	12	*7	8	9	12	*7	8	8	12
Fourwing saltbush	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Golden currant	---	*4	4	4	---	---	---	---	---	4	4	4	---	3	4	4
Greasewood	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lilac	*4	6	6	10	*4	6	6	10	*4	6	7	10	*4	6	7	10
Nanking cherry	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Peking cotoneaster	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Redosier dogwood	---	---	6	8	---	---	---	---	---	---	5	6	---	---	6	7
Rubber rabbitbrush	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Rugosa rose	3	4	4	4	3	4	4	4	4	4	4	4	3	4	4	4
Saskatoon serviceberry	---	4	4	4	---	---	---	---	---	4	4	5	---	---	4	5
Siberian peashrub	5	7	7	10	5	7	7	10	5	7	7	9	6	7	8	9
Silver buffaloberry	---	*7	9	11	---	*7	9	11	---	*7	8	11	---	*7	9	11
Silver sagebrush	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Skunkbush sumac	3	5	6	7	3	5	6	7	3	4	6	7	4	6	6	7
Tatarian honeysuckle	5	6	7	11	5	6	7	11	5	7	8	11	5	6	9	11
Western sandcherry	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Yucca	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 6C.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE III--Continued

Woody species	Group 4C				Group 5				Group 5K				Group 6C			
	Precipitation				Precipitation				Precipitation				Precipitation			
	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers:																
Austrian pine	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Blue spruce	---	---	17	20	---	16	20	22	---	---	16	20	---	---	14	18
Eastern redcedar	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lodgepole pine	---	---	---	---	---	17	22	26	---	---	---	---	---	---	16	22
Ponderosa pine	*10	12	14	22	*12	17	19	24	*10	12	14	22	*10	14	16	22
Rocky Mountain juniper	9	10	12	20	9	11	13	18	9	10	12	17	9	10	12	18
Scotch pine	---	---	---	20	---	---	18	20	---	---	---	---	---	---	---	21
Deciduous trees:																
Boxelder	---	---	---	20	---	---	16	20	---	---	---	---	---	---	---	18
Golden willow	---	---	---	28	---	---	---	27	---	---	---	27	---	---	---	---
Green ash	11	12	14	27	12	16	18	26	10	12	14	26	---	12	14	26
Honeylocust	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Plains cottonwood	---	---	---	33	---	---	---	33	---	---	---	31	---	---	---	32
Russian-olive	10	11	13	22	10	13	15	23	9	11	13	25	10	12	14	23
Siberian crabapple	---	12	15	19	---	---	---	---	---	---	---	---	---	---	---	---
Siberian elm	*19	21	24	32	*20	24	26	33	*17	21	24	31	*16	20	24	29
Shrubs:																
American plum	---	*6	6	9	---	6	7	10	---	---	---	11	---	---	7	9
Antelope bitterbrush	---	---	---	---	---	---	---	---	---	---	---	---	2	3	---	---
Basin big sagebrush	2	3	---	---	2	3	---	---	3	3	---	---	3	3	---	---
Common chokecherry	*7	8	8	11	*7	8	9	11	---	7	9	10	---	7	8	11
Fourwing saltbush	---	---	---	---	---	---	---	---	2	2	---	---	---	---	---	---
Golden currant	---	3	3	4	---	*3	4	4	---	---	---	---	---	---	4	4
Greasewood	---	---	---	---	---	---	---	---	3	3	---	---	---	---	---	---
Lilac	*4	5	6	10	*5	6	7	9	*4	6	7	10	---	5	7	9
Nanking cherry	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Peking cotoneaster	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Redosier dogwood	---	---	---	7	---	---	6	6	---	---	---	---	---	---	---	---
Rubber rabbitbrush	2	3	---	---	---	---	---	---	2	---	---	---	2	3	---	---
Rugosa rose	---	3	3	4	3	4	4	4	4	---	---	---	---	3	4	4
Saskatoon serviceberry	---	---	---	---	---	---	4	5	---	---	---	---	---	---	4	6
Siberian peashrub	4	5	7	8	6	7	8	9	6	7	7	9	6	7	8	9
Silver buffaloberry	---	*5	7	11	---	*7	8	11	---	*6	8	11	---	*6	8	10
Silver sagebrush	---	---	---	---	---	---	---	---	---	---	---	---	2	3	---	---
Skunkbush sumac	3	4	5	6	4	5	5	6	---	---	---	---	---	4	6	7
Tatarian honeysuckle	4	6	8	11	5	7	8	11	5	7	8	11	5	7	8	11
Western sandcherry	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Yucca	---	---	---	---	---	---	---	---	---	---	---	---	1	2	---	---

See footnote at end of table.

TABLE 6C.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE III--Continued

Woody species	Group 6R				Group 8				Group 9G			
	Precipitation				Precipitation				Precipitation			
	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers:												
Austrian pine	---	---	---	---	---	---	---	---	---	---	---	---
Blue spruce	---	---	16	20	---	---	16	21	---	---	---	---
Eastern redcedar	---	---	---	---	---	---	---	---	---	---	---	---
Lodgepole pine	---	16	19	25	---	---	---	---	---	---	---	---
Ponderosa pine	*12	17	19	22	*11	12	16	22	---	---	---	---
Rocky Mountain juniper	9	11	13	17	8	10	13	18	*7	8	9	18
Scotch pine	---	---	18	21	---	---	---	---	---	---	---	---
Deciduous trees:												
Boxelder	---	---	---	20	---	---	---	---	---	---	---	---
Golden willow	---	---	---	---	---	---	---	25	---	---	28	34
Green ash	11	13	15	24	11	13	16	29	13	16	19	28
Honeylocust	---	---	---	---	---	---	---	---	---	---	---	---
Plains cottonwood	---	---	---	---	---	---	---	---	---	---	---	---
Russian-olive	11	13	15	22	9	11	14	21	14	16	19	24
Siberian crabapple	---	---	---	---	---	---	---	---	---	---	---	---
Siberian elm	*19	22	25	31	*16	19	23	33	*19	22	27	33
Shrubs:												
American plum	---	---	6	8	---	---	---	---	---	---	---	---
Antelope bitterbrush	2	3	---	---	---	---	---	---	---	---	---	---
Basin big sagebrush	3	3	---	---	3	3	---	---	---	---	---	---
Common chokecherry	---	---	---	---	---	---	---	---	---	---	---	---
Fourwing saltbush	---	---	---	---	2	2	---	---	2	2	---	---
Golden currant	---	3	3	4	---	---	---	---	---	---	---	---
Greasewood	---	---	---	---	---	---	---	---	2	4	---	---
Lilac	---	5	6	8	---	---	---	---	*5	6	7	10
Nanking cherry	---	---	---	---	---	---	---	---	---	---	---	---
Peking cotoneaster	---	---	---	---	---	---	---	---	---	---	---	---
Redosier dogwood	---	---	6	8	---	---	---	---	---	---	---	---
Rubber rabbitbrush	2	3	---	---	2	3	---	---	2	2	---	---
Rugosa rose	---	3	3	4	---	---	---	---	---	---	---	---
Saskatoon serviceberry	---	---	4	5	---	---	---	---	---	---	---	---
Siberian peashrub	5	7	8	12	5	6	7	12	---	---	---	---
Silver buffaloberry	---	*7	8	11	---	*5	8	12	---	7	8	11
Silver sagebrush	2	3	---	---	---	---	---	---	---	---	---	---
Skunkbush sumac	3	3	5	8	3	5	7	9	---	5	6	7
Tatarian honeysuckle	5	7	8	11	5	6	8	11	5	6	7	11
Western sandcherry	---	---	---	---	---	---	---	---	---	---	---	---
Yucca	1	2	---	---	---	---	---	---	---	---	---	---

* Supplemental water is needed during the 3- to 5-year establishment period.

TABLE 7.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
100*:						
Babb	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Teeler	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
101*:						
Badlands	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.
Dollard	Moderate: depth to rock, too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Severe: too clayey.
102*:						
Bitton	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Severe: small stones.
Tally	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Moderate: droughty.
103*:						
Blackhall	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock.	Severe: depth to rock.
Kappes	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Slight	Moderate: depth to rock.
Rentsac	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.
104*:						
Blackhall	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Rentsac	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, depth to rock.
105*:						
Blazon, thin solum	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
105*:						
Blazon	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope, depth to rock.
Lilsnake	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
106*:						
Blazon	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope, depth to rock.
Delphill	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
107*:						
Bookcliff	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Lail	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
Rabbitex	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Moderate: small stones.
108 Brownsto	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Severe: droughty.
109 Brownsto	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: large stones.	Severe: droughty.
110*:						
Brownsto	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
Luhon	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
111*:						
Brownsto	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: large stones.	Severe: droughty.
Luhon	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
McFadden	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, droughty, slope.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
112*:						
Chittum	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Eyre Family	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: large stones, slope, depth to rock.
113--- Chroder	Slight	Slight	Slight	Slight	Slight	Slight.
114--- Condie	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
115--- Cowestglen	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Slight.
116--- Coyet	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
117*:						
Cryofluvents	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Moderate: droughty.
Borofibrists	Severe: cutbanks cave, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness.
118--- Dahlquist	Severe: cutbanks cave.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Severe: large stones, droughty.
119*:						
Delphill	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.
Iyers	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
Poposhia	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
120*:						
Dollard	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, too clayey.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
120*: Moyerson	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, depth to rock.
121*: Eyre Family	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Handran Family	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
122--- Flatnose	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty.
123--- Garlips	Slight---	Slight---	Slight---	Slight---	Slight---	Moderate: small stones.
124*: Gerst	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Strych	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
125--- Goslin	Slight---	Slight---	Slight---	Moderate: slope.	Slight---	Slight.
126--- Goslin	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
127*: Grieves	Slight---	Slight---	Slight---	Slight---	Slight---	Slight.
Tisworth	Slight---	Slight---	Slight---	Slight---	Slight---	Severe: excess salt, excess sodium.
128*: Grobutte Family	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
Rentsac	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rock outcrop	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
129*: Hagga	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
129*: Cowestglen	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Slight.
130*: Hanly Family	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.
Riverwash	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
131*: Haploborolls	Severe: depth to rock, large stones, slope.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: large stones, slope, depth to rock.
Torriorthents	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: small stones, slope, depth to rock.
132--- Harpole	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Severe: large stones.
133*: Harpole Family	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
Worfstone Family	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
134--- Henrieville	Slight---	Slight---	Slight---	Slight---	Slight---	Slight.
135*: Henrysfork	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: frost action.	Slight.
Borofibrists	Severe: cutbanks cave, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness.
136--- Hickey	Slight---	Slight---	Slight---	Slight---	Slight---	Slight.
137--- Hickey	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
138*: Hickey loam	Slight---	Slight---	Slight---	Moderate: slope.	Slight---	Slight.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
138*: Hickey gravelly sandy clay loam-	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: small stones.
139*: Hoodle Family	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.
Namon Family, dry	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.
Namon Family	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.
140--- Joebas	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
141*: Kappes	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Slight	Moderate: depth to rock.
McFadden	Slight	Slight	Slight	Slight	Slight	Slight.
142--- Lanver	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Moderate: small stones, droughty, slope.
143--- Ledgefork	Severe: cutbanks cave, large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: droughty.
144*: Lotex sandy loam-	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Chittum	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Lotex stony loam-	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
145--- Luhon	Slight	Slight	Slight	Slight	Slight	Slight.
146--- Luhon	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
147--- Luhon	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: small stones.
148*: Luhon	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, slope.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
148*:						
Brownsto	Moderate: large stones, slope.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, large stones.	Moderate: small stones, droughty, slope.
149*:						
Luhon	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Evanston	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
150*:						
Luhon	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Hickey	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Heath	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
151*:						
Luhon	Slight	Slight	Slight	Slight	Slight	Slight.
Rockinchair	Moderate: depth to rock.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Moderate: depth to rock.
152 McFadden	Slight	Slight	Slight	Slight	Slight	Slight.
153 McFadden	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
154 McFadden	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: small stones, droughty.
155*:						
McFadden	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Brownsto	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
156*:						
Middlewood	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, low strength.	Severe: depth to rock.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
156*: Boettcher	Moderate: depth to rock.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Moderate: depth to rock.
157--- Milok	Slight---	Slight---	Slight---	Moderate: slope.	Slight---	Moderate: droughty.
158--- Ouray	Severe: cutbanks cave.	Slight---	Slight---	Moderate: slope.	Slight---	Severe: droughty.
159*: Pesmore	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
Garlips	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
160--- Pits	Variable---	Variable---	Variable---	Variable---	Variable---	Variable.
161--- Poposhia	Slight---	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
162--- Poposhia	Slight---	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
163--- Poposhia	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
164--- Poposhia	Slight---	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
165--- Poposhia	Slight---	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
166--- Poposhia	Slight---	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
167*: Recklor	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Amsden	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Davtone	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
168*:						
Redcreek	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Blackhall	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Rock outcrop	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, thin layer.
169*:						
Rentsac very channery sandy loam	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, depth to rock.
Rentsac channery sandy loam	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rock outcrop	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
170 Rhoamett	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess salt, too clayey.
171*:						
Rockinchair	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Luhon	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Rentsac	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, depth to rock.
172*:						
Rock outcrop	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, thin layer.
Blazon	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
173*:						
Rock outcrop	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
Coyet loamy sand	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
173*: Coyet loamy fine sand	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
174 Rock River	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
175*: Rock River	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Brownsto	Moderate: large stones, slope.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, large stones.	Moderate: small stones, droughty, slope.
176*: Rogert	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, droughty, slope.
Parkay Family	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Davtone	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
177*: Rogrube gravelly loam	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.	Moderate: small stones.
Rogrube clay loam	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
178*: Roto	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: depth to rock.	Moderate: depth to rock.	Moderate: small stones, droughty, depth to rock.
Rockinchair	Moderate: depth to rock.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Moderate: depth to rock.
Rencot	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.
179 Salt flats	Variable	Variable	Variable	Variable	Variable	Variable.
180*: Sedillo Family	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.
Strych	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Moderate: small stones, large stones.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
181--- Sinkson	Slight---	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
182*:						
Spicerton---	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength.	Severe: excess salt.
Poposhia---	Slight---	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
183*:						
Spool---	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rock outcrop---	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
Blackhall---	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
184*:						
Strych gravelly sandy loam---	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, large stones.
Strych very cobbly sandy loam---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
185*:						
Strych---	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, large stones.
Milok---	Slight---	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
186--- Tally	Slight---	Slight---	Slight---	Moderate: slope.	Moderate: frost action.	Moderate: droughty.
187*:						
Tally---	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: droughty, slope.
Tolman---	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: small stones, large stones.
188--- Teeler	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: large stones.	Severe: droughty.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
189*:						
Thermopolis	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Blazon	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Sinkson	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
190--- Tridell	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, droughty, slope.
191*:						
Turson	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Moderate: flooding.
Menbar	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: frost action.	Slight.
192*:						
Yarts	Slight	Slight	Slight	Slight	Moderate: frost action.	Slight.
Bunkwater	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Severe: excess sodium.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill
100*:			
Babb	Severe: slope.	Severe: slope.	Severe: slope.
Teeler	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, large stones.
101*:			
Badlands	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
Dollard	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.
102*:			
Bitton	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.
Tally	Slight	Severe: seepage, slope.	Severe: seepage.
103*:			
Blackhall	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Kappes	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.
Rentsac	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.
104*:			
Blackhall	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Rentsac	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.
105*:			
Blazon, thin solum-	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill
105*:			
Blazon	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Lilsnake	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
106*:			
Blazon	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Delphill	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
107*:			
Bookcliff	Severe: slope.	Severe: slope.	Severe: slope.
Lail	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.
Rabbitex	Moderate: percs slowly.	Moderate: seepage.	Moderate: too clayey.
108, 109 Brownsto	Moderate: large stones.	Severe: seepage.	Moderate: large stones.
110*:			
Brownsto	Severe: slope.	Severe: slope, seepage.	Severe: slope.
Luhon	Severe: slope.	Severe: slope.	Severe: slope.
111*:			
Brownsto	Moderate: large stones.	Severe: seepage.	Moderate: large stones.
Luhon	Moderate: percs slowly, slope.	Severe: seepage.	Moderate: slope.
McFadden	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.
112*:			
Chittum	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Eyre Family	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill
113---------- Chroder	Slight----------	Severe: seepage.	Slight.
114---------- Condie	Severe: percs slowly, slope.	Severe: seepage, slope.	Severe: slope.
115---------- Cowestglen	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.
116---------- Coyet	Severe: poor filter.	Severe: seepage.	Moderate: too sandy.
117*: Cryofluvents-------	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.
Borofibrists-------	Severe: wetness, poor filter, flooding.	Severe: seepage, excess humus, wetness.	Severe: seepage, wetness, flooding.
118---------- Dahlquist	Moderate: large stones.	Severe: seepage, large stones.	Severe: large stones.
119*: Delphill----------	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.
Iyers----------	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.
Poposhia----------	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.
120*: Dollard----------	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Moyerson----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
121*: Eyre Family--------	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill
121*:			
Handran Family-----	Severe: slope.	Severe: seepage, slope, large stones.	Severe: seepage, slope, large stones.
122---------- Flatnose	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.
123---------- Garlips	Moderate: percs slowly.	Moderate: seepage.	Slight.
124*:			
Gerst----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Strych----------	Severe: slope.	Severe: seepage, slope.	Severe: slope.
125---------- Goslin	Slight----------	Severe: seepage.	Slight.
126---------- Goslin	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.
127*:			
Grieves----------	Slight----------	Severe: seepage.	Slight.
Tisworth----------	Severe: percs slowly.	Moderate: seepage, slope.	Slight.
128*:			
Grobutte Family----	Severe: slope.	Severe: slope, large stones.	Severe: seepage, slope, large stones.
Rentsac----------	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.
Rock outcrop-------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
129*:			
Hagga----------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Cowestglen---------	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill
130*:			
Hanly Family	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness, too sandy.
Riverwash	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.
131*:			
Haploborolls	Severe: depth to rock, slope, large stones.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.
Torriorthents	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
132--- Harpole	Moderate: percs slowly, large stones.	Severe: seepage, large stones.	Severe: seepage, large stones.
133*:			
Harpole Family	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.
Worfstone Family	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
134--- Henrieville	Slight	Severe: seepage.	Slight.
135*:			
Henrysfork	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Borofibrists	Severe: wetness, poor filter.	Severe: seepage, excess humus, wetness.	Severe: seepage, wetness.
136--- Hickey	Moderate: percs slowly.	Moderate: seepage.	Slight.
137--- Hickey	Severe: slope.	Severe: slope.	Severe: slope.
138*:			
Hickey loam	Moderate: percs slowly.	Moderate: seepage, slope.	Slight.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill
138*:			
Hickey gravelly sandy clay loam---	Moderate: percs slowly.	Moderate: seepage, slope.	Slight.
139*:			
Hoodle Family------	Severe: percs slowly, slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.
Namon Family, dry--	Severe: percs slowly, slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.
Namon Family-------	Severe: percs slowly, slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.
140---------- Joebas	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
141*:			
Kappes----------	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.
McFadden----------	Slight----------	Severe: seepage.	Slight.
142---------- Lanver	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
143---------- Ledgefork	Severe: poor filter, large stones.	Severe: seepage, large stones.	Severe: seepage, too sandy, large stones.
144*:			
Lotex sandy loam---	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, seepage.
Chittum----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Lotex stony loam---	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, seepage.
145---------- Luhon	Moderate: percs slowly.	Moderate: seepage.	Slight.
146---------- Luhon	Moderate: percs slowly.	Moderate: seepage, slope.	Slight.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill
147---------- Luhon	Moderate: percs slowly.	Moderate: seepage, slope.	Slight.
148*: Luhon----------	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.
Brownsto----------	Moderate: slope, large stones.	Severe: slope, seepage.	Moderate: slope, large stones.
149*: Luhon----------	Severe: slope.	Severe: slope.	Severe: slope.
Evanston----------	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.
150*: Luhon----------	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.
Hickey----------	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.
Heath----------	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.
151*: Luhon----------	Moderate: percs slowly.	Severe: seepage.	Slight.
Rockinchair--------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
152---------- McFadden	Slight----------	Severe: seepage.	Slight.
153---------- McFadden	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.
154---------- McFadden	Slight----------	Severe: seepage.	Slight.
155*: McFadden----------	Severe: slope.	Severe: slope.	Severe: slope.
Brownsto----------	Severe: slope.	Severe: slope, seepage.	Severe: slope.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill
155*:			
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
156*:			
Middlewood	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Boettcher	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock.
157 Milok	Slight	Severe: seepage.	Slight.
158 Ouray	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.
159*:			
Pesmore	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.
Garlips	Severe: slope.	Severe: slope.	Severe: slope.
160 Pits	Variable	Variable	Variable.
161 Poposhia	Moderate: percs slowly.	Moderate: seepage.	Slight.
162 Poposhia	Severe: percs slowly.	Moderate: slope.	Slight.
163 Poposhia	Severe: percs slowly.	Severe: slope.	Moderate: slope.
164 Poposhia	Severe: percs slowly.	Slight	Slight.
165 Poposhia	Severe: percs slowly.	Moderate: slope.	Slight.
166 Poposhia	Moderate: percs slowly.	Moderate: seepage, slope.	Slight.
167*:			
Recklor	Severe: slope.	Severe: slope.	Severe: slope.
Amsden	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill
167*:			
Davtone	Severe: slope.	Severe: slope.	Severe: slope.
168*:			
Redcreek	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.
Blackhall	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Rock outcrop	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
169*:			
Rentsac very channery sandy loam	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.
Rentsac channery sandy loam	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
170 Rhoamett	Severe: percs slowly.	Moderate: slope.	Slight.
171*:			
Rockinchair	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Luhon	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.
Rentsac	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.
172*:			
Rock outcrop	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Blazon	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill
173*:			
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
Coyet loamy sand	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope.
Coyet loamy fine sand	Severe: poor filter.	Severe: seepage, slope.	Moderate: slope, too sandy.
174--- Rock River	Moderate: percs slowly.	Moderate: slope, seepage.	Slight.
175*:			
Rock River	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.
Brownsto	Moderate: slope, large stones.	Severe: slope, seepage.	Moderate: slope, large stones.
176*:			
Rogert	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.
Parkay Family	Severe: slope.	Severe: slope.	Severe: slope.
Davtone	Severe: slope.	Severe: slope.	Severe: slope.
177*:			
Rogrube gravelly loam	Moderate: percs slowly.	Moderate: seepage, slope.	Slight.
Rogrube clay loam	Moderate: percs slowly.	Moderate: seepage, slope.	Slight.
178*:			
Roto	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rockinchair	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rencot	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
179: Salt flats.			

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill
180*:			
Sedillo Family-----	Severe: large stones.	Severe: seepage, large stones.	Severe: large stones.
Strych----------	Slight----------	Severe: seepage.	Moderate: large stones.
181----------	Moderate:	Moderate:	Slight.
Sinkson	percs slowly.	seepage, slope.	
182*:			
Spicerton----------	Severe: percs slowly.	Slight----------	Severe: wetness.
Poposhia----------	Moderate: percs slowly.	Moderate: seepage.	Slight.
183*:			
Spool----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Rock outcrop-------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
Blackhall----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
184*:			
Strych gravelly sandy loam--------	Moderate: slope.	Severe: seepage, slope.	Moderate: slope, large stones.
Strych very cobbly sandy loam--------	Severe: slope.	Severe: seepage, slope.	Severe: slope.
185*:			
Strych----------	Moderate: slope.	Severe: seepage, slope.	Moderate: slope, large stones.
Milok----------	Slight----------	Severe: seepage.	Slight.
186----------	Slight----------	Severe:	Severe:
Tally		seepage.	seepage.
187*:			
Tally----------	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill
187*:			
Tolman	Severe: depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, large stones.
188 Teeler	Moderate: large stones.	Severe: seepage.	Severe: seepage, large stones.
189*:			
Thermopolis	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Blazon	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Sinkson	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.
190 Tridell	Moderate: slope.	Severe: seepage, slope.	Moderate: slope, large stones.
191*:			
Turson	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.
Menbar	Severe: wetness.	Severe: wetness.	Severe: wetness.
192*:			
Yarts	Slight	Severe: seepage.	Slight.
Bunkwater	Moderate: percs slowly.	Severe: seepage.	Slight.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
100*:				
Babb	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Teeler	Fair: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
101*:				
Badlands	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Dollard	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
102*:				
Bitton	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Tally	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
103*:				
Blackhall	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Kappes	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones.
Rentsac	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
104*:				
Blackhall	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Rentsac	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
105*:				
Blazon, thin solum---	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Blazon---	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Lilsnake---	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
106*:				
Blazon---	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Delphill---	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
107*:				
Bookcliff---	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Lail---	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
Rabbitex---	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
108, 109--- Brownsto	Fair: large stones.	Probable---	Probable---	Poor: small stones, area reclaim.
110*:				
Brownsto---	Fair: large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Luhon---	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
111*:				
Brownsto---	Fair: large stones.	Probable---	Probable---	Poor: small stones, area reclaim.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
111*:				
Luhon	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
McFadden	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
112*:				
Chittum	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Eyre Family	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
113--- Chroder	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
114--- Condie	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
115--- Cowestglen	Good	Probable	Improbable: too sandy.	Fair: small stones, area reclaim.
116--- Coyet	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
117*:				
Cryofluvents	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Borofibrists	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
118--- Dahlquist	Fair: large stones.	Probable	Probable	Poor: small stones, area reclaim.
119*:				
Delphill	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, slope.
Iyers	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
119*:				
Poposhia	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
120*:				
Dollard	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Moyerson	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey.
121*:				
Eyre Family	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Handran Family	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
122 Flatnose	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
123 Garlips	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
124*:				
Gerst	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Strych	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
125 Goslin	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
126 Goslin	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
127*:				
Grieves	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Tisworth	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
128*:				
Grobutte Family	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, area reclaim, slope.
Rentsac	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
129*:				
Hagga	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Cowestglen	Good	Probable	Improbable: too sandy.	Fair: small stones.
130*:				
Hanly Family	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too sandy, small stones, area reclaim.
Riverwash	Poor: wetness.	Probable	Probable	Poor: too sandy, small stones, area reclaim.
131*:				
Haploborolls	Poor: depth to rock, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: depth to rock, large stones, slope.
Torriorthents	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
132 Harpole	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
133*:				
Harpole Family	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Worfstone Family	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
134--Henrieville	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
135*:				
Henrysfork	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
Borofibrists	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
136--Hickey	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
137--Hickey	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
138*:				
Hickey loam	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Hickey gravelly sandy clay loam	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
139*:				
Hoodle Family	Poor: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim, slope.
Namon Family, dry	Poor: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Namon Family	Poor: large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
140--Joebas	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
141*:				
Kappes	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones.
McFadden	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
142--Lanver	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
143--Ledgefork	Fair: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: too sandy, area reclaim, large stones.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
144*:				
Lotex sandy loam-----	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Chittum----------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Lotex stony loam-----	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
145---------- Luhon	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
146---------- Luhon	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
147---------- Luhon	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
148*:				
Luhon----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Brownsto----------	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
149*:				
Luhon----------	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Evanston----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
150*:				
Luhon----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Hickey----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Heath----------	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
151*:				
Luhon----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
151*:				
Rockinchair	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
152 McFadden	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
153 McFadden	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
154 McFadden	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
155*:				
McFadden	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Brownsto	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
156*:				
Middlewood	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Boettcher	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
157 Milok	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
158 Ouray	Good	Probable	Improbable: too sandy.	Fair: small stones, too sandy.
159*:				
Pesmore	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, slope.
Garlips	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
160 Pits	Variable	Variable	Variable	Variable.
161, 162, 163 Poposhia	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
164, 165---------- Poposhia	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
166---------- Poposhia, strongly alkaline	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, excess salt.
167*:				
Recklor----------	Fair: large stones, slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Amsden----------	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Davtone----------	Fair: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
168*:				
Redcreek----------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Blackhall----------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop---------	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, slope.
169*:				
Rentsac very channery sandy loam----------	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rentsac channery sandy loam----------	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop---------	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
170---------- Rhoamett	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
171*:				
Rockinchair	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Luhon	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Rentsac	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
172*:				
Rock outcrop	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, slope.
Blazon	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
173*:				
Rock outcrop	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Coyet loamy sand	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Coyet loamy fine sand	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, slope.
174 Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
175*:				
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Brownsto	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
176*:				
Rogert	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Parkay Family	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
176*:				
Davtone	Fair: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
177*:				
Rogrube gravelly loam	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
Rogrube clay loam	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, excess salt.
178*:				
Roto	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rockinchair	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rencot	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
179 Salt flats	Variable	Variable	Variable	Variable.
180*:				
Sedillo Family	Poor: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim.
Strych	Good	Probable	Probable	Poor: small stones, area reclaim.
181 Sinkson	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
182*:				
Spicerton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
Poposhia	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, excess salt.
183*:				
Spool	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
183*:				
Blackhall	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
184*:				
Strych gravelly sandy loam	Good	Probable	Probable	Poor: small stones, area reclaim.
Strych very cobbly sandy loam	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
185*:				
Strych	Good	Probable	Probable	Poor: small stones, area reclaim.
Milok	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
186--- Tally	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
187*:				
Tally	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
Tolman	Poor: depth to rock, large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
188--- Teeler	Fair: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones.
189*:				
Thermopolis	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Blazon	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Sinkson	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
190--- Tridell	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
191*:				
Turson	Good	Probable	Probable	Poor: area reclaim, small stones.
Menbar	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
192*:				
Yarts	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Bunkwater	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--		Features affecting--	
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation
100*:				
Babb	Severe: slope.	Severe: piping.	Deep to water	Slope.
Teeler	Severe: seepage, slope.	Severe: seepage, large stones.	Deep to water	Slope, large stones, droughty.
101*:				
Badlands	Severe: depth to rock, slope.	Slight	Deep to water	Slope, depth to rock.
Dollard	Severe: slope.	Severe: thin layer.	Deep to water	Slope, slow intake, percs slowly.
102*:				
Bitton	Severe: seepage, slope.	Slight	Deep to water	Slope, droughty.
Tally	Severe: seepage.	Severe: piping.	Deep to water	Slope, droughty, soil blowing.
103*:				
Blackhall	Severe: depth to rock.	Severe: thin layer.	Deep to water	Slope, depth to rock.
Kappes	Severe: seepage. depth to rock, slope.	Severe: thin layer. thin layer.	Deep to water	Slope, depth to rock. depth to rock.
Blazon	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, depth to rock, erodes easily.
105*:				
Lilsnake	Severe: depth to rock.	Severe: piping.	Deep to water	Slope, depth to rock.
106*:				
Blazon	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, depth to rock, erodes easily.
Delphill	Severe: slope.	Severe: thin layer.	Deep to water	Slope, depth to rock.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--	
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation
107*:				
Bookcliff	Severe: slope.	Slight	Deep to water	Slope, droughty.
Lail	Severe: slope.	Slight	Deep to water	Slope.
Rabbitex	Moderate: seepage.	Moderate: piping.	Deep to water	Favorable.
108--- Brownsto	Severe: seepage.	Severe: seepage.	Deep to water	Large stones, droughty.
109--- Brownsto	Severe: seepage.	Severe: seepage.	Deep to water	Slope, large stones, droughty.
110*:				
Brownsto	Severe: slope, seepage.	Moderate: seepage, piping, large stones.	Deep to water	Slope, large stones, droughty.
Luhon	Severe: slope.	Moderate: piping.	Deep to water	Slope.
111*:				
Brownsto	Severe: seepage.	Severe: seepage.	Deep to water	Slope, large stones, droughty.
Luhon	Severe: slope.	Severe: piping.	Deep to water	Slope.
McFadden	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, droughty, soil blowing.
112*:				
Chittum	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.
Eyre Family	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, large stones, droughty.
113--- Chroder	Severe: seepage.	Severe: piping.	Deep to water	Soil blowing, erodes easily.
114--- Condie	Severe: seepage, slope.	Moderate: large stones.	Deep to water	Slope, large stones, droughty.
115--- Cowestglen	Severe: seepage.	Severe: piping.	Deep to water	Soil blowing.
116--- Coyet	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--	
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation
117*:				
Cryofluvents	Severe: seepage.	Moderate: seepage, piping, large stones.	Large stones, cutbanks cave.	Droughty.
Borofibrists	Severe: seepage.	Severe: seepage, wetness.	Large stones, cutbanks cave.	Wetness, flooding.
118--- Dahlquist	Severe: seepage.	Severe: seepage, large stones.	Deep to water	Large stones, droughty.
119*:				
Delphill	Severe: slope.	Severe: thin layer.	Deep to water	Slope, depth to rock.
Iyers	Severe: slope.	Moderate: thin layer.	Deep to water	Slope, percs slowly.
Poposhia	Severe: slope.	Moderate: piping.	Deep to water	Slope, excess salt.
120*:				
Dollard	Severe: slope.	Severe: thin layer.	Deep to water	Slope, slow intake, percs slowly.
Moyerson	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, slow intake, percs slowly.
121*:				
Eyre Family	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, large stones, droughty.
Handran Family	Severe: seepage, slope.	Severe: large stones.	Deep to water	Slope, large stones, droughty.
122--- Flatnose	Severe: seepage.	Moderate: piping, wetness.	Deep to water	Droughty, erodes easily.
123--- Garlips	Moderate: seepage.	Moderate: piping.	Deep to water	Favorable.
124*:				
Gerst	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, depth to rock.
Strych	Severe: seepage, slope.	Moderate: thin layer.	Deep to water	Slope, droughty.
125--- Goslin	Severe: seepage.	Severe: piping.	Deep to water	Slope, soil blowing.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--	
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation
126---------- Goslin	Severe: seepage, slope.	Severe: piping.	Deep to water---------	Slope, soil blowing.
127*:				
Grieves----------	Severe: seepage.	Severe: piping.	Deep to water---------	Slope, soil blowing.
Tisworth---------	Moderate: seepage, slope.	Severe: piping, excess sodium.	Deep to water---------	Slope, droughty.
128*:				
Grobutte Family--	Severe: slope.	Severe: seepage, large stones.	Deep to water---------	Slope, large stones, droughty.
Rentsac----------	Severe: depth to rock, slope.	Severe: seepage.	Deep to water---------	Slope, large stones, droughty.
Rock outcrop-----	Severe: depth to rock, slope.	Slight----------	Deep to water---------	Slope, depth to rock.
129*:				
Hagga----------	Slight----------	Severe: piping, wetness.	Frost action----------	Wetness.
Cowestglen-------	Severe: seepage.	Severe: piping.	Deep to water---------	Soil blowing.
130*:				
Hanly Family-----	Severe: seepage.	Severe: seepage, piping.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.
Riverwash--------	Severe: seepage.	Severe: wetness.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.
131*:				
Haploborolls-----	Severe: seepage, depth to rock, slope.	Severe: piping, large stones.	Deep to water---------	Slope, large stones, droughty.
Torriorthents----	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water---------	Slope, droughty, depth to rock.
132---------- Harpole	Severe: seepage.	Severe: seepage, large stones.	Deep to water---------	Slope, large stones, droughty.
133*:				
Harpole Family---	Severe: slope.	Slight----------	Deep to water---------	Slope, droughty.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--	
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation
133*:				
Worfstone Family-	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, large stones, droughty.
134 Henrieville	Severe: seepage.	Severe: piping.	Deep to water	Soil blowing.
135*:				
Henrysfork	Moderate: seepage.	Moderate: piping, wetness.	Frost action	Wetness.
Borofibrists	Severe: seepage.	Severe: seepage, wetness.	Large stones, cutbanks cave.	Wetness, droughty.
136 Hickey	Moderate: seepage.	Moderate: piping.	Deep to water	Favorable.
137 Hickey	Severe: slope.	Moderate: piping.	Deep to water	Slope.
138*:				
Hickey loam	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope.
Hickey gravelly sandy clay loam-	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope.
139*:				
Hoodle Family	Severe: slope.	Severe: large stones.	Deep to water	Slope, large stones, droughty.
Namon Family, dry	Severe: slope.	Severe: large stones.	Deep to water	Slope, large stones, droughty.
Namon Family	Severe: slope.	Severe: large stones.	Deep to water	Slope, large stones, droughty.
140 Joebas	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, soil blowing.
141*:				
Kappes	Severe: seepage.	Severe: thin layer.	Deep to water	Slope, depth to rock.
McFadden	Severe: seepage.	Severe: piping.	Deep to water	Slope, soil blowing.
142 Lanver	Severe: slope.	Severe: seepage.	Deep to water	Slope, droughty, depth to rock.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--	
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation
143---------- Ledgefork	Severe: seepage.	Severe: seepage, large stones.	Deep to water---------	Slope, large stones, droughty.
144*:				
Lotex sandy loam-	Severe: depth to rock.	Severe: thin layer.	Deep to water---------	Slope, droughty, soil blowing.
Chittum----------	Severe: depth to rock.	Severe: thin layer.	Deep to water---------	Slope, depth to rock.
Lotex stony loam-	Severe: depth to rock.	Severe: thin layer.	Deep to water---------	Slope, droughty.
145---------- Luhon	Moderate: seepage.	Severe: piping.	Deep to water---------	Excess salt.
146---------- Luhon	Moderate: seepage, slope.	Severe: piping.	Deep to water---------	Slope.
147---------- Luhon	Moderate: seepage, slope.	Moderate: piping.	Deep to water---------	Slope.
148*:				
Luhon----------	Severe: slope.	Moderate: piping.	Deep to water---------	Slope.
Brownsto---------	Severe: slope, seepage.	Moderate: seepage, piping, large stones.	Deep to water---------	Slope, large stones, droughty.
149*:				
Luhon----------	Severe: slope.	Moderate: piping.	Deep to water---------	Slope.
Evanston---------	Severe: slope.	Moderate: piping.	Deep to water---------	Slope.
150*:				
Luhon----------	Severe: slope.	Severe: piping.	Deep to water---------	Slope, excess salt.
Hickey----------	Severe: slope.	Moderate: piping.	Deep to water---------	Slope.
Heath----------	Severe: slope.	Moderate: piping.	Deep to water---------	Slope, percs slowly.
151*:				
Luhon----------	Severe: seepage.	Severe: piping.	Deep to water---------	Slope.
Rockinchair------	Moderate: seepage, depth to rock, slope.	Moderate: thin layer, piping.	Deep to water---------	Slope, depth to rock.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--	
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation
152---------- McFadden	Severe: seepage.	Severe: piping.	Deep to water---------	Slope, soil blowing.
153---------- McFadden	Severe: seepage, slope.	Severe: piping.	Deep to water---------	Slope, soil blowing.
154---------- McFadden	Severe: seepage.	Severe: seepage.	Deep to water---------	Slope, droughty, soil blowing.
155*: McFadden---------	Severe: slope.	Moderate: piping.	Deep to water---------	Slope, droughty.
Brownsto---------	Severe: slope, seepage.	Moderate: seepage, piping, large stones.	Deep to water---------	Slope, large stones, droughty.
Rock outcrop-----	Severe: depth to rock, slope.	Slight----------	Deep to water---------	Slope, depth to rock.
156*: Middlewood-------	Severe: depth to rock.	Severe: thin layer.	Deep to water---------	Slope, soil blowing, depth to rock.
Boettcher--------	Moderate: depth to rock, slope.	Severe: thin layer.	Deep to water---------	Slope, soil blowing, percs slowly.
157---------- Milok	Severe: seepage.	Slight----------	Deep to water---------	Slope, droughty, soil blowing.
158---------- Ouray	Severe: seepage.	Severe: seepage.	Deep to water---------	Slope, droughty, fast intake.
159*: Pesmore----------	Severe: slope.	Severe: large stones.	Deep to water---------	Slope, large stones, droughty.
Garlips----------	Severe: slope.	Moderate: piping.	Deep to water---------	Slope.
160---------- Pits	Variable----------	Variable----------	Variable----------	Variable.
161---------- Poposhia	Moderate: seepage.	Moderate: piping.	Deep to water---------	Excess salt.
162---------- Poposhia	Moderate: slope.	Moderate: piping.	Deep to water---------	Slope, excess salt.
163---------- Poposhia	Severe: slope.	Moderate: piping.	Deep to water---------	Slope, excess salt.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--	
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation
164---------- Poposhia	Slight----------	Moderate: piping.	Deep to water---------	Excess salt.
165---------- Poposhia	Moderate: seepage, slope.	Moderate: piping.	Deep to water---------	Slope, excess salt.
166---------- Poposhia	Moderate: seepage.	Moderate: thin layer, piping.	Deep to water---------	Soil blowing, excess salt.
167*:				
Recklor----------	Severe: slope.	Moderate: large stones.	Deep to water---------	Slope, large stones, droughty.
Amsden----------	Severe: slope.	Slight----------	Deep to water---------	Slope.
Davtone----------	Severe: slope.	Moderate: piping.	Deep to water---------	Slope.
168*:				
Redcreek---------	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water---------	Slope, droughty, soil blowing.
Blackhall--------	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water---------	Slope, droughty, soil blowing.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: area reclaim.	Deep to water---------	Depth to rock, slope.
169*:				
Rentsac very channery sandy loam----------	Severe: depth to rock, slope.	Severe: seepage.	Deep to water---------	Slope, large stones, droughty.
Rentsac channery sandy loam------	Severe: depth to rock, slope.	Severe: seepage.	Deep to water---------	Slope, large stones, droughty.
Rock outcrop-----	Severe: depth to rock, slope.	Slight----------	Deep to water---------	Slope, depth to rock.
170---------- Rhoamett	Slight----------	Moderate: hard to pack, excess salt.	Deep to water---------	Slow intake, percs slowly.
171*:				
Rockinchair------	Severe: slope.	Severe: thin layer.	Deep to water---------	Slope, depth to rock.
Luhon----------	Severe: slope.	Severe: piping.	Deep to water---------	Slope, excess salt.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--	
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation
171*:				
Rentsac	Severe: depth to rock, slope.	Severe: seepage.	Deep to water	Slope, large stones, droughty.
172*:				
Rock outcrop	Severe: depth to rock, slope.	Severe: area reclaim.	Deep to water	Depth to rock, slope.
Blazon	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, depth to rock, erodes easily.
173*:				
Rock outcrop	Severe: depth to rock, slope.	Slight	Deep to water	Slope, depth to rock.
Coyet loamy sand	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.
Coyet loamy fine sand	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.
174 Rock River	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope.
175*:				
Rock River	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope, soil blowing.
Brownsto	Severe: slope, seepage.	Moderate: seepage, piping, large stones.	Deep to water	Slope, large stones, droughty.
176*:				
Rogert	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.
Parkay Family	Severe: slope.	Slight	Deep to water	Slope, droughty.
Davtone	Severe: slope.	Moderate: piping.	Deep to water	Slope.
177*:				
Rogrube gravelly loam	Moderate: seepage, slope.	Severe: excess gypsum.	Deep to water	Slope, piping.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--	
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation
177*:				
Rogrube clay loam	Moderate: seepage, slope.	Severe: excess gypsum.	Deep to water	Slope, erodes easily. piping.
178*:				
Roto	Moderate: seepage, depth to rock.	Severe: thin layer.	Deep to water	Droughty, depth to rock.
Rockinchair	Moderate: seepage, depth to rock, slope.	Moderate: thin layer, piping.	Deep to water	Slope, depth to rock.
Rencot	Severe: depth to rock.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.
179--- Salt flats	Variable	Variable	Variable	Variable.
180*:				
Sedillo Family	Severe: seepage.	Severe: large stones.	Deep to water	Slope, large stones, droughty.
Strych	Severe: seepage.	Moderate: thin layer.	Deep to water	Slope, droughty.
181--- Sinkson	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope, erodes easily.
182*:				
Spicerton	Slight	Moderate: excess salt.	Deep to water	Percs slowly, excess salt.
Poposhia	Moderate: seepage.	Moderate: piping.	Deep to water	Excess salt.
183*:				
Spool	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, fast intake.
Rock outcrop	Severe: depth to rock, slope.	Slight	Deep to water	Slope, depth to rock.
Blackhall	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, soil blowing.
184*:				
Strych gravelly sandy loam	Severe: seepage, slope.	Moderate: thin layer.	Deep to water	Slope, droughty.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--	
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation
184*: Strych very cobbly sandy loam	Severe: seepage, slope.	Moderate: thin layer, large stones.	Deep to water	Slope, droughty.
185*: Strych	Severe: seepage, slope.	Moderate: thin layer.	Deep to water	Slope, droughty.
Milok	Severe: seepage.	Slight	Deep to water	Droughty, soil blowing.
186 Tally	Severe: seepage.	Severe: piping.	Deep to water	Slope, droughty, soil blowing.
187*: Tally	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope, droughty, soil blowing.
Tolman	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Slope, large stones, droughty.
188 Teeler	Severe: seepage.	Severe: seepage, large stones.	Deep to water	Slope, large stones, droughty.
189*: Thermopolis	Severe: depth to rock, slope.	Severe: piping.	Deep to water	Slope, depth to rock.
Blazon	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, depth to rock.
Sinkson	Severe: slope.	Moderate: piping.	Deep to water	Slope, erodes easily.
190 Tridell	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, droughty.
191*: Turson	Severe: seepage.	Severe: seepage.	Deep to water	Flooding.
Menbar	Moderate: seepage.	Moderate: piping, wetness.	Deep to water	Favorable.
192*: Yarts	Severe: seepage.	Severe: piping.	Deep to water	Slope, soil blowing.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--	
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation
192*: Bunkwater	Severe: seepage.	Severe: piping, excess sodium.	Deep to water	Soil blowing, excess sodium.

* See description of the map unit for composition and behavior characteristics of the map unit.

SOIL SURVEY HENRYS FORK AREA, UTAH-WYOMING

TABLE 11--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
100*:												
Babb---------	0-12	Loam----------	CL-ML	A-4	---	0-5	85-100	80-95	55-85	50-70	20-30	5-10
	12-26	Gravelly loam.	CL-ML, GM-GC, SC-SM	A-4	---	10-15	70-95	60-85	50-70	40-60	20-30	5-10
	26-60	Gravelly loam, gravelly clay loam.	CL-ML, GM-GC, SC-SM	A-4	---	10-15	70-95	60-85	45-70	35-60	20-30	5-10
Teeler-------	0-3	Gravelly sandy loam.	SC-SM, SC, GM-GC, GC	A-2, A-1	0	0-10	55-85	50-75	30-55	15-30	15-25	NP-10
	3-7	Very gravelly clay loam.	GC, SC	A-2, A-6	0	10-15	45-65	35-60	25-45	15-40	30-40	15-20
	7-60	Very gravelly sandy loam.	GM, GM-GC, SC-SM, SM	A-1, A-2	0-5	5-15	50-75	45-70	30-55	15-30	15-25	NP-10
101*:												
Badlands-----	0-60	Unweathered bedrock.	---	---	0	0	---	---	---	---	---	---
Dollard------	0-2	Clay----------	ML, MH, CL, CH	A-7	0	0	95-100	95-100	90-100	70-95	45-55	20-25
	2-31	Silty clay, clay, clay loam.	CL, CH, ML, MH	A-7	0	0	95-100	95-100	85-100	70-80	40-55	15-25
	31	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
102*:												
Bitton-------	0-4	Very gravelly loam.	SC-SM, GM-GC	A-2	0	0	65-75	40-50	35-45	25-35	15-20	5-10
	4-28	Very gravelly loam.	SC-SM, GM-GC	A-2	0	0	65-75	40-50	35-45	25-35	15-20	5-10
	28-60	Very gravelly sandy loam.	SC-SM	A-1, A-2	0	0	65-75	30-45	20-30	10-20	15-20	5-10
Tally--------	0-13	Fine sandy loam.	SC, SC-SM, SM	A-4	0	0	85-100	80-100	70-80	40-50	15-25	NP-10
	13-29	Fine sandy loam, sandy loam.	SC, SC-SM, SM	A-4	0	0	85-100	80-100	70-80	40-50	15-25	NP-10
	29-60	Fine sandy loam, sandy loam.	SC, SC-SM, SM	A-4	0	0	85-100	80-100	70-80	40-50	15-25	NP-10
103*:												
Blackhall----	0-10	Fine sandy loam.	SM, SC-SM	A-2, A-4	0	0	95-100	90-100	60-80	30-50	<25	NP-10
	10	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
103*:												
Kappes-------	0-2	Sandy loam----	SC-SM, SC	A-4	0	0-5	95-100	85-100	55-75	35-45	15-25	5-10
	2-28	Sandy loam, fine sandy loam.	SC-SM, SC	A-4	0	0-5	95-100	85-100	55-75	35-45	15-25	5-10
	28	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rentsac------	0-5	Very channery fine sandy loam.	GM, GM-GC, GC	A-1, A-2	0-5	0-15	45-65	40-60	25-50	15-35	15-25	NP-10
	5-11	Extremely flaggy sandy loam.	GM, GM-GC	A-1	5-15	30-55	35-50	25-40	15-30	10-20	15-20	NP-5
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
104*:												
Blackhall----	0-16	Fine sandy loam.	SM, SC-SM	A-2, A-4	0	0	95-100	90-100	60-80	30-50	<25	NP-10
	16	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rentsac------	0-10	Very channery sandy loam.	GM, GM-GC, GC	A-1, A-2	0-5	0-15	45-65	40-60	25-50	15-35	15-25	NP-10
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
105*:												
Blazon, thin solum-------	0-4	Loam----------	CL-ML, ML, CL	A-4	0	0-5	90-100	90-100	70-90	65-75	25-35	5-10
	4-7	Channery loam	GC, GM-GC, GM	A-4	0	5-10	55-70	55-70	50-60	35-50	25-35	5-10
	7	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Blazon-------	0-4	Clay loam-----	CL	A-6	0	0-5	90-100	90-100	75-95	60-75	35-40	15-20
	4-15	Clay loam-----	CL	A-6	0	5-10	80-100	80-100	75-95	60-75	35-40	15-20
	15	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Lilsnake-----	0-3	Loam----------	CL-ML, CL	A-4	0	0	85-100	80-100	60-80	50-70	25-30	5-10
	3-13	Loam----------	CL-ML, CL	A-4, A-6	0	0	85-100	80-100	60-80	50-70	25-35	5-15
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
106*:												
Blazon-------	0-1	Clay loam-----	CL	A-6	0	0-5	90-100	90-100	75-95	60-75	35-40	15-20
	1-12	Clay loam.	CL	A-6	0	5-10	80-100	80-100	75-95	60-75	30-40	10-20
	12	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Delphill-----	0-5	Loam----------	CL	A-6	0	0	95-100	95-100	85-95	60-70	30-40	10-20
	5-39	Loam, silty clay loam, clay loam.	CL	A-6	0	0	95-100	95-100	90-100	70-85	30-35	10-15
	39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
107*:												
Bookcliff----	0-5	Gravelly sandy loam.	GC, GM-GC, SC, SC-SM	A-2, A-4	0	0-10	60-80	50-75	30-60	20-50	20-30	5-10
	5-18	Gravelly sandy clay loam, cobbly clay loam, sandy clay loam.	GC, CL, SC	A-6	0	0-10	60-100	50-95	40-80	35-75	25-35	10-15
	18-60	Gravelly sandy loam, gravelly sandy clay loam.	GC, SC, SC-SM	A-2, A-6	0	0-10	60-95	50-90	40-80	20-50	20-30	5-10
Lail----------	0-2	Loam----------	CL	A-6	0	0-10	80-100	75-100	65-100	50-65	25-35	10-15
	2-8	Sandy loam, loam.	SC, CL, CL-ML, SM-SC	A-2, A-4, A-6	0	0-10	80-100	75-100	50-90	30-70	20-30	5-15
	8-28	Clay, clay loam.	CL	A-7	0	0-10	80-100	75-100	60-100	60-95	40-50	20-30
	28-60	Clay loam-----	CL	A-6, A-7	0	0-10	80-100	75-100	60-100	50-80	35-45	15-20
Rabbitex-----	0-9	Gravelly loam	SC, GM-GC, CL	A-4	0-5	0-5	55-80	50-75	45-70	35-55	25-35	5-10
	9-60	Clay loam, loam, gravelly loam.	CL	A-6	0-5	0-5	80-95	75-90	65-90	50-70	25-45	10-20
108---------- Brownsto	0-9	Gravelly sandy loam.	SC, SC-SM, GM	A-2	0	0-5	55-80	50-75	30-50	15-30	<25	NP-10
	9-32	Very cobbly sandy loam.	GM, SC-SM, SC	A-2	0-10	20-40	55-75	50-70	30-50	15-30	<25	NP-10
	32-60	Very cobbly sandy loam.	GM, SC-SM, SC	A-2	0-10	20-40	55-75	50-70	30-50	15-30	<25	NP-10
109---------- Brownsto	0-10	Gravelly sandy loam.	SC, SC-SM, GM	A-2	0	0-5	55-80	50-75	30-50	15-30	<25	NP-10
	10-60	Very cobbly sandy loam.	GM, SC-SM, SC	A-2	0-10	20-40	55-75	50-70	30-50	15-30	<25	NP-10
110*:												
Brownsto-----	0-11	Very gravelly sandy loam.	GM, SM, GP-GM, SP-SM	A-1	---	0-15	45-60	35-50	25-35	10-20	---	NP
	11-60	Very cobbly sandy loam, very cobbly sandy clay loam.	GM, SM	A-2, A-4	---	25-35	60-70	50-60	40-50	25-40	<35	NP-10
Luhon--------	0-6	Gravelly loam	SC, GC, GM-GC, SC-SM	A-2, A-4, A-6	0	0-5	60-80	50-75	50-70	30-60	20-35	5-15
	6-60	Gravelly loam, loam.	CL, GC, SC	A-6	0	0-5	60-95	50-90	50-80	35-70	25-35	10-15

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
111*:												
Brownsto-----	0-11	Gravelly sandy loam.	SC, SC-SM, GM	A-2	0	0-5	55-80	50-75	30-50	15-30	<25	NP-10
	11-60	Very cobbly sandy loam.	GM, SC-SM, SC	A-2	0-10	20-40	55-75	50-70	30-50	15-30	<25	NP-10
Luhon--------	0-4	Loam----------	CL, SC, CL-ML	A-6, A-4	0	0-5	90-100	85-100	80-95	45-70	25-35	5-15
	4-12	Loam, clay loam.	CL, SC, CL-ML	A-4, A-6	0	0-5	90-100	85-100	80-95	45-70	25-35	5-15
	12-60	Loam, clay loam.	CL, SC	A-6	0	0-5	90-100	85-100	80-95	45-70	25-35	10-15
McFadden-----	0-7	Gravelly sandy loam.	SM, GM, SC-SM, GM-GC	A-2, A-1-B	0-5	0-5	60-80	50-75	30-60	15-35	<25	NP-10
	7-20	Gravelly sandy loam.	SM, GM, SC-SM, GM-GC	A-2, A-1-B	0-5	0-5	60-80	50-75	30-60	15-35	<25	NP-10
	20-60	Gravelly sandy loam.	SM, GM, SC-SM, GM-GC	A-2, A-1-B	0-5	0-5	60-80	50-75	30-60	15-35	<25	NP-10
112*:												
Chittum------	0-12	Gravelly loam	CL, SC, SC-SM, GM-GC	A-4	0	0-5	55-85	50-75	45-70	35-55	20-30	5-10
	12-19	Loam, gravelly loam.	CL, SC, GC	A-6	0	0-5	55-100	50-100	45-90	35-70	25-35	10-15
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Eyre Family--	0-10	Very gravelly loam.	GM-GC, GC	A-2	0-5	20-35	50-60	40-50	35-45	25-35	20-25	5-10
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
113----------- Chroder	0-11	Fine sandy loam.	SM, SC-SM	A-4	0	0	90-100	90-100	75-85	40-50	20-25	NP-5
	11-60	Sandy loam----	SM, SC-SM	A-4	0	0-5	85-95	80-90	70-80	40-50	20-25	NP-5
114----------- Condie	0-9	Gravelly loam	CL, GC, SC	A-6	0-5	0-10	60-80	50-75	40-70	35-55	25-30	10-15
	9-37	Gravelly sandy loam, very cobbly sandy loam.	SC, SC-SM, GC	A-2, A-1	5-10	10-35	60-90	50-80	30-55	15-30	15-25	5-10
	37-60	Very cobbly sandy clay loam, very cobbly clay loam.	SC, CL, GC	A-2, A-6	5-10	25-35	60-90	50-80	45-70	30-60	25-40	10-20

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
115---------- Cowestglen	0-8	Fine sandy loam.	CL-ML, SC-SM, SC, CL	A-4	0	0-5	90-100	90-100	75-90	45-60	20-25	5-10
	8-42	Stratified fine sandy loam to loamy sand.	CL-ML, SC-SM, SC, CL	A-4	0	0-5	90-100	90-100	70-85	40-55	20-25	5-10
	42-60	Gravelly sandy loam.	SC-SM, SC	A-2, A-1-B	0	0-5	90-100	65-75	35-45	15-25	20-25	5-10
116---------- Coyet	0-4	Loamy fine sand.	SM	A-2	0	0	95-100	95-100	70-90	15-35	---	NP
	4-60	Loamy fine sand, loamy sand.	SM	A-2	0	0	95-100	95-100	70-90	15-35	---	NP
117*: Cryofluvents-	0-18	Sandy loam, loam, clay loam.	SC, CL, CL-ML, SC-SM	A-2, A-4, A-6	0	0-5	90-100	80-100	50-80	25-60	25-35	5-15
	18-60	Very cobbly sandy loam to very gravelly loamy sand.	SM	A-2	0-5	15-35	70-90	60-80	35-50	20-30	---	NP
Borofibrists-	0-16	Peat----------	PT	---	0	0	100	100	100	100	---	---
	16-22	Muck----------	PT	---	0	0	100	100	100	100	---	---
	22-37	Loam----------	CL-ML, CL	A-4	0	0	90-100	90-100	85-95	60-75	20-25	5-10
	37-60	Very cobbly loamy sand, very cobbly sand.	SM, GM, GP-GM, SP-SM	A-1	0	30-35	50-70	40-60	20-45	5-20	---	NP
118---------- Dahlquist	0-2	Very cobbly sandy loam.	SC-SM, SC, GC, GM-GC	A-2, A-1	0-5	0-40	55-80	50-75	30-60	15-35	15-25	5-10
	2-17	Very cobbly clay loam, very cobbly sandy clay loam.	GC, CL, SC	A-6, A-2	0-5	10-40	55-80	50-75	40-70	15-60	35-40	15-20
	17-60	Very cobbly sandy loam, very cobbly loamy sand.	GW-GM, SM, GM, GP-GM	A-1	5-10	5-35	55-80	50-75	15-50	5-20	---	NP
119*: Delphill-----	0-4	Loam----------	CL	A-6	0	0	95-100	95-100	85-95	60-70	30-40	10-20
	4-9	Clay loam, loam, silty clay loam.	CL	A-6	0	0	95-100	95-100	90-100	70-85	30-40	15-20
	9-35	Silty clay loam, clay loam.	CL	A-6	0	0	95-100	95-100	95-100	70-85	30-40	15-20
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
119*:												
Iyers--------	0-1	Clay loam-----	CL, ML	A-6, A-7	0	0	95-100	90-100	85-100	65-80	35-45	10-20
	1-6	Clay loam, clay.	CL	A-6, A-7	0	0	95-100	90-100	85-100	65-90	35-50	15-25
	6-39	Clay loam, clay.	CL	A-6, A-7	0	0-5	85-100	80-100	75-100	60-90	35-50	15-25
	39	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Poposhia-----	0-2	Loam----------	CL-ML, CL	A-4, A-6	0	---	90-100	75-100	70-95	50-75	20-35	5-15
	2-60	Loam----------	CL-ML, CL	A-6, A-4	0	0	90-100	75-100	70-100	50-80	20-35	5-15
120*:												
Dollard------	0-6	Silty clay----	ML, MH, CL, CH	A-7	0	0	95-100	95-100	90-100	70-95	45-55	20-25
	6-28	Silty clay, clay, clay loam.	CL, CH, ML, MH	A-7	0	0	95-100	95-100	85-100	70-80	40-55	15-25
	28	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Moyerson-----	0-6	Clay----------	CL, CH	A-7	0-5	0-5	95-100	95-100	85-95	80-90	45-65	20-35
	6-12	Silty clay, clay, clay loam.	CL, CH	A-7	0-5	0-15	95-100	95-100	85-95	80-90	45-65	20-35
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
121*:												
Eyre Family--	0-13	Cobbly sandy loam.	SC-SM, SC	A-2, A-4	0-5	15-25	90-100	90-100	55-65	30-40	20-25	5-10
	13-18	Very cobbly sandy loam.	SC-SM, SC, SP-SC	A-2	0-10	25-45	60-70	50-60	30-40	10-20	20-25	5-10
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Handran Family------	0-12	Very stony sandy loam.	SC, SC-SM, GM-GC, GC	A-1, A-2	25-35	15-25	60-85	50-75	30-50	15-30	15-25	5-10
	12-60	Very stony sandy loam.	SC, SC-SM, GM-GC, GC	A-1, A-2	25-35	15-25	60-85	50-75	30-50	15-30	15-25	5-10
122----------	0-7	Loam----------	CL-ML, CL	A-4	0	0-5	90-100	90-100	70-85	65-70	20-30	5-10
Flatnose	7-60	Stratified loamy fine sand to loam.	SC-SM, SM	A-2, A-4	0-5	0-5	85-95	75-90	50-75	30-50	20-30	NP-10
123----------	0-19	Loam----------	CL, SC	A-6	0	0-5	80-100	70-100	60-90	40-70	25-35	10-15
Garlips	19-41	Loam, gravelly loam.	CL, SC	A-6	0	0-5	80-100	70-100	60-90	40-70	25-35	10-15
	41-60	Loam, gravelly loam.	CL, SC	A-6	0	0-5	80-100	70-100	60-90	40-70	25-35	10-15
124*:												
Gerst--------	0-6	Loam----------	CL-ML, CL	A-4, A-6	0	0	80-100	75-100	70-90	50-70	25-35	5-15
	6-18	Channery loam	SC, SC-SM, GM-GC, GC	A-4, A-6	0	0-10	60-80	55-75	50-70	35-50	25-35	5-15
	18	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
124*:												
Strych-------	0-4	Gravelly sandy loam.	SC-SM, SC	A-4	0	0-15	75-85	65-80	65-80	40-50	20-25	5-10
	4-60	Very gravelly sandy loam, extremely gravelly sandy loam.	GM-GC, GC	A-1, A-2	0	0-15	30-55	20-45	15-30	10-20	20-25	5-10
125, 126------ Goslin	0-6	Fine sandy loam.	SC-SM, SC, SM	A-2, A-4	0	0	95-100	90-100	60-80	30-50	15-25	NP-10
	6-60	Fine sandy loam.	SC-SM, SC, SM	A-2, A-4	0	0	95-100	90-100	60-80	30-50	15-25	NP-10
127*:												
Grieves------	0-7	Fine sandy loam.	SM, SC-SM	A-2	0	0-5	85-100	75-100	45-85	25-35	<25	NP-10
	7-60	Fine sandy loam, sandy loam.	SM, SC-SM	A-2	0	0-5	85-100	75-100	45-85	25-35	<25	NP-10
Tisworth-----	0-3	Fine sandy loam.	SC-SM, SM, SC	A-4	0	0	95-100	95-100	60-90	35-60	<25	NP-10
	3-28	Loam, sandy clay loam, fine sandy loam.	CL, SC	A-6	0	0	95-100	95-100	80-95	45-65	25-35	10-15
	28-60	Loam, fine sandy loam, sandy loam.	SC-SM, SC, SM	A-4	0	0	95-100	95-100	70-90	35-60	<25	NP-10
128*:												
Grobutte Family------	0-3	Very stony sandy loam.	SM, SC-SM	A-2, A-1	20-45	20-40	65-90	60-80	30-50	15-35	<25	NP-10
	3-60	Very stony sandy loam, very stony loam.	SM, SC-SM, SC	A-2, A-4, A-1	20-45	20-40	65-90	60-80	30-60	15-40	<25	NP-10
Rentsac------	0-9	Channery sandy loam.	SM, SC-SM	A-2	0-5	0-10	65-80	60-75	40-50	15-30	15-20	NP-5
	9-15	Extremely channery sandy loam, very channery fine sandy loam.	GM, GM-GC, GC	A-1, A-2	0-5	0-15	40-55	30-50	20-40	10-30	15-25	NP-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
129*:												
Hagga--------	0-8	Loam----------	CL, CL-ML	A-4	0	0	100	100	85-95	55-75	20-30	5-10
	8-60	Stratified clay loam to sandy loam.	CL, CL-ML, SC-SM	A-4, A-6	0	0	95-100	80-100	70-100	35-80	20-40	5-15

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
129*:												
Cowestglen---	0-8	Fine sandy loam.	CL-ML, SC-SM, SC, CL	A-4	0	0-5	90-100	90-100	75-90	45-60	20-25	5-10
	8-60	Stratified sand to loam.	SC-SM, SM, SC, SP-SM	A-2, A-3	0	0-5	90-100	75-100	50-70	5-30	<25	NP-10
130*:												
Hanly Family-	0-20	Loamy sand----	SM, SP-SM	A-2, A-1	0	0	95-100	90-100	45-75	10-30	---	NP
	20-60	Stratified loamy sand to gravelly sand.	SM, SP-SM	A-1, A-2	0	0	80-100	60-100	30-70	5-30	---	NP
Riverwash----	0-60	Variable------	---	---	---	---	---	---	---	---	---	---
131*:												
Haploborolls-	0-18	Very stony sandy loam.	SC, SC-SM	A-2, A-4, A-1-B	25-40	40-60	75-95	70-90	40-80	20-50	15-25	5-10
	18-26	Very stony sandy loam, very stony loam.	SC, SC-SM	A-2, A-4, A-1-B	25-40	40-60	75-95	70-90	40-80	20-50	15-25	5-10
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Torriorthents	0-4	Very gravelly loam.	SC, SC-SM, GM-GC, GC	A-1, A-2	0	0-10	40-70	30-60	20-35	10-30	20-35	5-15
	4-15	Very gravelly loam, very gravelly sandy loam, very cobbly sandy clay loam.	SC, SC-SM, GM-GC, GC	A-1, A-2	0	0-30	40-70	30-60	20-35	10-30	20-35	5-15
	15	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
132---------- Harpole	0-8	Very stony sandy loam.	GC, GM-GC, SC-SM, SC	A-2, A-1	20-35	20-35	60-80	50-75	30-50	15-30	<25	NP-10
	8-30	Very stony sandy clay loam.	GC, SC	A-2, A-6	20-35	20-35	60-80	50-75	40-65	20-40	25-35	10-15
	30-60	Very stony sandy loam.	SC-SM, SM, SC, SP-SM	A-1, A-2	20-35	20-35	60-80	50-75	30-50	10-25	<25	NP-10
133*:												
Harpole Family------	0-13	Very gravelly loam.	GC, GM-GC	A-2	0	0-15	40-60	30-60	20-50	15-35	20-30	5-15
	13-36	Very gravelly clay loam.	GC	A-2, A-6	0	0-15	40-60	30-60	30-60	20-40	35-40	15-20
	36-60	Extremely gravelly clay loam.	GC	A-2	0	0-15	20-40	10-25	10-20	10-20	25-35	10-15

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
133*:												
Worfstone Family------	0-5	Very stony loam.	GM-GC, SC-SM, GC, SC	A-2, A-4, A-6	10-20	5-10	60-80	60-75	40-60	30-50	20-30	5-15
	5-12	Very cobbly clay loam.	GC, SC	A-2	5-10	0-25	60-80	60-75	40-60	20-30	30-40	15-20
	12-15	Extremely cobbly clay loam.	GC, SC	A-2	5-10	0-30	50-70	40-60	30-50	15-20	25-35	10-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
134---------- Henrieville	0-7	Sandy loam----	CL-ML	A-4	0	0	95-100	95-100	85-95	50-65	20-30	5-10
	7-60	Sandy loam, fine sandy loam.	SM, SC-SM	A-4	0	0-5	90-100	85-95	60-80	40-50	20-30	NP-10
135*:												
Henrysfork---	0-3	Clay loam-----	CL	A-6	0	0	95-100	90-100	80-95	60-80	30-40	15-20
	3-50	Clay loam, sandy clay loam.	SC, CL	A-6	0	0-5	95-100	90-100	70-95	40-75	25-40	10-20
	50-60	Very cobbly sandy clay loam.	SC, SC-SM	A-2, A-4, A-6	0-5	5-30	80-95	75-90	40-75	20-40	15-35	5-15
Borofibrists-	0-24	Peat----------	PT	---	0	0	100	100	100	100	---	---
	24-33	Loam, clay loam.	CL-ML, CL	A-4	0	0	90-100	90-100	85-95	60-75	20-25	5-10
	33-60	Very cobbly loamy sand, very cobbly sandy loam.	SM, GM, GP-GM, SP-SM	A-1	0	30-35	50-70	40-60	20-45	5-20	---	NP
136---------- Hickey	0-6	Loam----------	SC-SM, CL, SC, CL-ML	A-4	0-5	0-5	85-100	75-100	75-90	35-70	20-30	5-10
	6-16	Loam, clay loam, sandy clay loam.	SC, CL	A-6	0-5	0-5	85-100	75-100	60-90	35-75	30-40	15-20
	16-60	Clay loam, sandy clay loam.	SC, CL	A-6, A-2-6	0-5	0-5	85-100	75-100	60-90	25-70	25-40	10-20
137---------- Hickey	0-5	Cobbly sandy loam.	SM, SC-SM	A-2, A-4	0-5	5-15	80-90	80-90	50-60	30-40	20-25	NP-5
	5-9	Loam, clay loam, sandy clay loam.	SC, CL	A-6	0-5	0-5	85-100	75-100	60-90	35-75	30-40	15-20
	9-26	Clay loam, sandy clay loam.	SC, CL	A-6, A-2-6	0-5	0-5	85-100	75-100	60-90	25-70	25-40	10-20
	26-60	Stony sandy clay loam.	SC	A-6	10-20	10-20	80-95	80-95	55-65	35-50	30-40	10-20

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
138*:												
Hickey loam--	0-2	Loam----------	SC-SM, CL, SC, CL-ML	A-4	0-5	0-5	85-100	75-100	75-90	35-70	20-30	5-10
	2-16	Loam, clay loam, sandy clay loam.	SC, CL	A-6	0-5	0-5	85-100	75-100	60-90	35-75	30-40	15-20
	16-60	Clay loam, sandy clay loam.	SC, CL	A-6, A-2-6	0-5	0-5	85-100	75-100	60-90	25-70	25-40	10-20
Hickey gravelly sandy clay loam--------	0-4	Gravelly sandy clay loam.	SC, CL, GC	A-2, A-6	0-5	0-10	60-85	50-75	45-70	20-55	25-35	10-20
	4-8	Clay loam, gravelly clay loam.	SC, CL	A-6	0-5	0-5	85-100	75-100	60-90	35-75	30-40	15-20
	8-60	Clay loam, sandy clay loam.	SC, CL	A-6, A-2-6	0-5	0-5	85-100	75-100	60-90	25-70	25-40	10-20
139*:												
Hoodle Family-----	0-5	Cobbly clay loam.	CL	A-6	0-10	5-25	85-95	85-95	75-85	60-70	20-30	10-15
	5-31	Very cobbly clay loam, extremely cobbly clay loam.	GC	A-2, A-6	0-10	30-55	40-65	35-60	30-60	25-50	30-40	10-15
	31-60	Extremely cobbly sandy clay loam, very cobbly sandy clay loam.	GC	A-2	0-10	35-55	30-45	25-40	20-35	10-20	30-40	10-15
Namon Family, dry---------	0-4	Cobbly loam---	CL, CL-ML	A-4, A-6	0-5	15-30	80-90	80-90	65-75	50-60	25-35	5-15
	4-13	Very cobbly clay loam.	GC, GP-GC	A-2, A-6	0-5	40-55	25-60	20-55	15-55	10-45	30-40	10-15
	13-50	Very cobbly loam.	GC, GP-GC	A-2	0-5	40-55	25-60	20-55	15-55	10-45	30-40	10-15
	50-60	Cobbly clay loam.	GC, SC, CL	A-6	0-5	10-20	75-90	70-85	65-85	40-65	30-40	10-15
Namon Family-	0-1	Extremely stony loam.	GM-GC, GC	A-2, A-1-B	0-5	40-65	30-45	25-40	20-40	15-30	20-35	5-15
	1-34	Very cobbly clay loam, extremely cobbly clay loam.	GC, GP-GC	A-2, A-6	0-5	40-55	25-60	20-55	15-55	10-45	30-40	10-15
	34-43	Gravelly clay loam, cobbly clay loam.	GC, SC, CL	A-6	0-5	5-25	65-90	60-85	55-85	40-65	30-40	10-15
	43-60	Extremely cobbly sandy loam.	GM-GC, GM	A-1-B	0-5	40-50	50-60	40-50	30-40	15-25	20-25	NP-5

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
140---------- Joebas	0-2	Gravelly sandy loam.	SM, SC-SM	A-2	---	---	65-85	50-80	40-60	20-30	20-25	NP-5
	2-13	Gravelly sandy clay loam.	GM, SM	A-2, A-4	---	---	65-85	50-80	40-60	25-45	30-40	5-15
	13-19	Gravelly sandy clay loam, gravelly sandy loam.	SC-SM, GM-GC, GC, SC	A-2, A-4	---	---	65-85	50-80	40-60	25-40	20-30	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
141*: Kappes-------	0-8	Fine sandy loam.	SC-SM, SC	A-4	0	0-5	95-100	85-100	55-75	35-45	15-25	5-10
	8-28	Sandy loam, fine sandy loam.	SC-SM, SC	A-4	0	0-5	95-100	85-100	55-75	35-45	15-25	5-10
	28	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
McFadden-----	0-6	Fine sandy loam.	SC, SC-SM, SM	A-2, A-4	0	0	90-100	75-100	50-80	30-50	15-25	NP-10
	6-14	Fine sandy loam.	SC, SC-SM, SM	A-2, A-4	0	0	90-100	75-100	50-80	30-50	15-25	NP-10
	14-60	Fine sandy loam.	SC, SC-SM, SM	A-2, A-4	0	0	90-100	75-100	50-80	30-50	15-25	NP-10
142---------- Lanver	0-6	Gravelly sandy loam.	GM-GC, SC-SM	A-4	0	0-5	60-80	55-75	40-65	30-40	20-30	5-10
	6-17	Very cobbly loam.	GM-GC, SC-SM	A-2, A-4	0	20-30	60-80	55-75	40-60	30-50	20-30	5-10
	17-38	Very cobbly sandy loam.	SM, SC-SM, GM, GM-GC	A-1, A-2	0	10-25	45-65	40-60	25-45	15-30	15-25	NP-10
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
143---------- Ledgefork	0-7	Cobbly sandy loam.	SM	A-2, A-1	0	10-25	70-90	60-80	30-50	15-30	<25	NP-5
	7-17	Extremely cobbly sandy loam, extremely stony sandy loam.	GM, GP-GM	A-1	0-25	35-50	40-60	30-50	20-35	10-20	<25	NP-5
	17-60	Extremely cobbly sand, extremely stony loamy sand.	GM, GP-GM	A-1	15-30	35-50	40-60	30-50	20-35	0-10	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
144*:												
Lotex sandy loam--------	0-2	Sandy loam----	CL-ML, SC-SM, SC, CL	A-2, A-4	0	0-5	80-100	75-100	60-85	30-60	10-25	NP-10
	2-7	Loam, sandy loam, cobbly loam.	CL-ML, SC-SM, SC, CL	A-2, A-4	0-5	0-20	80-100	75-100	60-85	30-60	10-25	NP-10
	7	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Chittum------	0-8	Loam----------	CL, CL-ML	A-4	0	0-5	90-100	80-100	65-90	50-70	20-30	5-10
	8-15	Loam, gravelly loam.	CL, SC, GC	A-6	0	0-5	55-100	50-100	45-90	35-70	25-35	10-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Lotex stony loam--------	0-9	Stony loam----	CL-ML, SC-SM, SC, CL	A-2, A-4	10-15	0-10	80-100	75-100	60-85	30-60	10-25	NP-10
	9	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
145---------- Luhon	0-11	Loam----------	ML, CL, CL-ML	A-4	0	0-5	80-100	80-100	65-95	50-70	20-30	NP-10
	11-38	Loam, clay loam.	CL	A-6	0	0-5	80-100	80-100	60-80	50-70	30-40	10-15
	38-60	Loam, gravelly clay loam, gravelly loam.	ML, GM, SM, SC	A-4, A-6	0	0-10	55-100	50-95	35-90	35-75	30-40	5-15
146---------- Luhon	0-3	Loam----------	CL, SC, CL-ML	A-6, A-4	0	0-5	90-100	85-100	80-95	45-70	25-35	5-15
	3-12	Loam, clay loam.	CL, SC, CL-ML	A-4, A-6	0	0-5	90-100	85-100	80-95	45-70	25-35	5-15
	12-60	Loam, clay loam.	CL, SC	A-6	0	0-5	90-100	85-100	80-95	45-70	25-35	10-15
147---------- Luhon	0-6	Channery loam	SC, GC, GM-GC, SC-SM	A-2, A-4, A-6	0	0-5	60-80	50-75	50-70	30-60	20-35	5-15
	6-60	Gravelly loam, channery loam, loam.	CL, GC, SC	A-6	0	0-5	60-95	50-90	50-80	35-70	25-35	10-15
148*:												
Luhon--------	0-6	Gravelly sandy loam.	SC, SC-SM, GM-GC, SC	A-2, A-1	0	0-5	60-80	50-75	30-55	10-30	<25	NP-10
	6-60	Gravelly loam, loam.	CL, GC, SC	A-6	0	0-5	60-95	50-90	50-80	35-70	25-35	10-15

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
148*:												
Brownsto-----	0-6	Gravelly sandy loam.	SM, GM	A-2	0	0-5	60-70	50-60	40-50	25-35	---	NP
	6-28	Very gravelly sandy loam.	GM, SM, GP-GM, SP-SM	A-1	0	0-15	45-60	35-50	25-35	10-20	---	NP
	28-60	Very cobbly sandy loam, very cobbly sandy clay loam.	GM, SM	A-2, A-4	0	25-35	60-70	50-60	40-50	25-40	25-35	NP-10
149*:												
Luhon--------	0-6	Gravelly loam	SC, GC, GM-GC, SC-SM	A-2, A-4, A-6	0	0-5	60-80	50-75	50-70	30-60	20-35	5-15
	6-60	Gravelly loam, loam.	CL, GC, SC	A-6	0	0-5	60-95	50-90	50-80	35-70	25-35	10-15
Evanston-----	0-10	Loam----------	CL	A-6	0	0-5	90-100	85-100	75-95	60-80	25-35	10-15
	10-15	Clay loam-----	CL	A-6	0	0-10	90-100	85-100	75-95	60-80	35-40	15-20
	15-60	Loam, gravelly loam.	CL, SC	A-6	0	0-10	80-100	70-100	60-90	40-75	25-35	10-15
150*:												
Luhon--------	0-5	Clay loam-----	CL	A-6	0	0-5	80-100	80-100	75-95	60-75	35-40	15-20
	5-60	Gravelly clay loam, gravelly loam.	ML, GM, SM, GC	A-4, A-6	0	0-10	55-80	50-75	35-70	35-55	30-40	5-15
Hickey-------	0-2	Loam----------	SC-SM, CL, SC, CL-ML	A-4	0-5	0-5	85-100	75-100	75-90	35-70	20-30	5-10
	2-9	Loam, clay loam, sandy clay loam.	SC, CL	A-6	0-5	0-5	85-100	75-100	60-90	35-75	30-40	15-20
	9-60	Clay loam, gravelly clay loam.	SC, CL	A-6, A-2-6	0-5	0-10	85-100	75-100	60-90	25-70	25-40	10-20
Heath--------	0-12	Loam----------	CL, ML, CL-ML	A-4	0-5	0-5	85-100	80-100	70-90	50-70	25-35	5-10
	12-24	Clay loam, gravelly clay loam.	CL, SC	A-6, A-7	0-5	0-10	70-100	65-100	60-100	40-80	35-45	15-20
	24-60	Clay loam, gravelly clay loam.	CL, SC	A-6, A-7	0-5	0-10	70-100	65-100	60-95	40-80	30-45	10-20
151*:												
Luhon--------	0-8	Loam----------	CL, SC, CL-ML	A-6, A-4	0	0-5	90-100	85-100	80-95	45-70	25-35	5-15
	8-30	Loam, clay loam.	CL, SC, CL-ML	A-4, A-6	0	0-5	90-100	85-100	80-95	45-70	25-35	5-15
	30-60	Sandy loam----	SC-SM, SC	A-2, A-4, A-1-B	0	0-5	90-100	75-100	45-70	20-40	15-25	5-10

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
151*:												
Rockinchair--	0-11	Loam----------	CL	A-6	0	0-5	90-100	75-100	70-90	60-75	25-40	10-20
	11-32	Loam, clay loam, channery loam.	CL, SC, GC	A-6	0	0-5	70-100	60-100	50-90	35-75	25-40	10-20
	32	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
152, 153------ McFadden	0-7	Fine sandy loam.	SC, SC-SM, SM	A-2, A-4	0	0	90-100	75-100	50-80	30-50	15-25	NP-10
	7-21	Fine sandy loam.	SC, SC-SM, SM	A-2, A-4	0	0	90-100	75-100	50-80	30-50	15-25	NP-10
	21-60	Fine sandy loam.	SC, SC-SM, SM	A-2, A-4	0	0	90-100	75-100	50-80	30-50	15-25	NP-10
154----------- McFadden	0-3	Gravelly sandy loam.	SM, GM, SC-SM, GM-GC	A-2, A-1-B	0	0-5	60-80	50-75	30-60	15-35	<25	NP-10
	3-11	Gravelly sandy loam.	SM, GM, SC-SM, GM-GC	A-2, A-1-B	0	0-5	60-80	50-75	30-60	15-35	<25	NP-10
	11-60	Gravelly sandy loam.	SM, GM, SC-SM, GM-GC	A-2, A-1-B	0	0-5	60-80	50-75	30-60	15-35	<25	NP-10
155*:												
McFadden-----	0-6	Gravelly sandy loam.	GM-GC, GM, SM, SC-SM	A-2, A-1-B	0	0-5	60-80	50-75	30-60	15-35	<25	NP-10
	6-15	Gravelly sandy loam.	GM, SM, GM-GC, SC-SM	A-2, A-1-B	0	0-5	60-80	50-75	30-60	15-35	<25	NP-10
	15-60	Gravelly sandy loam.	GM, SM, GM-GC, SC-SM	A-2, A-1-B	0	0-5	60-80	50-75	30-60	15-35	<25	NP-10
Brownsto-----	0-6	Gravelly sandy loam.	SM, GM	A-2	0	0-5	60-70	50-60	40-50	25-35	---	NP
	6-16	Very gravelly sandy loam.	GM, SM, GP-GM, SP-SM	A-1	---	0-15	45-60	35-50	25-35	10-20	---	NP
	16-60	Very gravelly sandy loam, very gravelly sandy clay loam.	GM	A-1, A-2	---	0-15	45-60	35-50	25-40	20-30	25-35	NP-10
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
156*:												
Middlewood---	0-2	Sandy loam----	SC-SM, SC	A-2, A-4	0	0	100	90-100	55-60	30-40	20-25	5-10
	2-5	Loam----------	CL-ML, CL	A-4	0	0	100	90-100	80-90	60-70	25-30	5-10
	5-18	Clay loam-----	ML, CL	A-6	0	0	100	90-100	85-95	70-80	35-40	10-15
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
156*:												
Boettcher----	0-3	Fine sandy loam.	SC-SM, SC	A-4	0	0	100	85-95	65-75	35-50	20-25	5-10
	3-18	Clay, clay loam.	CL, CH	A-7	0	0	80-100	75-100	70-100	70-85	45-60	30-45
	18-30	Clay loam-----	CL	A-6	0	0	90-100	85-95	80-90	60-70	30-35	10-15
	30-35	Very channery clay loam.	SC, GC	A-2	0	0	60-70	35-45	25-35	20-30	30-35	10-15
	35	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
157----------	0-2	Sandy loam----	SC-SM	A-2	0	0	85-100	80-95	55-70	15-30	20-30	5-10
Milok	2-11	Sandy loam----	SC-SM	A-2	0	0	85-100	80-95	55-70	15-30	20-30	5-10
	11-28	Gravelly sandy loam, gravelly loam.	SC-SM	A-2, A-4	0	0	75-85	65-75	50-70	25-50	20-30	5-10
	28-60	Gravelly sandy loam.	SC-SM	A-1, A-2	0	0	75-85	65-75	40-55	15-30	20-30	5-10
158----------	0-16	Loamy sand----	SM	A-2	0	0	90-100	75-100	50-75	15-30	<15	NP
Ouray	16-60	Loamy sand, sand.	SM, SP-SM	A-1, A-2, A-3	0	0-10	85-95	75-85	35-55	5-20	<15	NP
159*:												
Pesmore------	0-10	Very stony loam.	GC, SC	A-2, A-6	20-25	20-30	60-80	50-75	40-60	20-40	25-35	10-15
	10-25	Very stony loam, very cobbly loam.	GC, SC	A-2, A-6	5-25	20-30	60-80	50-75	40-60	20-40	25-35	10-15
	25-34	Extremely stony loam, very cobbly loam.	GC, SC	A-2, A-6	15-50	25-45	60-80	50-75	40-60	20-40	25-35	10-15
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Garlips------	0-18	Gravelly loam	CL, SC	A-6	0	0-5	80-100	70-100	60-90	40-70	25-35	10-15
	18-34	Loam, gravelly loam.	CL, SC	A-6	0	0-5	80-100	70-100	60-90	40-70	25-35	10-15
	34-60	Loam, gravelly loam.	CL, SC	A-6	0	0-5	80-100	70-100	60-90	40-70	25-35	10-15
160----------	0-60	Variable------	---	---	---	---	---	---	---	---	---	---
Pits												
161----------	0-2	Loam----------	CL-ML, CL	A-4, A-6	0	0	90-100	75-100	70-95	50-75	20-35	5-15
Poposhia	2-60	Loam----------	CL-ML, CL	A-6, A-4	0	0	90-100	75-100	70-100	50-80	20-35	5-15
162----------	0-5	Loam----------	CL-ML, CL	A-4, A-6	0	0	90-100	75-100	70-95	50-75	20-35	5-15
Poposhia	5-60	Clay loam-----	CL	A-6	0	0	90-100	75-100	70-100	50-80	25-40	10-20
163----------	0-3	Loam----------	CL-ML, CL	A-4, A-6	0	0	90-100	75-100	70-95	50-75	20-35	5-15
Poposhia	3-27	Loam----------	CL-ML, CL	A-6, A-4	0	0	90-100	75-100	70-100	50-80	25-35	5-15
	27-60	Clay loam-----	CL	A-6	0	0	90-100	75-100	70-100	50-80	25-40	10-20
164, 165------	0-6	Clay loam-----	CL	A-6	0	0	90-100	75-100	70-100	60-80	35-40	15-20
Poposhia	6-60	Clay loam-----	CL	A-6	0	0	90-100	75-100	70-100	50-80	25-40	10-20

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
166---------- Poposhia, strongly alkaline	0-4	Very fine sandy loam.	SM	A-4	0	0	85-100	75-100	70-90	40-50	---	NP
	4-60	Loam, clay loam, sandy clay loam.	CL	A-6	0	0	85-100	75-100	70-90	50-85	25-40	10-20
167*:												
Recklor------	0-3	Gravelly loam	SC, GC	A-6	0	0-10	60-80	55-75	50-65	35-50	25-30	10-15
	3-22	Very gravelly clay loam.	CL, GC	A-7, A-2-7	0	10-30	50-70	45-60	40-55	30-50	40-45	15-20
	22-60	Very gravelly clay loam, very gravelly sandy clay loam.	SC, GC	A-6, A-2-7	0	10-30	50-70	45-60	40-55	25-45	30-40	10-20
Amsden-------	0-5	Cobbly loam---	CL, CL-ML	A-4, A-6	0-5	5-20	80-100	75-100	60-90	50-65	20-30	5-15
	5-15	Cobbly clay loam.	CL	A-6	0-5	5-20	80-100	75-100	70-100	50-75	35-40	15-20
	15-40	Clay loam-----	CL	A-6	0	0	90-100	85-95	80-90	60-70	35-40	15-20
	40-60	Clay loam-----	CL	A-6	0	0	90-100	85-95	80-90	60-70	35-40	15-20
Davtone------	0-16	Loam----------	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-5	90-100	80-100	70-85	40-75	20-35	5-15
	16-42	Clay loam-----	CL	A-6	0	0-5	90-100	80-100	70-95	50-75	25-35	10-20
	42-60	Gravelly clay loam, sandy clay loam.	CL	A-6	0	0-5	80-100	70-90	60-75	50-65	25-35	10-20
168*:												
Redcreek-----	0-6	Channery fine sandy loam.	SM, SC-SM, GM-GC	A-2, A-4	0-5	0-5	60-90	50-75	45-70	20-40	10-20	NP-10
	0-16	Channery fine sandy loam, channery sandy loam.	SM, SC-SM, GM-GC	A-2, A-4	0-5	0-10	60-90	50-75	45-70	20-40	10-20	NP-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Blackhall----	0-4	Fine sandy loam.	SM, SC, SC-SM	A-2, A-4	0	0	90-100	75-100	50-80	25-50	<25	NP-10
	4-16	Sandy loam, fine sandy loam, channery sandy loam.	SM, SC, SC-SM	A-2, A-4	0	0-5	60-100	50-100	35-80	15-50	<25	NP-10
	16	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
169*:												
Rentsac very channery sandy loam--	0-5	Very channery sandy loam.	GM, GM-GC, GC	A-1, A-2	0-5	0-15	45-65	40-60	25-50	15-35	15-25	NP-10
	5-10	Extremely flaggy sandy loam.	GM, GM-GC	A-1	5-15	30-55	35-50	25-40	15-30	10-20	15-20	NP-5
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rentsac channery sandy loam--	0-6	Channery sandy loam.	SM, SC-SM	A-2	0-5	0-10	65-80	60-75	40-50	15-30	15-20	NP-5
	6-11	Extremely flaggy sandy loam.	GM, GM-GC	A-1	5-15	30-55	35-50	25-40	15-30	10-20	15-20	NP-5
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
170----------	0-7	Silty clay----	CL, CH	A-7	0	0	100	100	95-100	90-95	45-55	20-30
Rhoamett	7-60	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	85-95	40-55	15-30
171*:												
Rockinchair--	0-8	Gravelly loam	SC-SM, SC	A-4	0-5	0-5	80-100	50-75	40-50	40-50	25-30	5-10
	8-14	Gravelly loam, gravelly clay loam.	SC-SM, SC	A-4	0-5	0-5	80-100	50-75	45-65	35-50	25-30	5-10
	14-23	Clay loam, loam.	CL	A-6	0	0	80-100	80-100	70-90	60-70	30-40	10-20
	23	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Luhon--------	0-4	Loam----------	ML, CL, CL-ML	A-4	0	0-5	80-100	80-100	65-95	50-70	20-30	NP-10
	4-14	Loam, clay loam.	CL	A-6	0	0-5	80-100	80-100	60-80	50-70	30-40	10-15
	14-60	Loam, gravelly clay loam, gravelly loam.	ML, GM, SM	A-4, A-6	0	0-10	55-100	50-95	35-90	35-75	30-40	5-15
Rentsac------	0-11	Very channery loam.	GM, GM-GC, GC	A-1, A-2	0-5	0-15	45-65	40-60	25-50	15-35	15-25	NP-10
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
172*:												
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Blazon-------	0-13	Clay loam-----	CL	A-6	0	0-5	90-100	90-100	75-85	60-75	30-40	15-20
	13	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
173*:												
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
173*:												
Coyet loamy sand--------	0-5	Loamy sand----	SM	A-2	0	0	95-100	95-100	70-90	15-35	---	NP
	5-60	Loamy fine sand, loamy sand.	SM	A-2	0	0	95-100	95-100	70-90	15-35	---	NP
Coyet loamy fine sand---	0-3	Loamy fine sand.	SM	A-2	0	0	95-100	95-100	70-90	15-35	---	NP
	3-60	Loamy fine sand, loamy sand.	SM	A-2	0	0	95-100	95-100	70-90	15-35	---	NP
174----------	0-2	Loam----------	CL-ML, CL	A-4, A-6	0	0	95-100	85-100	80-95	50-75	20-30	5-15
Rock River	2-14	Loam, sandy clay loam, fine sandy loam.	CL	A-6	0	0	90-100	75-100	70-95	50-75	25-35	10-15
	14-60	Loam, fine sandy loam.	CL-ML, CL, SC, SC-SM	A-2, A-4, A-6	0	0	80-100	75-100	65-90	30-65	15-30	5-15
175*:												
Rock River---	0-3	Fine sandy loam.	SC, SC-SM	A-4	0	0	95-100	85-100	70-90	35-50	<30	5-10
	3-15	Sandy clay loam, sandy loam.	CL	A-6	0	0	80-100	75-100	70-90	40-60	25-35	10-15
	15-40	Sandy loam.	SC, SC-SM	A-2, A-4,	0	0	80-100	75-100	55-80	20-50	<30	5-10
	40-60	Gravelly sandy loam.	SC, SC-SM	A-2	0	0	75-80	60-75	40-55	15-35	<30	NP-10
Brownsto-----	0-6	Gravelly sandy loam.	SM, GM	A-2	0	0-5	60-70	50-60	40-50	25-35	---	NP
	6-60	Very gravelly sandy loam, very gravelly sandy clay loam.	GM	A-1, A-2	0	0-15	45-60	35-50	25-40	20-30	25-35	NP-10
176*:												
Rogert-------	0-13	Very gravelly sandy loam.	GM-GC, GC	A-1, A-2	0-5	0-5	35-60	25-50	15-35	10-20	20-25	5-10
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Parkay Family	0-6	Very gravelly loam.	SC, SC-SM, GC, GM-GC	A-2, A-1-B	0-5	0-5	50-65	40-50	40-70	30-45	15-35	5-10
	6-20	Very gravelly loam, very gravelly sandy clay loam.	GC	A-2, A-6	0-5	0-5	50-65	40-50	35-45	20-40	25-35	10-15
	20-60	Very gravelly sandy clay loam, very gravelly sandy loam.	GC, GM-GC	A-2, A-1-B	0-5	0-5	40-65	30-50	30-45	15-30	20-30	5-15

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
176*:												
Davtone------	0-20	Loam----------	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-5	90-100	80-100	70-85	40-75	20-35	5-15
	20-45	Clay loam-----	CL	A-6	0	0-5	90-100	80-100	70-95	50-75	25-35	10-20
	45-60	Gravelly loam, loam.	SC, CL	A-6	0	0-10	80-100	70-90	50-90	35-65	25-35	10-15
177*:												
Rogrube gravelly loam--------	0-6	Gravelly loam	SC-SM, SC	A-4	0	0-5	80-90	60-75	55-65	40-50	25-30	5-10
	6-24	Gravelly loam	SC-SM, SC	A-4	0	0-10	80-90	60-75	55-65	40-50	25-30	5-10
	24-60	Cobbly sandy loam.	SC, SC-SM	A-6, A-4, A-2	0	5-25	70-80	60-70	40-65	25-50	20-35	5-15
Rogrube clay loam--------	0-4	Clay loam-----	CL	A-6, A-7	0	0	90-100	90-100	85-95	75-85	35-45	10-20
	4-13	Clay loam-----	CL	A-6, A-7	0	0	90-100	90-100	85-95	75-85	35-45	10-20
	13-24	Clay loam-----	CL, CL-ML	A-4, A-6	0	0	90-100	90-100	80-90	70-85	25-40	5-15
	24-60	Sandy clay loam, loam.	CL, CL-ML	A-4, A-6	0	0	90-100	90-100	80-90	55-75	25-35	5-15
178*:												
Roto---------	0-7	Channery loam	GM-GC, CL-ML, CL	A-4	0-5	0-5	55-80	50-75	45-70	35-55	20-30	5-10
	7-12	Very channery loam.	GM-GC, GC	A-2, A-4	0-5	0-15	40-65	35-60	30-55	20-40	20-30	5-10
	12-25	Very gravelly sandy loam, very gravelly loam, very gravelly fine sandy loam.	GM-GC, GC, SC-SM, SC	A-2, A-4, A-1-B	0-5	0-15	40-70	35-60	30-50	10-40	20-30	NP-10
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rockinchair--	0-4	Loam----------	CL	A-6	0	0-5	90-100	75-100	70-90	60-75	25-40	10-20
	4-39	Loam, clay loam, channery loam.	CL, SC, GC	A-6	0	0-5	70-100	60-100	50-90	35-75	25-40	10-20
	39	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rencot-------	0-3	Very channery loam.	GM-GC	A-2, A-4	0	0-10	50-60	40-50	30-45	25-40	20-30	5-10
	3-12	Very channery loam, very gravelly sandy loam.	GM-GC	A-4, A-2, A-1-B	0	0-10	35-60	30-55	25-50	15-40	20-30	5-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
179---------- Salt flats	0-60	Variable------	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
180*:												
Sedillo Family------	0-2	Very cobbly sandy loam.	SC-SM, SC, GC, GM-GC	A-1, A-2	0-10	30-55	55-65	50-60	35-50	15-30	15-25	NP-10
	2-23	Very cobbly sandy clay loam.	GC	A-2	0-10	30-55	50-65	45-60	30-55	20-35	30-40	10-20
	23-60	Very cobbly sandy loam, extremely cobbly sandy loam.	SC-SM, GM-GC, GC, SC	A-1, A-2	0-10	45-60	40-60	35-50	25-40	10-30	15-25	NP-10
Strych-------	0-14	Gravelly sandy loam.	SC-SM, SC	A-4	0-5	0-15	75-85	65-80	65-80	40-50	20-25	5-10
	14-60	Very gravelly sandy loam, extremely gravelly sandy loam.	GM-GC, GC	A-1, A-2	0-25	0-15	30-55	20-45	15-30	10-20	20-25	5-10
181---------- Sinkson	0-9	Sandy clay loam.	CL	A-6	0	0	90-100	80-100	70-90	50-75	25-40	10-20
	9-60	Sandy clay loam, loam.	CL	A-6	0	0	90-100	80-100	70-90	50-75	25-40	10-20
182*:												
Spicerton----	0-1	Loam----------	CL	A-6	0	0	95-100	90-100	80-95	50-75	25-35	10-15
	1-35	Clay loam-----	CL	A-7	0	0	95-100	90-100	90-100	65-90	40-45	15-20
	35-60	Clay loam-----	CL	A-6	0	0	95-100	90-100	90-100	60-80	35-40	10-20
Poposhia-----	0-4	Loam----------	CL-ML, CL	A-4, A-6	0	0	90-100	75-100	70-95	50-75	20-35	5-15
	4-60	Loam----------	CL-ML, CL	A-6, A-4	0	0	90-100	75-100	70-100	50-80	20-35	5-20
183*:												
Spool--------	0-9	Loamy fine sand.	SM	A-2	0-5	0-5	75-100	75-100	70-90	15-35	---	NP
	9	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Blackhall----	0-3	Fine sandy loam.	SM, SC, SC-SM	A-2, A-4	0	0	90-100	75-100	50-80	25-50	<25	NP-10
	3-13	Sandy loam, fine sandy loam, channery sandy loam.	SM, SC, SC-SM	A-2, A-4	0	0-5	60-100	50-100	35-80	15-50	<25	NP-10
	13	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
184*:												
Strych gravelly sandy loam--	0-9	Gravelly sandy loam.	SC-SM, SC	A-4	0	0-15	75-85	65-80	65-80	40-50	20-25	5-10
	9-60	Very gravelly sandy loam, extremely gravelly sandy loam.	GM-GC, GC	A-1, A-2	0-25	0-15	30-55	20-45	15-30	10-20	20-25	5-10
Strych very cobbly sandy loam--------	0-4	Very cobbly sandy loam.	GM-GC, GC	A-1, A-2	0-10	10-30	50-60	40-50	30-45	15-25	20-25	5-10
	4-60	Very gravelly sandy loam, extremely gravelly sandy loam.	GM-GC, GC	A-1, A-2	0-25	0-25	30-55	20-45	15-30	10-20	20-25	5-10
185*:												
Strych-------	0-8	Gravelly sandy loam.	SC-SM, SC	A-4	0	0-15	75-85	65-80	65-80	40-50	20-25	5-10
	8-26	Very gravelly sandy loam, extremely gravelly sandy loam.	GM-GC, GC	A-1, A-2	0	0-15	30-55	20-45	15-30	10-20	20-25	5-10
	26-60	Extremely cobbly sandy loam.	GP-GM, GM	A-1	0-10	45-70	35-45	25-35	15-25	10-15	<25	NP
Milok--------	0-2	Fine sandy loam.	SC-SM	A-2	0	0	90-100	85-95	70-80	25-35	20-30	5-10
	2-33	Sandy loam----	SC-SM	A-2	0	0	85-100	80-95	55-70	15-30	20-30	5-10
	33-60	Gravelly sandy loam.	SC-SM	A-1, A-2	0	0	75-85	65-75	40-55	15-30	20-30	5-10
186---------- Tally	0-14	Fine sandy loam.	SC, SC-SM, SM	A-4	0	0	85-100	80-100	70-80	40-50	15-25	NP-10
	14-34	Fine sandy loam, sandy loam.	SC, SC-SM, SM	A-4	0	0	85-100	80-100	70-80	40-50	15-25	NP-10
	34-60	Fine sandy loam, sandy loam.	SC, SC-SM, SM	A-4	0	0	85-100	80-100	70-80	40-50	15-25	NP-10
187*:												
Tally--------	0-14	Fine sandy loam.	SC, SC-SM, SM	A-4	0	0	85-100	80-100	70-80	40-50	15-25	NP-10
	14-34	Fine sandy loam.	SC, SC-SM, SM	A-4	0	0	85-100	80-100	70-80	40-50	15-25	NP-10
	34-60	Fine sandy loam.	SC, SC-SM, SM	A-4	0	0	85-100	80-100	70-80	40-50	15-25	NP-10

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
187*:												
Tolman-------	0-10	Very flaggy fine sandy loam.	SM, SC-SM	A-1, A-2	5-10	25-60	75-95	40-60	30-55	15-30	20-25	NP-5
	10-14	Extremely flaggy sandy clay loam.	GC, GP-GC	A-2	5-10	25-40	40-50	30-45	25-35	10-20	25-35	10-15
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
188---------- Teeler	0-3	Gravelly sandy loam.	SC-SM, SC, GM-GC, GC	A-2, A-1	0	0-10	55-85	50-75	30-55	15-30	15-25	NP-10
	3-11	Very gravelly clay loam.	GC, SC	A-2, A-6	0	10-15	45-65	35-60	25-45	15-40	30-40	15-20
	11-17	Very gravelly sandy loam.	GM, GM-GC, SC-SM, SM	A-1, A-2	0-5	5-15	50-75	45-70	30-55	15-30	15-25	NP-10
	17-60	Very cobbly sandy loam.	GM, SM	A-1, A-2	0-5	25-60	55-85	50-80	30-55	15-30	---	NP
189*:												
Thermopolis--	0-17	Gravelly loam	GM-GC, SC-SM, GC, SC	A-4	0	0-10	55-80	50-75	40-60	35-45	25-35	5-10
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Blazon-------	0-7	Loam----------	CL-ML, ML, CL	A-4	0	0-5	90-100	90-100	70-90	65-75	25-35	5-10
	7-13	Channery loam	GC, GM-GC, GM	A-4	0	5-10	55-70	55-70	50-60	35-50	25-35	5-10
	13	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Sinkson------	0-9	Loam----------	CL	A-6	0	0	90-100	80-100	70-90	50-75	25-40	10-20
	9-60	Sandy clay loam, loam, clay loam.	CL	A-6	0	0	90-100	80-100	70-90	50-75	25-40	10-20
190---------- Tridell	0-7	Gravelly loam	GC, GM-GC, SC, CL-ML	A-2, A-4	0	0-5	55-85	50-75	40-75	30-55	20-30	5-10
	7-13	Gravelly loam	GC, GM-GC, SC, CL-ML	A-2, A-4	0	0-10	55-85	50-75	40-70	30-55	20-30	5-10
	13-60	Very gravelly loam, very gravelly sandy loam.	GM-GC, GC	A-1, A-2, A-4	0	5-30	40-70	35-60	25-55	15-45	20-25	5-10
191*:												
Turson-------	0-12	Clay loam-----	CL	A-6	0	0-5	80-100	75-100	70-100	55-90	25-40	10-20
	12-32	Loam, clay loam, silty clay loam.	CL	A-6	0	0-5	80-100	75-100	70-100	55-90	25-40	10-20
	32-60	Very gravelly loamy sand, very gravelly sand.	SP, SP-SM	A-1	0-5	0-50	60-90	50-75	20-50	0-10	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
191*:												
Menbar-------	0-20	Clay loam-----	CL	A-6	0-5	0-5	90-100	90-100	85-95	60-75	35-40	15-20
	20-60	Stratified sandy loam to silty clay loam.	SC, CL	A-6	0-5	0-5	90-100	90-100	60-90	40-75	25-40	10-20
192*:												
Yarts--------	0-7	Fine sandy loam.	SC-SM, CL-ML, SM, ML	A-4	0	0	90-100	85-100	70-85	40-60	20-30	NP-10
	7-60	Fine sandy loam, sandy loam.	SC-SM, CL-ML, SM, ML	A-4	0	0	90-100	85-100	70-85	40-60	20-30	NP-10
Bunkwater----	0-5	Very fine sandy loam.	ML, CL-ML	A-4	0	0	95-100	95-100	85-95	55-65	15-25	NP-10
	5-18	Clay loam, sandy clay loam.	CL, SC	A-6	0	0	95-100	95-100	70-95	35-85	30-40	10-20
	18-36	Loam, clay loam.	CL	A-6	0	0	95-100	90-100	75-95	55-80	25-40	10-20
	36-60	Fine sandy loam, sandy loam.	SM, SC-SM, SC	A-2, A-4	0	0-5	95-100	75-100	50-70	25-50	15-25	NP-10

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
100*:												
Babb	0-12	18-25	1.10-1.35	0.6-2.0	0.17-0.21	6.6-7.8	<2	Low	0.32	5	6	2-5
	12-26	18-25	1.30-1.50	0.6-2.0	0.13-0.16	6.6-7.8	<2	Low	0.24			
	26-60	18-30	1.30-1.50	0.6-2.0	0.13-0.16	7.9-8.4	<2	Low	0.24			
Teeler	0-3	8-20	1.25-1.35	2.0-6.0	0.07-0.09	6.6-7.8	<2	Low	0.15	5	5	1-3
	3-7	27-35	1.25-1.35	0.6-2.0	0.05-0.10	6.6-7.8	<2	Low	0.10			
	7-60	8-20	1.35-1.45	2.0-6.0	0.03-0.06	7.4-8.4	<2	Low	0.10			
101*:												
Badlands	0-60	---	---	---	---	---	>4	---	---	---	---	---
Dollard	0-2	40-50	1.20-1.30	0.06-0.2	0.15-0.16	7.9-8.4	<4	High	0.37	2	4	.5-1
	2-31	35-50	1.30-1.40	0.06-0.2	0.10-0.15	7.9-8.4	4-16	High	0.37			
	31	---	---	---	---	---	---	---	---			
102*:												
Bitton	0-4	12-18	1.35-1.40	2.0-6.0	0.08-0.10	6.6-7.3	<2	Low	0.10	3	7	2-4
	4-28	12-18	1.35-1.40	2.0-6.0	0.08-0.10	7.4-8.4	<2	Low	0.10			
	28-60	12-18	1.40-1.45	2.0-6.0	0.05-0.07	8.5-9.0	<2	Low	0.10			
Tally	0-13	5-18	1.20-1.40	2.0-6.0	0.09-0.14	6.6-7.8	<2	Low	0.24	5	3	1-3
	13-29	5-18	1.20-1.40	2.0-6.0	0.09-0.14	6.6-7.8	<2	Low	0.28			
	29-60	5-18	1.20-1.40	2.0-6.0	0.09-0.14	7.9-9.0	<2	Low	0.28			
103*:												
Blackhall	0-10	5-18	1.35-1.45	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low	0.28	1	3	1-2
	10	---	---	---	---	---	---	---	---			
Kappes	0-2	8-18	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low	0.28	2	3	1-2
	2-28	8-18	1.35-1.45	2.0-6.0	0.12-0.14	7.4-9.0	<8	Low	0.37			
	28	---	---	---	---	---	---	---	---			
Rentsac	0-5	7-18	1.25-1.35	2.0-6.0	0.05-0.11	7.4-7.8	<2	Low	0.10	1	8	.5-2
	5-11	7-15	1.30-1.50	2.0-6.0	0.04-0.06	7.4-8.4	<2	Low	0.05			
	11	---	---	---	---	---	---	---	---			
104*:												
Blackhall	0-16	5-18	1.35-1.45	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low	0.28	1	3	1-2
	16	---	---	---	---	---	---	---	---			
Rentsac	0-10	7-18	1.25-1.35	2.0-6.0	0.05-0.11	7.4-8.4	<2	Low	0.10	1	8	.5-2
	10	---	---	---	---	---	---	---	---			
105*:												
Blazon, thin solum	0-4	15-27	1.15-1.25	0.6-2.0	0.16-0.18	7.9-9.0	2-4	Low	0.32	1	4L	.5-1
	4-7	18-27	1.25-1.35	0.6-2.0	0.19-0.21	7.9-9.0	2-4	Low	0.43			
	7	---	---	---	---	---	---	---	---			
Blazon	0-4	28-35	1.15-1.25	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate	0.37	1	4L	.5-1
	4-15	27-35	1.25-1.35	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate	0.43			
	15	---	---	---	---	---	---	---	---			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
105*:												
Lilsnake	0-3	18-27	1.15-1.20	0.6-2.0	0.14-0.16	7.9-8.4	<2	Low	0.32	1	4L	<.5
	3-13	18-27	1.15-1.20	0.6-2.0	0.10-0.12	7.9-8.4	<2	Low	0.37			
	13	---	---	---	---	---	---	---	---			
106*:												
Blazon	0-1	28-35	1.15-1.25	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate	0.37	1	4L	.5-1
	1-12	28-35	1.25-1.35	0.2-0.6	0.18-0.20	7.9-9.0	2-4	Moderate	0.32			
	12	---	---	---	---	---	---	---	---			
Delphill	0-5	20-27	1.15-1.25	0.6-2.0	0.17-0.20	7.9-9.0	<4	Moderate	0.32	2	4L	.5-1
	5-39	25-35	1.20-1.30	0.6-2.0	0.19-0.21	7.9-9.0	<4	Moderate	0.37			
	39	---	---	---	---	---	---	---	---			
107*:												
Bookcliff	0-5	15-27	1.30-1.35	0.6-6.0	0.10-0.14	6.6-7.8	<2	Low	0.17	5	5	3-5
	5-18	20-30	1.25-1.30	0.6-2.0	0.10-0.18	6.6-7.8	<2	Moderate	0.28			
	18-60	15-30	1.35-1.40	0.6-2.0	0.08-0.15	7.4-8.4	<2	Low	0.28			
Lail	0-2	20-30	1.10-1.25	0.6-2.0	0.15-0.20	6.6-7.3	<2	Low	0.32	5	5	.5-1
	2-8	15-25	1.25-1.40	0.6-2.0	0.11-0.17	6.6-7.3	<2	Low	0.32			
	8-28	35-45	1.10-1.20	0.2-0.6	0.14-0.20	6.6-7.3	<2	High	0.37			
	28-60	30-40	1.10-1.20	0.2-0.6	0.15-0.20	7.4-8.4	<2	Moderate	0.37			
Rabbitex	0-9	18-27	1.20-1.30	0.6-2.0	0.13-0.15	7.9-8.4	<2	Low	0.17	5	6	2-3
	9-60	18-35	1.30-1.40	0.6-2.0	0.15-0.18	7.9-8.4	<2	Moderate	0.32			
108	0-9	10-18	1.25-1.35	2.0-6.0	0.07-0.10	7.4-8.4	<2	Low	0.17	1	7	1-2
Brownsto	9-32	12-20	1.30-1.40	2.0-6.0	0.04-0.07	7.9-8.4	<2	Low	0.10			
	32-60	12-20	1.30-1.40	2.0-6.0	0.04-0.07	7.9-8.4	<2	Low	0.10			
109	0-10	10-18	1.25-1.35	2.0-6.0	0.07-0.10	7.4-8.4	<2	Low	0.17	1	7	1-2
Brownsto	10-60	12-20	1.30-1.40	2.0-6.0	0.04-0.07	7.9-8.4	<2	Low	0.10			
110*:												
Brownsto	0-11	7-15	1.15-1.35	2.0-6.0	0.04-0.06	7.4-8.4	<2	Low	0.05	1	6	1-2
	11-60	15-25	1.30-1.50	2.0-6.0	0.06-0.09	7.9-9.0	<2	Low	0.05			
Luhon	0-6	15-27	1.30-1.40	0.6-2.0	0.12-0.14	7.4-8.4	<2	Low	0.24	5	7	1-2
	6-60	18-27	1.35-1.50	0.6-2.0	0.12-0.14	7.9-9.0	<4	Low	0.28			
111*:												
Brownsto	0-11	10-18	1.25-1.35	2.0-6.0	0.07-0.10	7.4-8.4	<2	Low	0.17	1	7	1-2
	11-60	12-20	1.30-1.40	2.0-6.0	0.04-0.07	7.9-8.4	<2	Low	0.10			
Luhon	0-4	18-30	1.20-1.30	0.6-2.0	0.15-0.20	7.4-8.4	<2	Low	0.28	5	4L	1-2
	4-12	18-30	1.25-1.35	0.6-2.0	0.15-0.20	7.9-9.0	<4	Low	0.32			
	12-60	18-30	1.25-1.35	0.6-2.0	0.15-0.20	7.9-9.0	<4	Low	0.32			
McFadden	0-7	5-18	1.25-1.35	2.0-6.0	0.08-0.11	7.4-8.4	<2	Low	0.17	5	6	.5-1
	7-20	5-18	1.35-1.45	2.0-6.0	0.07-0.10	7.9-9.0	<2	Low	0.20			
	20-60	5-18	1.35-1.45	2.0-6.0	0.07-0.10	7.9-9.0	<2	Low	0.20			
112*:												
Chittum	0-12	15-25	1.10-1.20	0.6-2.0	0.10-0.13	6.6-7.3	<2	Low	0.20	1	8	2-3
	12-19	18-27	1.20-1.30	0.6-2.0	0.09-0.16	6.6-7.3	<2	Low	0.32			
	19	---	---	---	---	---	---	---	---			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
112*:												
Eyre Family-----	0-10	10-18	1.30-1.40	2.0-6.0	0.09-0.11	6.6-7.3	<2	Low-------	0.15	1	8	5-10
	10	---	---	---	---	---	---	----------	----			
113----------	0-11	13-18	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low-------	0.37	5	3	.5-1
Chroder	11-60	12-18	1.35-1.45	2.0-6.0	0.10-0.12	7.9-8.4	<2	Low-------	0.28			
114----------	0-9	18-25	1.25-1.40	0.6-2.0	0.12-0.15	6.1-7.3	<2	Low-------	0.15	5	8	1-3
Condie	9-37	15-20	1.40-1.60	2.0-6.0	0.06-0.10	6.1-7.3	<2	Low-------	0.15			
	37-60	20-35	1.35-1.50	0.2-0.6	0.08-0.13	6.1-7.3	<2	Low-------	0.28			
115----------	0-8	8-18	1.35-1.40	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low-------	0.28	5	3	.5-1
Cowestglen	8-42	10-18	1.35-1.40	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low-------	0.28			
	42-60	5-15	1.35-1.40	2.0-6.0	0.07-0.09	7.4-8.4	<2	Low-------	0.15			
116----------	0-4	0-10	1.35-1.45	6.0-20	0.07-0.09	7.4-7.8	<2	Low-------	0.20	5	2	1-2
Coyet	4-60	0-10	1.35-1.45	6.0-20	0.07-0.09	7.4-7.8	<2	Low-------	0.20			
117*:												
Cryofluvents----	0-18	15-30	1.30-1.40	0.6-2.0	0.10-0.18	7.4-7.8	<2	Moderate	0.32	2	8	1-2
	18-60	5-15	1.50-1.60	2.0-6.0	0.05-0.08	7.4-7.8	<2	Low-------	0.10			
Borofibrists----	0-16	0-5	0-0.50	6.0-20	0.50-0.75	6.6-7.3	<2	Low-------	0.02	3	8	85-95
	16-22	0-5	0-0.50	6.0-20	0.50-0.75	6.6-7.3	<2	Low-------	0.02			
	22-37	15-27	1.25-1.30	0.6-2.0	0.16-0.18	7.4-7.8	<2	Low-------	0.37			
	37-60	5-15	1.50-1.55	6.0-20	0.04-0.06	7.4-7.8	<2	Low-------	0.05			
118----------	0-2	10-18	1.25-1.35	2.0-6.0	0.05-0.08	6.6-7.8	<2	Low-------	0.10	5	8	1-3
Dahlquist	2-17	20-35	1.30-1.40	0.6-2.0	0.08-0.12	6.6-7.8	<2	Low-------	0.15			
	17-60	5-18	1.40-1.50	2.0-6.0	0.05-0.08	7.4-8.4	<2	Low-------	0.05			
119*:												
Delphill--------	0-4	20-27	1.15-1.25	0.6-2.0	0.17-0.20	7.9-9.0	<4	Moderate	0.32	2	4L	.5-1
	4-9	25-35	1.20-1.30	0.6-2.0	0.19-0.21	7.9-9.0	<4	Moderate	0.37			
	9-35	27-35	1.20-1.30	0.2-0.6	0.19-0.21	7.9-9.0	<4	Moderate	0.37			
	35	---	---	---	---	---	---	----------	----			
Iyers-----------	0-1	30-40	1.15-1.25	0.2-0.6	0.16-0.18	7.4-8.4	<2	Moderate	0.37	2	4L	.5-1
	1-6	35-45	1.15-1.30	0.06-0.2	0.14-0.16	7.4-8.4	<2	High------	0.37			
	6-39	35-45	1.20-1.30	0.06-0.2	0.14-0.16	7.4-8.4	<2	High------	0.43			
	39	---	---	---	---	---	---	----------	----			
Poposhia--------	0-2	15-27	1.20-1.30	0.6-2.0	0.14-0.17	7.9-8.4	<4	Moderate	0.32	5	4L	1-2
	2-60	18-27	1.25-1.35	0.6-2.0	0.14-0.20	7.9-9.0	<4	Moderate	0.37			
120*:												
Dollard---------	0-6	40-50	1.20-1.30	0.06-0.2	0.15-0.16	7.9-8.4	<4	High------	0.37	2	4	.5-1
	6-28	35-50	1.30-1.40	0.06-0.2	0.14-0.19	7.9-8.4	4-16	High------	0.37			
	28	---	---	---	---	---	---	----------	----			
Moyerson--------	0-6	40-50	1.05-1.15	0.06-0.2	0.14-0.17	7.4-9.0	2-4	High------	0.32	2	4	1-2
	6-12	35-50	1.25-1.30	0.06-0.2	0.14-0.17	7.9-9.0	2-4	High------	0.32			
	12	---	---	---	---	---	---	----------	----			
121*:												
Eyre Family-----	0-13	10-18	1.40-1.50	2.0-6.0	0.10-0.12	6.6-7.3	<2	Low-------	0.20	1	6	5-10
	13-18	10-18	1.40-1.50	2.0-6.0	0.06-0.08	6.6-7.3	<2	Low-------	0.10			
	18	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
121*:												
Handran Family--	0-12	10-18	1.20-1.30	2.0-6.0	0.05-0.08	6.6-7.8	<2	Low-------	0.10	1	8	2-5
	12-60	10-18	1.30-1.40	2.0-6.0	0.05-0.07	6.6-7.8	<2	Low-------	0.10			
122----------	0-7	10-18	1.20-1.30	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low-------	0.37	5	5	1-3
Flatnose	7-60	6-18	1.20-1.50	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low-------	0.20			
123----------	0-19	18-27	1.20-1.30	0.6-2.0	0.14-0.17	6.6-7.8	<2	Low-------	0.28	5	6	2-4
Garlips	19-41	18-27	1.25-1.35	0.6-2.0	0.13-0.16	7.4-8.4	<2	Low-------	0.32			
	41-60	18-27	1.25-1.35	0.6-2.0	0.13-0.16	7.4-8.4	<2	Low-------	0.32			
124*:												
Gerst----------	0-6	15-27	1.25-1.35	0.6-2.0	0.14-0.17	7.9-8.4	<2	Low-------	0.32	2	4L	.5-1
	6-18	18-27	1.25-1.35	0.6-2.0	0.12-0.15	7.9-8.4	<2	Low-------	0.17			
	18	---	---	---	---	---	---	----------	----			
Strych----------	0-4	8-18	1.35-1.50	2.0-6.0	0.08-0.11	7.4-8.4	<2	Low-------	0.20	2	4	.5-3
	4-60	8-18	1.35-1.50	2.0-6.0	0.05-0.07	7.4-8.4	<2	Low-------	0.05			
125, 126---------	0-6	8-18	1.25-1.35	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low-------	0.32	5	3	1-2
Goslin	6-60	5-18	1.35-1.45	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low-------	0.37			
127*:												
Grieves---------	0-7	8-18	1.25-1.35	2.0-6.0	0.10-0.14	7.4-8.4	<4	Low-------	0.32	5	3	1-2
	7-60	8-18	1.35-1.45	2.0-6.0	0.10-0.14	7.9-8.4	<4	Low-------	0.37			
Tisworth--------	0-3	10-20	1.30-1.40	2.0-6.0	0.05-0.07	>7.8	4-16	Low-------	0.32	5	3	1-2
	3-28	18-25	1.15-1.25	0.2-0.6	0.07-0.11	>8.4	4-16	Low-------	0.37			
	28-60	10-20	1.20-1.30	0.6-2.0	0.05-0.10	>8.4	4-16	Low-------	0.32			
128*:												
Grobutte Family-	0-3	8-18	1.30-1.40	2.0-6.0	0.05-0.10	7.4-7.8	<2	Low-------	0.10	1	8	.5-1
	3-60	8-20	1.30-1.40	2.0-6.0	0.05-0.10	7.4-7.8	<2	Low-------	0.15			
Rentsac---------	0-9	7-15	1.25-1.35	2.0-6.0	0.07-0.10	7.4-7.8	<2	Low-------	0.20	1	6	.5-2
	9-15	7-18	1.30-1.50	2.0-6.0	0.04-0.06	7.4-8.4	<2	Low-------	0.10			
	15	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
129*:												
Hagga----------	0-8	15-27	1.25-1.35	0.6-2.0	0.16-0.18	7.9-8.4	<4	Low-------	0.28	5	8	1-2
	8-60	18-35	1.30-1.40	0.2-0.6	0.12-0.18	7.9-9.0	<4	Moderate	0.37			
Cowestglen------	0-8	8-18	1.35-1.40	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low-------	0.28	5	3	.5-1
	8-60	5-18	1.40-1.50	2.0-6.0	0.10-0.12	7.4-8.4	<2	Low-------	0.17			
130*:												
Hanly Family----	0-20	0-10	1.50-1.70	6.0-20	0.06-0.07	7.4-7.8	<2	Low-------	0.17	5	8	0-.5
	20-60	0-10	1.60-1.70	6.0-20	0.04-0.06	7.4-7.8	<2	Low-------	0.17			
Riverwash-------	0-60	---	---	---0	---	---	---	----------	----	---	---	<.1
131*:												
Haploborolls----	0-18	8-20	1.30-1.40	0.6-6.0	0.06-0.08	6.6-7.8	<2	Low-------	0.15	1	8	1-3
	18-26	8-20	1.40-1.50	0.6-6.0	0.06-0.08	6.6-7.8	<2	Low-------	0.15			
	26	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
131*:												
Torriorthents---	0-4	15-30	1.20-1.30	0.6-2.0	0.05-0.10	7.4-7.8	<2	Low-------	0.20	1	8	0-1
	4-15	15-30	1.25-1.35	0.6-6.0	0.05-0.10	7.4-7.8	<2	Low-------	0.24			
	15	---	---	---	---	---	---	----------	----			
132----------	0-8	10-18	1.20-1.30	2.0-6.0	0.05-0.09	6.6-7.3	<2	Low-------	0.15	3	8	2-5
Harpole	8-30	20-27	1.30-1.40	0.6-2.0	0.06-0.11	6.6-7.3	<2	Low-------	0.20			
	30-60	5-15	1.30-1.40	2.0-6.0	0.04-0.08	6.6-7.8	<2	Low-------	0.10			
133*:												
Harpole Family--	0-13	15-25	1.30-1.45	0.6-2.0	0.07-0.10	6.6-7.3	<2	Low-------	0.17	3	8	1-3
	13-36	27-35	1.40-1.55	0.2-0.6	0.08-0.12	6.6-7.3	<2	Moderate	0.28			
	36-60	20-30	1.35-1.50	0.6-2.0	0.04-0.06	6.6-7.8	<2	Low-------	0.24			
Worfstone	0-5	15-20	1.20-1.40	0.6-2.0	0.06-0.10	6.1-7.3	<2	Low-------	0.15	1	8	1-2
Family---------	5-12	27-35	1.45-1.65	0.2-0.6	0.06-0.10	6.1-7.8	<2	Moderate	0.28			
	12-15	27-35	1.45-1.65	0.2-0.6	0.05-0.08	6.1-7.8	<2	Low-------	0.10			
	15	---	---	---	---	---	---	----------	----			
134----------	0-7	14-18	1.30-1.40	0.6-2.0	0.11-0.13	7.9-9.0	<2	Low-------	0.28	3	3	.5-1
Henrieville	7-60	10-18	1.30-1.50	2.0-6.0	0.10-0.12	7.9-9.0	<2	Low-------	0.28			
135*:												
Henrysfork------	0-3	27-35	1.30-1.40	0.2-0.6	0.14-0.18	>7.3	<4	Moderate	0.32	5	4L	.5-1
	3-50	20-35	1.40-1.50	0.2-0.6	0.14-0.18	7.4-8.4	<4	Moderate	0.32			
	50-60	15-25	1.50-1.60	0.6-2.0	0.06-0.12	7.4-8.4	<4	Low-------	0.20			
Borofibrists----	0-24	0-5	0-0.50	6.0-20	0.50-0.75	6.6-7.3	<2	Low-------	0.02	3	8	85-95
	24-33	15-30	1.25-1.30	0.6-2.0	0.16-0.18	7.4-7.8	<2	Low-------	0.37			
	33-60	5-15	1.50-1.55	6.0-20	0.04-0.06	7.4-7.8	<2	Low-------	0.05			
136----------	0-6	15-22	1.30-1.40	0.6-2.0	0.10-0.17	7.4-7.8	<2	Low-------	0.28	5	5	1-2
Hickey	6-16	25-35	1.25-1.35	0.6-2.0	0.15-0.20	7.4-7.8	<2	Moderate	0.37			
	16-60	20-35	1.25-1.35	0.6-2.0	0.12-0.18	7.4-8.4	<2	Low-------	0.37			
137----------	0-5	10-18	1.40-1.50	2.0-6.0	0.09-0.11	7.4-7.8	<2	Low-------	0.15	5	7	1-2
Hickey	5-9	25-35	1.25-1.35	0.6-2.0	0.15-0.20	7.4-7.8	<2	Moderate	0.37			
	9-26	20-35	1.25-1.35	0.6-2.0	0.12-0.18	7.4-8.4	<2	Low-------	0.37			
	26-60	18-27	1.25-1.35	0.6-2.0	0.11-0.13	7.4-8.4	<2	Low-------	0.17			
138*:												
Hickey loam-----	0-2	15-22	1.30-1.40	0.6-2.0	0.10-0.17	7.4-7.8	<2	Low-------	0.28	5	5	1-2
	2-16	25-35	1.25-1.35	0.6-2.0	0.15-0.20	7.4-7.8	<2	Moderate	0.37			
	16-60	20-35	1.25-1.35	0.6-2.0	0.12-0.18	7.4-8.4	<2	Low-------	0.37			
Hickey gravelly	0-4	20-30	1.25-1.35	0.6-2.0	0.10-0.16	7.4-7.8	<2	Low-------	0.24	5	7	1-2
sandy clay	4-8	25-35	1.25-1.35	0.6-2.0	0.15-0.20	7.4-7.8	<2	Moderate	0.37			
loam----------	8-60	20-35	1.25-1.35	0.6-2.0	0.12-0.18	7.4-8.4	<2	Low-------	0.37			
139*:												
Hoodle Family---	0-5	27-35	1.20-1.35	0.2-0.6	0.14-0.16	6.1-6.5	<2	Moderate	0.20	2	8	3-5
	5-31	27-35	1.30-1.45	0.2-0.6	0.08-0.11	6.6-8.4	<2	Moderate	0.10			
	31-60	27-35	1.30-1.45	0.2-0.6	0.06-0.08	7.9-8.4	<2	Low-------	0.05			
Namon Family,	0-4	10-20	1.45-1.60	2.0-6.0	0.03-0.05	7.9-8.4	<2	Low-------	0.05	5	8	3-5
dry----------	4-13	27-35	1.35-1.50	0.2-0.6	0.07-0.10	7.4-8.4	<2	Low-------	0.05			
	13-50	27-35	1.35-1.50	0.2-0.6	0.07-0.10	7.9-9.0	<2	Moderate	0.20			
	50-60	27-35	1.35-1.50	0.2-0.6	0.12-0.16	7.9-9.0	<2	Moderate	0.20			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
139*:												
Namon Family----	0-1	15-27	1.20-1.35	6.0-20	0.06-0.08	7.4-7.8	<2	Low-------	0.02	5	8	3-5
	1-34	27-35	1.35-1.50	0.2-0.6	0.07-0.10	7.4-9.0	<2	Low-------	0.05			
	34-43	27-35	1.35-1.50	0.2-0.6	0.12-0.16	8.5-9.0	<2	Moderate	0.20			
	43-60	10-15	1.40-1.50	2.0-6.0	0.03-0.05	7.9-9.0	<2	Low-------	0.05			
140----------	0-2	10-20	1.25-1.35	2.0-6.0	0.08-0.10	6.6-7.8	<2	Low-------	0.15	1	3	1-2
Joebas	2-13	20-27	1.25-1.35	0.6-2.0	0.10-0.13	6.6-7.8	<2	Low-------	0.20			
	13-19	18-25	1.30-1.40	0.6-2.0	0.10-0.13	6.6-8.4	<2	Low-------	0.20			
	19	---	---	---	---	---	---	----------	----			
141*:												
Kappes----------	0-8	8-18	1.25-1.35	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low-------	0.37	2	3	1-2
	8-28	8-18	1.35-1.45	2.0-6.0	0.12-0.14	7.4-9.0	<8	Low-------	0.37			
	28	---	---	---	---	---	---	----------	----			
McFadden--------	0-6	8-18	1.25-1.35	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low-------	0.32	5	3	1-2
	6-14	8-18	1.35-1.45	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low-------	0.37			
	14-60	8-18	1.35-1.45	2.0-6.0	0.10-0.14	7.9-9.0	<4	Low-------	0.37			
142----------	0-6	12-18	1.30-1.40	0.6-2.0	0.09-0.12	7.9-8.4	<2	Low-------	0.20	2	4L	.5-1
Lanver	6-17	12-18	1.20-1.30	0.6-2.0	0.11-0.13	7.9-8.4	<2	Low-------	0.17			
	17-38	10-18	1.35-1.45	0.6-2.0	0.08-0.10	7.9-8.4	<2	Low-------	0.10			
	38	---	---	---	---	---	---	----------	----			
143----------	0-7	10-16	1.25-1.35	6.0-20	0.06-0.10	6.6-7.8	<2	Low-------	0.15	3	8	2-5
Ledgefork	7-17	8-16	1.35-1.45	6.0-20	0.04-0.09	6.6-7.8	<2	Low-------	0.20			
	17-60	0-10	1.45-1.55	6.0-20	0.03-0.05	6.6-7.8	<2	Low-------	0.10			
144*:												
Lotex sandy loam	0-2	8-18	1.10-1.20	2.0-6.0	0.12-0.17	6.6-7.3	<2	Low-------	0.20	1	3	2-4
	2-7	8-18	1.15-1.25	2.0-6.0	0.08-0.17	6.6-7.3	<2	Low-------	0.20			
	7	---	---	---	---	---	---	----------	----			
Chittum---------	0-8	15-25	1.10-1.20	0.6-2.0	0.14-0.17	6.6-7.3	<2	Low-------	0.32	1	5	2-3
	8-15	18-27	1.20-1.30	0.6-2.0	0.09-0.16	6.6-7.3	<2	Low-------	0.32			
	15	---	---	---	---	---	---	----------	----			
Lotex stony loam	0-9	8-18	1.10-1.20	2.0-6.0	0.08-0.14	6.6-7.3	<2	Low-------	0.17	1	7	2-4
	9	---	---	---	---	---	---	----------	----			
145----------	0-11	15-27	1.30-1.40	0.6-2.0	0.16-0.20	7.9-8.4	2-4	Low-------	0.28	5	4L	.5-1
Luhon	11-38	20-30	1.35-1.50	0.6-2.0	0.12-0.15	7.9-8.4	2-4	Low-------	0.32			
	38-60	18-30	1.35-1.50	0.6-2.0	0.11-0.13	7.9-9.0	4-8	Low-------	0.24			
146----------	0-3	18-30	1.20-1.30	0.6-2.0	0.15-0.20	7.4-8.4	<2	Low-------	0.28	5	4L	1-2
Luhon	3-12	18-30	1.25-1.35	0.6-2.0	0.15-0.20	7.9-9.0	<4	Low-------	0.32			
	12-60	18-30	1.25-1.35	0.6-2.0	0.15-0.20	7.9-9.0	<4	Low-------	0.32			
147----------	0-6	15-27	1.30-1.40	0.6-2.0	0.12-0.14	7.4-8.4	<2	Low-------	0.24	5	7	1-2
Luhon	6-60	18-27	1.35-1.50	0.6-2.0	0.12-0.14	7.9-9.0	<4	Low-------	0.28			
148*:												
Luhon----------	0-6	10-20	1.35-1.50	2.0-6.0	0.08-0.10	7.4-8.4	<2	Low-------	0.20	5	5	1-2
	6-60	18-27	1.35-1.50	0.6-2.0	0.12-0.14	7.9-9.0	<4	Low-------	0.28			
Brownsto--------	0-6	7-15	1.15-1.35	2.0-6.0	0.10-0.13	7.4-8.4	<2	Low-------	0.15	1	6	1-2
	6-28	5-15	1.25-1.40	2.0-6.0	0.04-0.06	7.4-8.4	<2	Low-------	0.05			
	28-60	15-25	1.30-1.50	2.0-6.0	0.06-0.09	7.9-9.0	<2	Low-------	0.05			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
149*:												
Luhon	0-6	15-27	1.30-1.40	0.6-2.0	0.12-0.14	7.4-8.4	<2	Low	0.24	5	7	1-2
	6-60	18-27	1.35-1.50	0.6-2.0	0.12-0.14	7.9-9.0	<4	Low	0.28			
Evanston	0-10	18-27	1.15-1.25	0.6-2.0	0.15-0.20	6.6-7.8	<2	Low	0.28	5	6	1-3
	10-15	27-35	1.30-1.40	0.6-2.0	0.15-0.20	6.6-7.8	<2	Moderate	0.37			
	15-60	18-27	1.30-1.40	0.6-2.0	0.13-0.17	7.4-8.4	<2	Low	0.32			
150*:												
Luhon	0-5	27-35	1.30-1.40	0.2-0.6	0.16-0.20	7.9-8.4	2-4	Low	0.28	5	4L	.5-1
	5-60	18-30	1.35-1.50	0.6-2.0	0.11-0.13	7.9-9.0	4-8	Low	0.24			
Hickey	0-2	15-22	1.30-1.40	0.6-2.0	0.10-0.17	7.4-7.8	<2	Low	0.28	5	5	1-2
	2-9	25-35	1.25-1.35	0.6-2.0	0.15-0.20	7.4-7.8	<2	Moderate	0.37			
	9-60	20-35	1.25-1.35	0.6-2.0	0.12-0.18	7.4-8.4	<2	Low	0.37			
Heath	0-12	20-27	1.15-1.25	0.6-2.0	0.15-0.17	7.4-7.8	<2	Low	0.28	5	6	2-4
	12-24	35-40	1.25-1.35	0.06-0.2	0.15-0.20	7.4-7.8	<2	Moderate	0.37			
	24-60	27-40	1.25-1.35	0.06-0.2	0.14-0.18	7.9-8.4	<2	Moderate	0.37			
151*:												
Luhon	0-8	18-27	1.20-1.30	0.6-2.0	0.15-0.20	7.4-8.4	<2	Low	0.28	5	4L	1-2
	8-30	18-30	1.25-1.35	0.6-2.0	0.15-0.20	7.9-9.0	<4	Low	0.32			
	30-60	15-20	1.35-1.45	2.0-6.0	0.09-0.12	7.9-9.0	<4	Low	0.28			
Rockinchair	0-11	18-27	1.15-1.25	0.6-2.0	0.15-0.20	7.4-8.4	<2	Moderate	0.32	3	6	1-2
	11-32	18-35	1.25-1.40	0.6-2.0	0.11-0.20	7.9-9.0	<4	Moderate	0.32			
	32	---	---	---	---	---	---	---	---			
152, 153	0-7	8-18	1.25-1.35	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low	0.32	5	3	1-2
McFadden	7-21	8-18	1.35-1.45	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low	0.37			
	21-60	8-18	1.35-1.45	2.0-6.0	0.10-0.14	7.9-9.0	<4	Low	0.37			
154	0-3	5-18	1.25-1.35	2.0-6.0	0.08-0.10	7.4-8.4	<2	Low	0.17	5	6	.5-1
McFadden	3-11	5-18	1.35-1.45	2.0-6.0	0.07-0.10	7.4-8.4	<2	Low	0.20			
	11-60	5-18	1.35-1.45	2.0-6.0	0.07-0.10	7.9-9.0	<2	Low	0.20			
155*:												
McFadden	0-6	5-18	1.25-1.35	2.0-6.0	0.08-0.11	7.9-8.4	<2	Low	0.17	5	6	.5-1
	6-15	5-18	1.35-1.45	2.0-6.0	0.07-0.10	7.4-8.4	<2	Low	0.20			
	15-60	5-18	1.35-1.45	2.0-6.0	0.07-0.10	7.9-9.0	<2	Low	0.20			
Brownsto	0-6	7-15	1.15-1.35	2.0-6.0	0.10-0.13	7.4-8.4	<2	Low	0.15	1	6	1-2
	6-16	5-15	1.25-1.40	2.0-6.0	0.04-0.06	7.4-8.4	<2	Low	0.05			
	16-60	15-25	1.30-1.50	2.0-6.0	0.06-0.09	7.9-9.0	<2	Low	0.05			
Rock outcrop	0-60	---	---	---	---	---	<2	---	---	---	---	---
156*:												
Middlewood	0-2	10-18	1.35-1.40	2.0-6.0	0.10-0.12	7.4-7.8	<2	Low	0.24	1	3	1-2
	2-5	18-27	1.30-1.35	0.2-0.6	0.15-0.17	7.4-7.8	<2	Low	0.32			
	5-18	35-40	1.25-1.30	0.2-0.6	0.16-0.19	7.4-8.4	<2	Moderate	0.28			
	18	---	---	---	---	---	---	---	---			
Boettcher	0-3	10-18	1.40-1.45	2.0-6.0	0.10-0.14	7.9-8.4	<2	Low	0.28	2	3	1-2
	3-18	35-50	1.25-1.30	0.06-0.2	0.14-0.16	7.9-8.4	<2	High	0.32			
	18-30	15-20	1.25-1.35	0.2-0.6	0.14-0.18	7.9-8.4	<2	Moderate	0.28			
	30-35	27-35	1.30-1.35	0.2-0.6	0.11-0.13	7.9-8.4	<2	Moderate	0.10			
	35	---	---	---	---	---	---	---	---			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
157----------	0-2	12-18	1.35-1.45	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low-------	0.28	5	3	.5-1
Milok	2-11	12-18	1.35-1.45	2.0-6.0	0.10-0.13	7.4-8.4	<4	Low-------	0.28			
	11-28	13-18	1.35-1.45	2.0-6.0	0.08-0.14	7.9-8.4	<4	Low-------	0.24			
	28-60	12-18	1.35-1.45	2.0-6.0	0.08-0.11	7.9-8.4	<4	Low-------	0.24			
158----------	0-16	0-5	1.25-1.35	6.0-20	0.05-0.08	6.1-7.8	<2	Low-------	0.10	2	2	1-3
Ouray	16-60	0-5	1.35-1.45	6.0-20	0.04-0.08	6.1-7.8	2-4	Low-------	0.10			
159*:												
Pesmore---------	0-10	18-25	1.20-1.30	0.6-2.0	0.07-0.10	6.6-7.8	<2	Low-------	0.10	1	8	2-5
	10-25	18-25	1.25-1.35	0.6-2.0	0.07-0.10	7.4-8.4	<2	Low-------	0.10			
	25-34	18-25	1.25-1.35	0.6-2.0	0.04-0.07	7.4-9.0	<2	Low-------	0.10			
	34	---	---	---	---	---	---	----------	----			
Garlips---------	0-18	18-27	1.20-1.30	0.6-2.0	0.14-0.17	6.6-7.8	<2	Low-------	0.28	5	6	2-4
	18-34	18-27	1.25-1.35	0.6-2.0	0.13-0.16	7.4-8.4	<2	Low-------	0.32			
	34-60	18-27	1.25-1.35	0.6-2.0	0.13-0.16	7.4-8.4	<2	Low-------	0.32			
160----------	0-60	---	---	---	---	---	---	----------	----	---	---	---
Pits												
161----------	0-2	15-27	1.20-1.30	0.6-2.0	0.14-0.17	7.9-8.4	<2	Moderate	0.32	5	4L	1-2
Poposhia	2-60	18-27	1.25-1.35	0.6-2.0	0.14-0.20	7.9-9.0	<4	Moderate	0.37			
162----------	0-5	15-27	1.20-1.30	0.6-2.0	0.14-0.17	7.9-8.4	<2	Moderate	0.32	5	4L	1-2
Poposhia	5-60	27-35	1.25-1.35	0.2-0.6	0.14-0.20	7.9-9.0	<4	Moderate	0.37			
163----------	0-3	15-27	1.20-1.30	0.6-2.0	0.14-0.17	7.4-8.4	<2	Moderate	0.32	5	4L	1-2
Poposhia	3-27	18-27	1.25-1.35	0.6-2.0	0.14-0.20	7.9-9.0	<4	Moderate	0.37			
	27-60	27-35	1.25-1.35	0.2-0.6	0.14-0.20	7.9-9.0	<4	Moderate	0.37			
164, 165----------	0-6	27-35	1.15-1.25	0.6-2.0	0.16-0.20	7.9-8.4	<2	Moderate	0.32	5	4L	1-2
Poposhia	6-60	27-35	1.25-1.35	0.2-0.6	0.14-0.20	7.9-9.0	<4	Moderate	0.37			
166----------	0-4	7-18	1.25-1.35	2.0-6.0	0.15-0.17	7.9-9.0	2-4	Low-------	0.32	5	3	1-2
Poposhia, strongly alkaline	4-60	20-35	1.25-1.35	0.6-2.0	0.13-0.15	7.9-9.0	4-8	Moderate	0.37			
167*:												
Recklor---------	0-3	20-27	1.10-1.20	0.6-2.0	0.12-0.15	7.4-7.8	<2	Low-------	0.17	3	8	2-3
	3-22	35-40	1.30-1.40	0.2-0.6	0.09-0.13	7.4-7.8	<2	Moderate	0.20			
	22-60	20-35	1.30-1.40	0.6-2.0	0.08-0.10	7.4-8.4	<2	Moderate	0.20			
Amsden----------	0-5	15-27	1.35-1.40	0.6-2.0	0.12-0.15	6.6-7.8	<2	Low-------	0.24	5	8	2-5
	5-15	27-35	1.30-1.35	0.2-0.6	0.14-0.19	6.6-7.8	<2	Moderate	0.24			
	15-40	27-35	1.30-1.35	0.2-0.6	0.14-0.19	6.6-7.8	<2	Moderate	0.43			
	40-60	27-35	1.30-1.35	0.2-0.6	0.14-0.19	7.4-8.4	<2	Moderate	0.43			
Davtone---------	0-16	15-27	1.10-1.20	0.6-2.0	0.16-0.18	7.4-7.8	<2	Low-------	0.28	5	5	2-5
	16-42	27-35	1.10-1.20	0.6-2.0	0.16-0.20	7.4-7.8	<2	Moderate	0.32			
	42-60	20-30	1.20-1.30	0.6-2.0	0.15-0.17	7.4-7.8	<2	Moderate	0.32			
168*:												
Redcreek--------	0-6	5-15	1.35-1.45	2.0-6.0	0.09-0.12	7.4-8.4	<2	Low-------	0.24	1	5	.5-1
	6-16	5-15	1.40-1.50	2.0-6.0	0.09-0.12	7.4-8.4	<2	Low-------	0.24			
	16	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
168*:												
Blackhall-------	0-4	5-18	1.30-1.40	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low-------	0.28	1	3	1-2
	4-16	5-18	1.30-1.40	2.0-6.0	0.08-0.13	7.4-8.4	<2	Low-------	0.28			
	16	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	---	----------	----	---	---	---
169*:												
Rentsac very channery sandy loam----------	0-5	7-18	1.25-1.35	2.0-6.0	0.05-0.11	7.4-7.8	<2	Low-------	0.10	1	8	.5-2
	5-10	7-15	1.30-1.50	2.0-6.0	0.04-0.06	7.4-8.4	<2	Low-------	0.05			
	10	---	---	---	---	---	---	----------	----			
Rentsac channery sandy loam-----	0-6	7-15	1.25-1.35	2.0-6.0	0.07-0.10	7.4-7.8	<2	Low-------	0.20	1	6	.5-2
	6-11	7-15	1.30-1.50	2.0-6.0	0.04-0.06	7.4-8.4	<2	Low-------	0.05			
	11	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
170----------	0-7	40-50	1.10-1.20	0.06-0.2	0.11-0.13	7.9-9.0	4-16	High------	0.32	5	4L	1-2
Rhoamett	7-60	35-50	1.10-1.25	0.06-0.2	0.11-0.13	7.9-9.0	4-16	High------	0.28			
171*:												
Rockinchair-----	0-8	18-25	1.15-1.25	0.6-2.0	0.11-0.17	7.4-8.4	<2	Low-------	0.17	3	8	1-3
	8-14	18-25	1.25-1.40	0.6-2.0	0.11-0.15	7.9-8.4	<4	Low-------	0.17			
	14-23	20-30	1.25-1.40	0.6-2.0	0.16-0.20	7.9-9.0	<4	Moderate	0.32			
	23	---	---	---	---	---	---	----------	----			
Luhon-----------	0-4	15-27	1.30-1.40	0.6-2.0	0.16-0.20	7.9-8.4	2-4	Low-------	0.28	5	4L	.5-1
	4-14	20-30	1.35-1.50	0.6-2.0	0.12-0.15	7.9-8.4	2-4	Low-------	0.32			
	14-60	18-30	1.35-1.50	0.6-2.0	0.11-0.13	7.9-9.0	4-8	Low-------	0.24			
Rentsac---------	0-11	7-18	1.25-1.35	2.0-6.0	0.05-0.11	7.4-8.4	<2	Low-------	0.10	1	8	.5-2
	11	---	---	---	---	---	---	----------	----			
172*:												
Rock outcrop----	0-60	---	---	---	---	---	---	----------	----	---	---	---
Blazon----------	0-13	28-35	1.15-1.25	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate	0.37	1	4L	.5-1
	13	---	---	---	---	---	---	----------	----			
173*:												
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
Coyet loamy sand----------	0-5	0-10	1.35-1.45	6.0-20	0.07-0.09	7.4-7.8	<2	Low-------	0.20	5	2	1-2
	5-60	0-10	1.35-1.45	6.0-20	0.07-0.09	7.4-7.8	<2	Low-------	0.20			
Coyet loamy fine sand------	0-3	0-10	1.35-1.45	6.0-20	0.07-0.09	7.4-7.8	<2	Low-------	0.20	5	2	1-2
	3-60	0-10	1.35-1.45	6.0-20	0.07-0.09	7.4-7.8	<2	Low-------	0.20			
174----------	0-2	15-22	1.30-1.40	0.6-2.0	0.14-0.17	7.4-7.8	<2	Low-------	0.28	5	5	1-2
Rock River	2-14	18-27	1.30-1.45	0.6-2.0	0.13-0.17	7.4-7.8	<2	Low-------	0.32			
	14-60	10-22	1.30-1.45	0.6-2.0	0.11-0.15	7.4-8.4	<4	Low-------	0.24			
175*:												
Rock River------	0-3	10-20	1.30-1.40	2.0-6.0	0.11-0.14	7.4-7.8	<2	Low-------	0.24	5	3	1-2
	3-15	18-27	1.35-1.45	0.6-2.0	0.13-0.16	7.4-7.8	<2	Low-------	0.32			
	15-40	12-20	1.35-1.45	2.0-6.0	0.10-0.13	7.4-8.4	<4	Low-------	0.24			
	40-60	8-18	1.35-1.45	2.0-6.0	0.08-0.11	7.9-8.4	<4	Low-------	0.20			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
175*:												
Brownsto--------	0-6	7-15	1.15-1.35	2.0-6.0	0.10-0.13	7.4-8.4	<2	Low-------	0.15	1	6	1-2
	6-60	15-25	1.30-1.50	2.0-6.0	0.06-0.09	7.9-9.0	<2	Low-------	0.05			
176*:												
Rogert----------	0-13	7-13	1.30-1.45	6.0-20	0.04-0.08	6.6-7.3	<2	Low-------	0.10	1	8	2-3
	13	---	---	---	---	---	---	----------	----			
Parkay Family---	0-6	15-20	1.20-1.35	0.6-2.0	0.05-0.09	7.4-7.8	<2	Low-------	0.10	5	8	2-4
	6-20	18-27	1.20-1.35	0.6-2.0	0.06-0.09	7.4-7.8	<2	Low-------	0.10			
	20-60	15-25	1.30-1.40	0.6-2.0	0.05-0.08	7.4-7.8	<2	Low-------	0.17			
Davtone---------	0-20	15-27	1.10-1.20	0.6-2.0	0.16-0.18	7.4-7.8	<2	Low-------	0.28	5	5	2-5
	20-45	27-35	1.10-1.20	0.6-2.0	0.16-0.20	7.4-7.8	<2	Moderate	0.32			
	45-60	18-27	1.20-1.30	0.6-2.0	0.13-0.15	7.4-7.8	<2	Moderate	0.32			
177*:												
Rogrube gravelly loam--	0-6	15-25	1.20-1.30	0.6-2.0	0.10-0.13	7.4-7.8	<4	Low-------	0.15	5	5	.5-1
	6-24	18-27	1.20-1.30	0.6-2.0	0.10-0.13	7.4-8.4	<4	Low-------	0.15			
	24-60	12-25	1.30-1.40	0.6-2.0	0.09-0.12	7.4-8.4	<4	Low-------	0.15			
Rogrube clay loam-----------	0-4	27-35	1.20-1.30	0.2-0.6	0.15-0.17	7.4-8.4	<4	Moderate	0.37	5	4L	.5-1
	4-13	27-35	1.20-1.30	0.2-0.6	0.15-0.17	7.4-8.4	<4	Low-------	0.37			
	13-24	18-35	1.20-1.30	0.6-2.0	0.13-0.15	7.4-8.4	<4	Low-------	0.37			
	24-60	18-30	1.30-1.40	0.6-2.0	0.13-0.15	7.4-8.4	<4	Low-------	0.37			
178*:												
Roto------------	0-7	10-25	1.15-1.25	0.6-2.0	0.12-0.15	7.9-8.4	<2	Low-------	0.20	2	8	.5-2
	7-12	10-25	1.25-1.40	0.6-2.0	0.08-0.11	7.9-8.4	<2	Low-------	0.10			
	12-25	10-25	1.25-1.40	0.6-2.0	0.06-0.10	7.9-8.4	<4	Low-------	0.20			
	25	---	---	---	---	---	---	----------	----			
Rockinchair-----	0-4	18-27	1.15-1.25	0.6-2.0	0.15-0.20	7.4-8.4	<2	Moderate	0.32	3	6	1-2
	4-39	18-35	1.25-1.40	0.6-2.0	0.11-0.20	7.9-9.0	<4	Moderate	0.32			
	39	---	---	---	---	---	---	----------	----			
Rencot----------	0-3	15-27	1.15-1.35	0.6-2.0	0.09-0.11	7.4-8.4	<2	Low-------	0.15	1	7	1-3
	3-12	15-27	1.30-1.50	0.6-2.0	0.08-0.10	7.9-8.4	<2	Low-------	0.15			
	12	---	---	---	---	---	---	----------	----			
179-------------- Salt flats	0-60	---	---	---	---	---	>16	----------	----	---	---	---
180*:												
Sedillo Family--	0-2	8-17	1.30-1.40	2.0-6.0	0.03-0.06	7.4-8.4	<2	Low-------	0.10	1	8	1-2
	2-23	20-35	1.30-1.45	0.6-2.0	0.07-0.10	7.9-9.0	<2	Low-------	0.10			
	23-60	8-17	1.40-1.50	2.0-6.0	0.03-0.06	7.9-9.0	<2	Low-------	0.05			
Strych----------	0-14	8-18	1.35-1.50	2.0-6.0	0.08-0.11	7.4-8.4	<2	Low-------	0.20	2	4	.5-3
	14-60	8-18	1.35-1.50	2.0-6.0	0.05-0.07	7.4-8.4	<2	Low-------	0.05			
181-------------- Sinkson	0-9	18-35	1.25-1.35	0.6-2.0	0.15-0.20	7.9-8.4	<4	Moderate	0.32	5	5	1-2
	9-60	18-35	1.30-1.40	0.6-2.0	0.15-0.20	7.9-8.4	<4	Moderate	0.32			
182*:												
Spicerton-------	0-1	20-27	1.15-1.25	0.2-0.6	0.14-0.18	7.9-9.0	2-18	Moderate	0.37	5	4L	1-2
	1-35	35-40	1.25-1.35	0.2-0.6	0.12-0.15	>8.4	8-16	Moderate	0.32			
	35-60	27-35	1.25-1.35	0.2-0.6	0.12-0.15	>7.8	2-16	Moderate	0.32			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
182*:												
Poposhia	0-4	15-27	1.20-1.30	0.6-2.0	0.16-0.18	7.9-9.0	2-4	Moderate	0.32	5	4L	1-2
	4-60	18-27	1.25-1.35	0.6-2.0	0.13-0.15	7.9-9.0	4-8	Moderate	0.37			
183*:												
Spool	0-9	0-10	1.35-1.45	6.0-20	0.06-0.09	6.6-7.8	<2	Low	0.20	1	2	.5-1
	9	---	---	---	---	---	---	---	---			
Rock outcrop	0-60	---	---	---	---	---	<2	---	---	---	---	---
Blackhall	0-3	5-18	1.30-1.40	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low	0.28	1	3	1-2
	3-13	5-18	1.30-1.40	2.0-6.0	0.08-0.13	7.4-8.4	<2	Low	0.28			
	13	---	---	---	---	---	---	---	---			
184*:												
Strych gravelly sandy loam	0-9	8-18	1.35-1.50	2.0-6.0	0.08-0.11	7.4-8.4	<2	Low	0.20	2	4	.5-3
	9-60	8-18	1.35-1.50	2.0-6.0	0.05-0.07	7.4-8.4	<2	Low	0.05			
Strych very cobbly sandy loam	0-4	10-15	1.30-1.40	2.0-6.0	0.05-0.07	7.4-8.4	<2	Low	0.05	2	8	.5-2
	4-60	8-18	1.35-1.50	2.0-6.0	0.05-0.07	7.4-8.4	<2	Low	0.05			
185*:												
Strych	0-8	8-18	1.35-1.50	2.0-6.0	0.08-0.11	7.4-8.4	<2	Low	0.20	2	4	.5-3
	8-26	8-18	1.35-1.50	2.0-6.0	0.05-0.07	7.4-8.4	<2	Low	0.05			
	26-60	5-10	1.35-1.50	2.0-6.0	0.03-0.06	7.4-8.4	<2	Low	0.05			
Milok	0-2	12-18	1.35-1.45	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low	0.32	5	3	.5-1
	2-33	12-18	1.35-1.45	2.0-6.0	0.10-0.13	7.4-8.4	<4	Low	0.28			
	33-60	12-18	1.35-1.45	2.0-6.0	0.08-0.11	7.9-8.4	<4	Low	0.24			
186	0-14	5-18	1.20-1.40	2.0-6.0	0.09-0.14	6.6-7.8	<2	Low	0.24	5	3	1-3
Tally	14-34	5-18	1.20-1.40	2.0-6.0	0.09-0.14	6.6-7.8	<2	Low	0.28			
	34-60	5-18	1.20-1.40	2.0-6.0	0.09-0.14	7.9-9.0	<2	Low	0.28			
187*:												
Tally	0-14	5-18	1.20-1.40	2.0-6.0	0.09-0.14	6.6-7.8	<2	Low	0.24	5	3	1-3
	14-34	5-18	1.20-1.40	2.0-6.0	0.09-0.14	6.6-7.8	<2	Low	0.28			
	34-60	5-18	1.20-1.40	2.0-6.0	0.09-0.14	7.9-9.0	<2	Low	0.28			
Tolman	0-10	10-20	1.30-1.45	2.0-6.0	0.05-0.10	6.6-7.3	<2	Low	0.10	1	8	2-4
	10-14	20-30	1.25-1.35	0.6-2.0	0.07-0.13	6.6-7.3	<2	Low	0.02			
	14	---	---	---	---	---	---	---	---			
188	0-3	8-20	1.25-1.35	2.0-6.0	0.07-0.09	6.6-7.8	<2	Low	0.15	5	5	1-3
Teeler	3-11	27-35	1.25-1.35	0.6-2.0	0.05-0.10	6.6-7.8	<2	Low	0.10			
	11-17	8-20	1.35-1.45	2.0-6.0	0.03-0.06	7.4-8.4	<2	Low	0.10			
	17-60	8-18	1.35-1.45	2.0-6.0	0.03-0.06	7.4-8.4	<2	Low	0.05			
189*:												
Thermopolis	0-17	18-27	1.15-1.25	0.6-2.0	0.09-0.13	7.4-8.4	<2	Low	0.20	1	8	1-2
	17	---	---	---	---	---	---	---	---			
Blazon	0-7	15-27	1.15-1.25	0.6-2.0	0.16-0.18	7.9-9.0	2-4	Low	0.32	1	4L	.5-1
	7-13	18-27	1.25-1.35	0.6-2.0	0.19-0.21	7.9-9.0	2-4	Low	0.43			
	13	---	---	---	---	---	---	---	---			
Sinkson	0-9	18-27	1.25-1.35	0.6-2.0	0.15-0.20	7.9-8.4	<4	Moderate	0.32	5	5	1-2
	9-60	18-35	1.30-1.40	0.6-2.0	0.15-0.20	7.9-8.4	<4	Moderate	0.32			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
190----------	0-7	15-20	1.25-1.35	2.0-6.0	0.11-0.14	7.4-7.8	<2	Low-------	0.17	3	8	1-3
Tridell	7-13	15-20	1.30-1.40	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low-------	0.20			
	13-60	10-18	1.35-1.45	2.0-6.0	0.05-0.08	7.9-8.4	<2	Low-------	0.15			
191*:												
Turson----------	0-12	27-35	1.25-1.35	0.6-2.0	0.15-0.20	7.4-8.4	<2	Low-------	0.32	5	4L	1-5
	12-32	18-35	1.30-1.40	0.6-2.0	0.15-0.20	7.4-8.4	<2	Low-------	0.37			
	38-60	0-10	1.45-1.55	>6.0	0.03-0.05	7.4-8.4	<2	Low-------	0.10			
Menbar----------	0-20	27-35	1.30-1.40	0.2-0.6	0.17-0.20	7.4-8.4	<2	Moderate	0.32	5	6	2-3
	20-60	18-35	1.35-1.45	0.6-2.0	0.12-0.20	7.4-8.4	<2	Moderate	0.32			
192*:												
Yarts----------	0-7	8-18	1.35-1.40	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low-------	0.20	5	3	<2
	7-60	8-18	1.35-1.40	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low-------	0.20			
Bunkwater-------	0-5	8-20	1.30-1.40	2.0-6.0	0.11-0.13	>7.8	<8	Low-------	0.32	5	3	.5-1
	5-18	20-35	1.35-1.45	0.2-0.6	0.12-0.16	>8.4	<8	Moderate	0.32			
	18-36	18-35	1.35-1.45	0.6-2.0	0.12-0.16	>7.8	<8	Moderate	0.32			
	36-60	8-20	1.40-1.50	2.0-6.0	0.09-0.12	>7.8	<8	Low-------	0.24			

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
100*:												
Babb	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
Teeler	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
101*:												
Badlands	D	None	---	---	>6.0	---	---	0-3	Soft	---	---	---
Dollard	C	None	---	---	>6.0	---	---	20-40	Soft	Moderate	High	Moderate.
102*:												
Bitton	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	High.
Tally	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
103*:												
Blackhall	D	None	---	---	>6.0	---	---	6-20	Soft	Low	High	Low.
Kappes	B	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
Rentsac	D	None	---	---	>6.0	---	---	4-20	Hard	Low	High	Low.
104*:												
Blackhall	D	None	---	---	>6.0	---	---	6-20	Soft	Low	High	Low.
Rentsac	D	None	---	---	>6.0	---	---	10-20	Hard	Low	High	Low.
105*:												
Blazon, thin solum	D	None	---	---	>6.0	---	---	4-10	Soft	Low	High	Low.
Blazon	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Low.
Lilsnake	C	None	---	---	>6.0	---	---	10-20	Hard	Low	High	Low.
106*:												
Blazon	D	None	---	---	>6.0	---	---	8-20	Soft	Low	High	Low.
Delphill	C	None	---	---	>6.0	---	---	20-40	Soft	Moderate	High	Moderate.
107*:												
Bookcliff	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Moderate.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
107*:												
Lail	C	None	---	---	>6.0	---	---	>60	---	Moderate	High	Moderate.
Rabbitex	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
108, 109--Brownsto	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
110*:												
Brownsto	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Luhon	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
111*:												
Brownsto	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Luhon	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
McFadden	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
112*:												
Chittum	D	None	---	---	>6.0	---	---	10-20	Hard	Moderate	High	Low.
Eyre Family	D	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Moderate	Moderate.
113--Chroder	B	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
114--Condie	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
115--Cowestglen	B	Rare	---	---	3.0-5.0	Apparent	Apr-Jun	>60	---	Moderate	High	Moderate.
116--Coyet	A	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
117*:												
Cryofluvents	C	Rare	---	---	2.0-3.0	Apparent	Mar-Aug	>60	---	Moderate	High	Low.
Borofibrists	D	Occasional	Brief	Jan-Dec	0.5-1.0	Apparent	Jan-Dec	>60	---	Moderate	High	Low.
118--Dahlquist	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
119*:												
Delphill	C	None	---	---	>6.0	---	---	20-40	Soft	Moderate	High	Moderate.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
119*:												
Iyers	D	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
Poposhia	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
120*:												
Dollard	C	None	---	---	>6.0	---	---	20-40	Soft	Moderate	High	Moderate.
Moyerson	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Low.
121*:												
Eyre Family	D	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Moderate	Moderate.
Handran Family	A	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
122 Flatnose	B	Rare	---	---	3.0-5.0	Apparent	Mar-Sep	>60	---	Low	High	Moderate.
123 Garlips	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
124*:												
Gerst	D	None	---	---	>6.0	---	---	10-20	Soft	Moderate	High	Moderate.
Strych	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Moderate.
125, 126 Goslin	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
127*:												
Grieves	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Tisworth	C	None	---	---	>6.0	---	---	>60	---	Low	High	High.
128*:												
Grobutte Family	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Rentsac	D	None	---	---	>6.0	---	---	5-20	Hard	Low	High	Low.
Rock outcrop	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
129*:												
Hagga	D	Rare	---	---	0-1.0	Apparent	Apr-Jun	>60	---	High	High	Low.
Cowestglen	B	Rare	---	---	3.0-5.0	Apparent	Apr-Jun	>60	---	Moderate	High	Moderate.
130*:												
Hanly Family	A	Occasional	Brief	Mar-Sep	2.0-5.0	Apparent	Mar-Sep	>60	---	Moderate	High	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
130*: Riverwash	D	Frequent	Long to very long.	Jan-Dec	0-2.0	Apparent	Jan-Dec	>60	---	---	---	---
131*: Haploborolls	B	None	---	---	>6.0	---	---	15-60	Hard	Low	High	Low.
Torriorthents	D	None	---	---	>6.0	---	---	10-60	Soft	Low	High	Low.
132--- Harpole	A	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
133*: Harpole Family	C	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Worfstone Family-	D	None	---	---	>6.0	---	---	10-20	Hard	Low	High	Low.
134--- Henrieville	B	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
135*: Henrysfork	C	Rare	---	---	2.0-5.0	Apparent	Apr-Sep	>60	---	High	High	Low.
Borofibrists	D	Rare	---	---	0.5-1.0	Apparent	Jan-Dec	>60	---	Moderate	High	Low.
136, 137--- Hickey	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
138*: Hickey	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
139*: Hoodle Family	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Moderate.
Namon Family, dry	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Moderate.
Namon Family	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Moderate.
140--- Joebas	D	None	---	---	>6.0	---	---	10-20	Hard	Low	Low	Low.
141*: Kappes	B	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
McFadden	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
142---------- Lanver	C	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	High-----	Moderate.
143---------- Ledgefork	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
144*:												
Lotex sandy loam-	D	None--------	---	---	>6.0	---	---	4-10	Hard	Low------	High-----	Low.
Chittum----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	High-----	Low.
Lotex stony loam-	D	None--------	---	---	>6.0	---	---	4-20	Hard	Low------	High-----	Low.
145, 146, 147----- Luhon	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
148*:												
Luhon----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Brownsto---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
149*:												
Luhon----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Evanston---------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
150*:												
Luhon----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Hickey----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Heath----------	C	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
151*:												
Luhon----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Rockinchair------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Moderate.
152, 153, 154----- McFadden	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
155*:												
McFadden---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Brownsto---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
156*:												
Middlewood	B	None	---	---	>6.0	---	---	10-20	Hard	Low	High	Moderate.
Boettcher	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Moderate.
157--- Milok	B	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
158--- Ouray	A	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
159*:												
Pesmore	C	None	---	---	>6.0	---	---	20-40	Hard	Low	High	Low.
Garlips	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
160: Pits.												
161, 162, 163, 164, 165--- Poposhia	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
166--- Poposhia, strongly alkaline	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
167*:												
Recklor	C	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
Amsden	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Davtone	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
168*:												
Redcreek	C	None	---	---	>6.0	---	---	4-20	Hard	Low	High	Low.
Blackhall	D	None	---	---	>6.0	---	---	8-20	Soft	Low	High	Low.
Rock outcrop	D	None	---	---	>6.0	---	---	0	Soft	---	---	---
169*:												
Rentsac	D	None	---	---	>6.0	---	---	10-20	Hard	Low	High	Low.
Rock outcrop	D	None	---	---	>6.0	---	---	0	Hard	---	---	---

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
170---------- Rhoamett	C	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
171*:												
Rockinchair------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Moderate.
Luhon----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Rentsac----------	D	None--------	---	---	>6.0	---	---	5-20	Hard	Low------	High-----	Low.
172*:												
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Soft	---	---	---
Blazon----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
173*:												
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---
Coyet----------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
174---------- Rock River	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
175*:												
Rock River-------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Brownsto---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
176*:												
Rogert----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Low------	Moderate	Low.
Parkay Family----	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Davtone----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
177*:												
Rogrube----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
178*:												
Roto----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Low------	High-----	Low.
Rockinchair------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Moderate.
Rencot----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	High-----	Low.
179---------- Salt flats	D	None-rare			0-1.0	Apparent	May-Sep	>60	---	High-----	High-----	High.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
180*:												
Sedillo Family---	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Moderate.
Strych----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Moderate.
181--------------- Sinkson	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Moderate.
182*:												
Spicerton--------	D	Rare--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
Poposhia---------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
183*:												
Spool------------	D	None--------	---	---	>6.0	---	---	4-20	Hard	Low------	High-----	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---
Blackhall--------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
184*:												
Strych----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Moderate.
185*:												
Strych----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Moderate.
Milok------------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
186--------------- Tally	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
187*:												
Tally------------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Tolman-----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Moderate	Low.
188--------------- Teeler	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
189*:												
Thermopolis------	D	None--------	---	---	>6.0	---	---	8-20	Soft	Low------	High-----	High.
Blazon-----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
Sinkson----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Moderate.
190--------------- Tridell	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
191*:												
Turson	C	Occasional	Brief	Mar-Jun	3.0-5.0	Apparent	Mar-Sep	>60	---	Moderate	High	Low.
Menbar	C	Rare	---	---	3.0-5.0	Apparent	Mar-Jul	>60	---	High	High	Low.
192*:												
Yarts	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Moderate.
Bunkwater	C	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Amsden	Fine-loamy, mixed Argic Cryoborolls
Babb	Fine-loamy, mixed Typic Cryoborolls
Bitton	Loamy-skeletal, mixed Typic Haploborolls
Blackhall	Loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents
Blazon	Loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents
Boettcher	Fine, montmorillonitic Borollic Haplargids
Bookcliff	Fine-loamy, mixed Typic Argiborolls
Borofibrists	Terric Borofibrists
Brownsto	Loamy-skeletal, mixed Borollic Calciorthids
Bunkwater	Fine-loamy, mixed, mesic Ustollic Natrargids
Chittum	Loamy, mixed Argic Lithic Cryoborolls
Chroder	Coarse-loamy, mixed, mesic Typic Calciorthids
Condie	Loamy-skeletal, mixed Mollic Cryoboralfs
Cowestglen	Coarse-loamy, mixed (calcareous), frigid Ustic Torrifluvents
Coyet	Mixed, frigid Ustic Torripsamments
Cryofluvents	Aquic Cryofluvents
Dahlquist	Loamy-skeletal, mixed Borollic Haplargids
Davtone	Fine-loamy, mixed Argic Pachic Cryoborolls
Delphill	Fine-loamy, mixed (calcareous), frigid Ustic Torriorthents
Dollard	Fine, montmorillonitic (calcareous), frigid Ustic Torriorthents
Evanston	Fine-loamy, mixed Aridic Argiborolls
Eyre Family	Loamy-skeletal, mixed Lithic Cryoborolls
Flatnose	Coarse-loamy, mixed (calcareous), mesic Typic Ustifluvents
Garlips	Fine-loamy, mixed Pachic Haploborolls
Gerst	Loamy, mixed (calcareous), mesic, shallow Ustic Torriorthents
Goslin	Coarse-loamy, mixed (calcareous), frigid Ustic Torriorthents
Grieves	Coarse-loamy, mixed (calcareous), frigid Ustic Torriorthents
Grobutte Family	Loamy-skeletal, mixed (calcareous), frigid Ustic Torriorthents
Hagga	Fine-loamy, mixed (calcareous), frigid Typic Fluvaquents
Handran Family	Loamy-skeletal, mixed Typic Cryoborolls
Hanly Family	Sandy, mixed, frigid Ustic Torrifluvents
Haploborolls	Haploborolls
Harpole	Loamy-skeletal, mixed Typic Argiborolls
Harpole Family	Loamy-skeletal, mixed Typic Argiborolls
Heath	Fine, montmorillonitic Argic Cryoborolls
Henrieville	Coarse-loamy, mixed (calcareous), mesic Ustic Torriorthents
Henrysfork	Fine-loamy, carbonatic Aquic Cryorthents
Hickey	Fine-loamy, mixed Borollic Haplargids
Hoodle Family	Loamy-skeletal, mixed Argic Cryoborolls
Iyers	Fine, montmorillonitic (calcareous) Typic Cryorthents
Joebas	Loamy, mixed Borollic Lithic Haplargids
Kappes	Coarse-loamy, mixed Borollic Calciorthids
Lail	Fine, montmorillonitic Typic Cryoboralfs
Lanver	Loamy-skeletal, mixed, mesic Ustollic Calciorthids
Ledgefork	Sandy-skeletal, mixed Typic Cryoborolls
Lilsnake	Loamy, mixed, frigid Lithic Calciorthids
Lotex	Loamy, mixed Lithic Cryoborolls
Luhon	Fine-loamy, mixed Borollic Calciorthids
McFadden	Coarse-loamy, mixed Borollic Calciorthids
Menbar	Fine-loamy, mixed Cumulic Cryoborolls
Middlewood	Clayey, montmorillonitic Borollic Lithic Haplargids
Milok	Coarse-loamy, mixed, mesic Ustollic Calciorthids
Moyerson	Clayey, montmorillonitic (calcareous), frigid, shallow Ustic Torriorthents
Namon Family	Loamy-skeletal, mixed Mollic Cryoboralfs
Ouray	Sandy, mixed Torriorthentic Haploborolls
Parkay Family	Loamy-skeletal, mixed Argic Pachic Cryoborolls
Pesmore	Loamy-skeletal, mixed Typic Haploborolls
Poposhia	Fine-loamy, mixed (calcareous), frigid Ustic Torriorthents
Rabbitex	Fine-loamy, mixed Typic Calciborolls
Recklor	Clayey-skeletal, montmorillonitic Mollic Cryoboralfs
Redcreek	Loamy, mixed (calcareous), frigid Lithic Ustic Torriorthents

TABLE 14.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Rencot	Loamy-skeletal, mixed Borollic Lithic Calciorthids
Rentsac	Loamy-skeletal, mixed (calcareous), frigid Lithic Ustic Torriorthents
Rhoamett	Fine, montmorillonitic (calcareous), frigid Ustic Torriorthents
Rockinchair	Fine-loamy, mixed Borollic Calciorthids
Rock River	Fine-loamy, mixed Borollic Haplargids
Rogert	Loamy-skeletal, mixed Lithic Cryoborolls
Rogrube	Fine-loamy, mixed, frigid Calcic Gypsiorthids
Roto	Loamy-skeletal, carbonatic Borollic Calciorthids
Sedillo Family	Loamy-skeletal, mixed, mesic Ustollic Haplargids
Sinkson	Fine-loamy, mixed (calcareous), frigid Ustic Torriorthents
Spicerton	Fine, montmorillonitic Borollic Natrargids
Spool	Mixed, frigid Lithic Torripsamments
Strych	Loamy-skeletal, mixed, mesic Ustollic Calciorthids
Tally	Coarse-loamy, mixed Typic Haploborolls
Teeler	Loamy-skeletal, mixed Argic Cryoborolls
Thermopolis	Loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents
Tisworth	Fine-loamy, mixed Borollic Natrargids
Tolman	Loamy-skeletal, mixed Lithic Argiborolls
Torriorthents	Ustic Torriorthents
Tridell	Loamy-skeletal, mixed Aridic Calciborolls
Turson	Fine-loamy over sandy or sandy-skeletal, mixed Aquic Cryoborolls
Worfstone	Loamy-skeletal, mixed Borollic Lithic Haplargids
Yarts	Coarse-loamy, mixed (calcareous), mesic Ustic Torriorthents

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Nondiscrimination Policy

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers, employees, and applicants for employment on the basis of race, color, national origin, age, disability, sex, gender identity, religion, reprisal, and where applicable, political beliefs, marital status, familial or parental status, sexual orientation, whether all or part of an individual's income is derived from any public assistance program, or protected genetic information. The Department prohibits discrimination in employment or in any program or activity conducted or funded by the Department. (Not all prohibited bases apply to all programs and/or employment activities.)

To File an Employment Complaint

If you wish to file an employment complaint, you must contact your agency's EEO Counselor (http://directives.sc.egov.usda.gov/33081.wba) within 45 days of the date of the alleged discriminatory act, event, or personnel action. Additional information can be found online at http://www.ascr.usda.gov/complaint_filing_file.html.

To File a Program Complaint

If you wish to file a Civil Rights program complaint of discrimination, complete the USDA Program Discrimination Complaint Form, found online at http://www.ascr.usda.gov/complaint_filing_cust.html or at any USDA office, or call (866) 632-9992 to request the form. You may also write a letter containing all of the information requested in the form. Send your completed complaint form or letter by mail to U.S. Department of Agriculture; Director, Office of Adjudication; 1400 Independence Avenue, S.W.; Washington, D.C. 20250-9419; by fax to (202) 690-7442; or by email to program.intake@usda.gov.

Persons with Disabilities

If you are deaf, are hard of hearing, or have speech disabilities and you wish to file either an EEO or program complaint, please contact USDA through the Federal Relay Service at (800) 877-8339 or (800) 845-6136 (in Spanish).

If you have other disabilities and wish to file a program complaint, please see the contact information above. If you require alternative means of communication for

program information (e.g., Braille, large print, audiotape, etc.), please contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

Supplemental Nutrition Assistance Program

For additional information dealing with Supplemental Nutrition Assistance Program (SNAP) issues, call either the USDA SNAP Hotline Number at (800) 221-5689, which is also in Spanish, or the State Information/Hotline Numbers (http://directives.sc.egov.usda.gov/33085.wba).

All Other Inquiries

For information not pertaining to civil rights, please refer to the listing of the USDA Agencies and Offices (http://directives.sc.egov.usda.gov/33086.wba).