United States
Department of
Agriculture

Soil
Conservation
Service

In cooperation with
United States Department
of the Interior, Bureau of
Land Management, and
University of Wyoming,
Agricultural Experiment
Station

Soil Survey of Fremont County, East Part and Dubois Area, Wyoming

How To Use This Soil Survey

General Soil Map

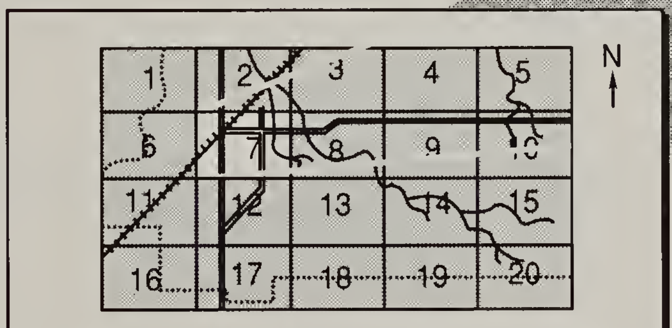
The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

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.

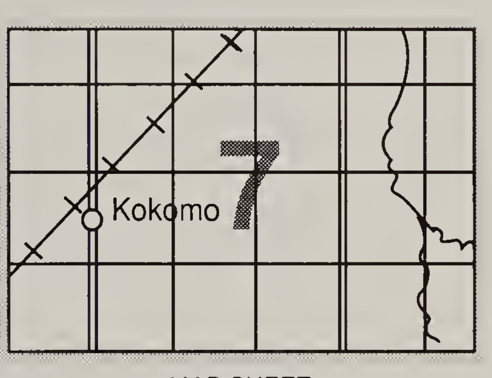
Detailed Soil Maps

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.

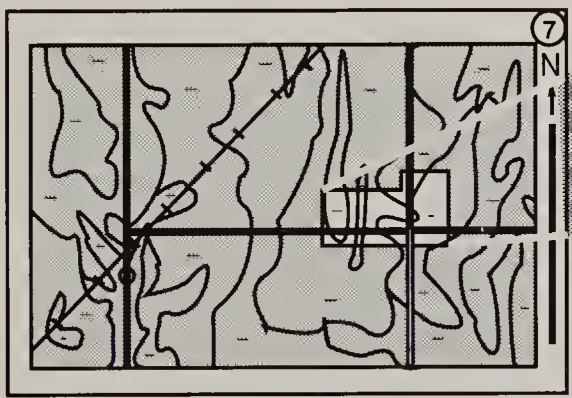


INDEX TO MAP SHEETS



MAP SHEET

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



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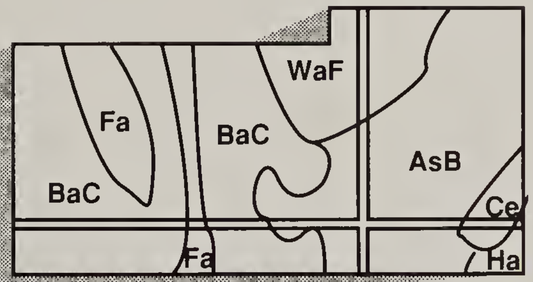

AREA OF INTEREST

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.

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.

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 Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1983. Soil names and descriptions were approved in 1984. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1984. This survey was made cooperatively by the Soil Conservation Service; the United States Department of the Interior, Bureau of Land Management; and the University of Wyoming, Agricultural Experiment Station. It is part of the technical assistance furnished to the Dubois-Crowheart, Popo Agie, and Riverton Conservation Districts.

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 Soil Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Cover: Historic South Pass City, a legacy of the gold rush days of 1842. Venapass-Silas loams, 0 to 6 percent slopes, is in the drainageways, and Irigul-Midelight-Rock outcrop association, rolling, is on the hills.

Contents

Issued July 1993

Index to Map Units

Summary of Tables

Foreword

This soil survey provides information that can be used in land-planning programs in the survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow over bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to 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 Soil Conservation Service or the Cooperative Extension Service.

Frank Dickson

Frank S. Dickson, Jr.
State Conservationist
Soil Conservation Service

Soil Survey of Fremont County, East Part and Dubois Area, Wyoming

By John E. Iiams, Charlie E. Dillahunty, Jr., Steven J. Jelden, Joe P. Moore, Christopher Paris, Halvor B. Ravenholt, and Marvin C. Suhr, Soil Conservation Service, and Greg F. Bautz, Bureau of Land Management

United States Department of Agriculture, Soil Conservation Service,
in cooperation with
United States Department of the Interior, Bureau of Land Management, and
University of Wyoming, Agricultural Experimental Station

This survey area is in the west-central part of Wyoming (fig. 1). It includes nearly all of Fremont County, except for the Wind River Indian Reservation, the Shoshone National Forest, and the Lander and Riverton soil survey areas. The Dubois area, which is part of Fremont County, is separated from the rest of the survey area by the Wind River Indian Reservation. It is 110,000 acres of private land and 50,000 acres of land administered by the Bureau of Land Management. It is too small to be mapped as a separate soil survey. Much of the survey area is publicly owned land.

The total extent of the survey area is 2,594,275 acres, or about 4,054 square miles. About 96 percent of the area is rangeland. The rest is forest land, irrigated hayland or pasture, urban land, water areas, roads, and mines.

Dubois and Shoshoni are the largest towns in the survey area. Other communities are Atlantic City, South Pass City, Bonneville, Lost Cabin, Lysite, Moneta, Sand Draw, and Jeffrey City.

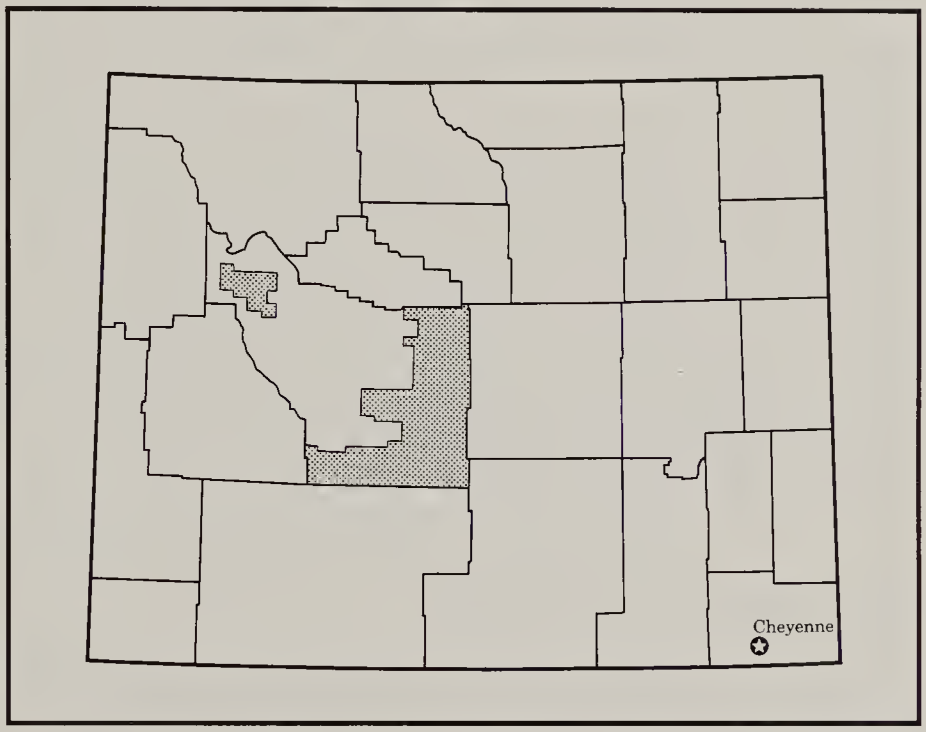

Figure 1.—Location of the east part and the Dubois area of Fremont County in Wyoming.

General Nature of the Survey Area

This section gives general information about the survey area. It describes history; transportation facilities; natural resources; physiography, relief, and drainage; geology; and climate.

History

The Indians were the first land users in this survey area. They harvested wildlife for food and clothing and developed homesites and villages. They are still using the land for these purposes.

Ranchers and other settlers came into the survey area in the latter half of the 19th century. Cattle were first introduced by William Sublette in 1829, when he brought four head of milk cows to an area along the Popo Agie River *(6)*. In 1869, William Boyd brought in the first herd of cattle in order to provide food for the miners at the South Pass gold fields. Sheep were introduced in 1870. Currently, the rangeland and the irrigated hayland and pasture support an important and diversified livestock industry.

Fremont County was established on March 5, 1884

(4). The town of Dubois, which has a population of 1,067, was founded when a post office was built in 1886. Frank Welty opened the first general store in 1889 and was one of the first ranchers in the survey area. John Burlingham was the first to settle in the DuNoir Valley. Agriculture and lumber are still important to the town, and building resort homes and tourism are growing businesses.

Shoshoni, which has a population of 879, was incorporated on April 2, 1906. The first building, the Elk Horn Hotel, was erected in 1905 *(3, 6)*. Early settlers began ranching in 1896. Currently, Shoshoni provides goods and services to farmers, ranchers, and people visiting the survey area for recreational purposes.

South Pass City, which has a population of 12, and Atlantic City, which has a population of 50, are ghost towns established during the gold rush days of 1842. Miners and stockmen obtained some supplies in these towns between 1842 and 1956. Jeffrey City, which has a population of 1,882, was established about 1958 as a result of uranium mining. It supplies goods and services for ranchers, for the mining industry, and for recreational activities, such as hunting, fishing, and rock hounding.

Bonneville, which has a population of 50, Lost Cabin, which has a population of 30, Lysite, which has a population of 120, and Moneta, which has a population of 10, were stops for trail herds of cattle and sheep between 1870 and 1900. After the railroad arrived in 1906, these towns became shipping points for the livestock industry. Currently, Sand Draw, which has a population of 15, Bonneville, and Lost Cabin are primarily "oil camps" for the nearby oil fields.

Transportation Facilities

The major highways in the survey area are U.S. Highways 20, 26, and 287 and Wyoming Highways 28 and 789. The area has several other highways, county roads, and farm-to-market roads.

A railroad crosses the northern part of the survey area from Moneta to Bonneville. It splits at Bonneville, from which one track extends to Riverton and the other extends to Thermopolis and to Billings, Montana. A special line hauling taconite from Atlantic City to Rock Springs crosses the western part of the survey area.

Transcontinental bus service is available in Shoshoni. A local bus line provides service between Shoshoni and another transcontinental bus line in Rock Springs. Airports in Lander and Riverton, which are just outside the survey area, provide service to Billings, Montana; Salt Lake City, Utah; Denver, Colorado; and other cities.

Natural Resources

Soil is the most important natural resource in the survey area. It provides a growing medium for the vegetation in areas of rangeland and in areas of irrigated pasture and hayland. The rangeland and irrigated pasture are grazed by cattle, sheep, wild horses, and wildlife. The irrigated hayland provides supplemental winter feed for livestock. Other natural resources include natural gas, oil, water, timber, uranium, gravel, gold, jade, copper, and coal.

Water for livestock, domestic purposes, and wildlife is supplied by several perennial streams and springs and by numerous small livestock watering ponds. The number of areas where ground water is available and the amount of available water are limited. Intermittent drainageways provide water for short periods in spring and after thundershowers.

Some timber is harvested in areas on Green Mountain and around Dubois and Atlantic City, which are in general soil map unit 3. Several small sawmills operate in Dubois, in Shoshoni, and in Lander and Riverton.

The Wind and Sweetwater Rivers and their tributaries supply most of the livestock and irrigation water in the survey area. Domestic water for the various communities is drawn from wells. Many ranchers use surface water from livestock ponds and ground water from wells.

Uranium, jade, and gravel are surface mined in the survey area. Jade is common in areas of general soil map unit 21. Gravel is mined in areas of general soil map units 5, 17, and 23. Many abandoned gold mine shafts are on the western part of the Sweetwater Arch. Small gold-dredging enterprises are still active along the drainageways. Several abandoned coal mines are north and east of Lander. Several oil and gas fields are in the Shoshone Basin and on the eastern side of the Sweetwater Arch. Oil and gas exploration and production are major industries in the survey area.

Physiography, Relief, and Drainage

This survey area is part of the Middle Rocky Mountains physiographic province. This province includes the Wyoming Basin *(5)*, which is drained by the Wind and Sweetwater Rivers. The part of the Wyoming Basin that is in the survey area can be divided into the Wind River Basin, the Sweetwater Arch, the Shoshone Basin, the Great Divide Basin, and the Green Mountains (fig. 2). The Shoshone Basin is the eastern extension of the Wind River Basin. The mountains and foothills in the survey area rise steeply from the floor of

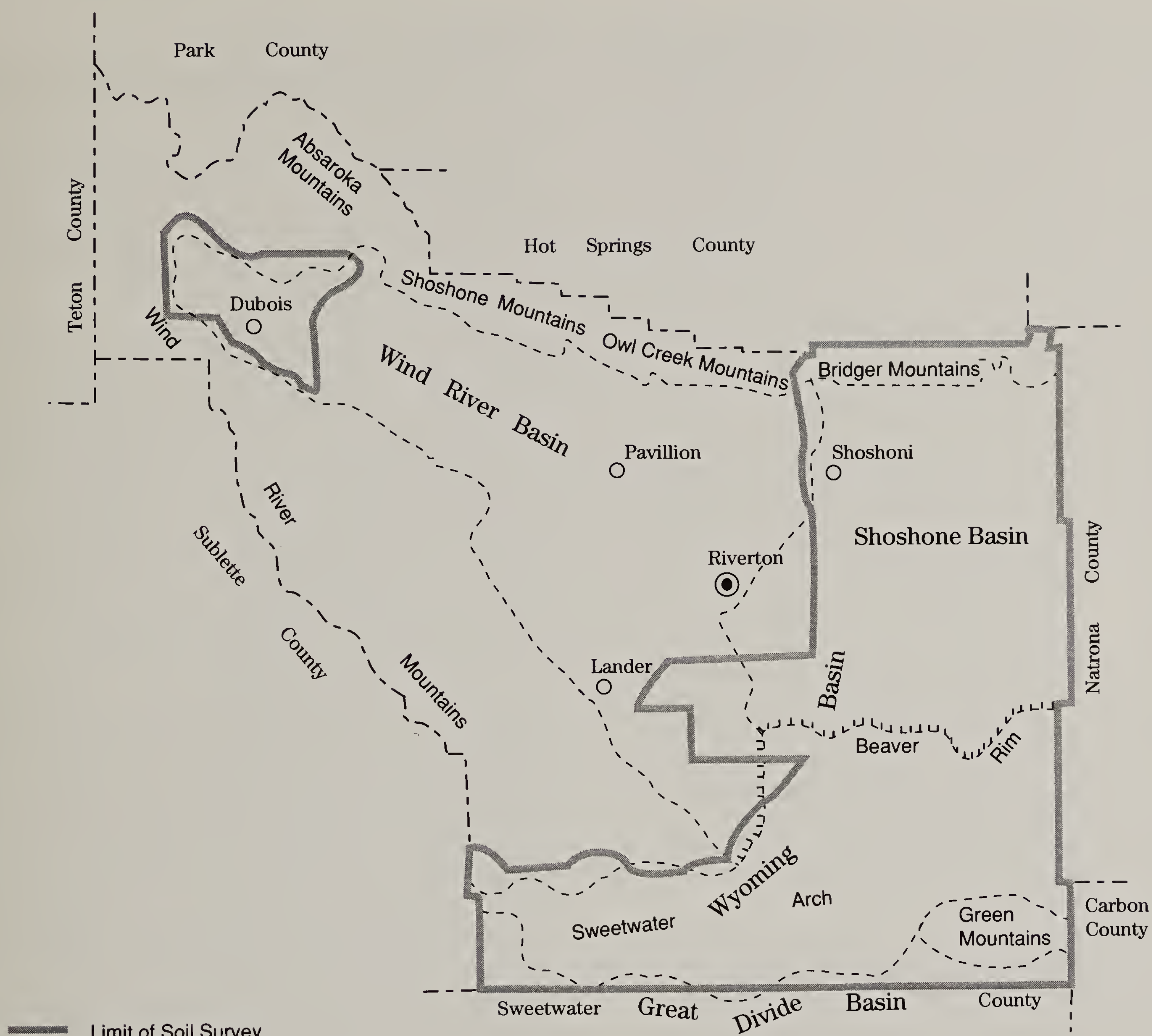

Figure 2.—Major physiographic regions in the survey area.

the Wind River and Great Divide Basins.

The Shoshone Basin is bordered on the south by Beaver Rim and the Rattlesnake Mountains and on the north by the Bridger and Big Horn Mountains. To the east of the survey area, this basin is separated from the Great Plains by the Oil Mountain anticline.

The Dubois area is at the western end of the Wind River Basin. It lies between the Shoshone and Absaroka Mountains to the north and the Wind River Mountains to the south.

The Sweetwater Arch, which is south of Beaver Rim and north of the Great Divide Basin, is drained by the Sweetwater River. The Great Divide Basin is along the southern boundary of the survey area.

Relief in the survey area is characterized by the uplifted blocks of the Wind River, Bridger, and Shoshone Mountains and the associated intermontane basins. The lowest point in the survey area, at Boysen Reservoir, is 4,740 feet above mean sea level. Some elevations at summits in the survey area are 8,231 feet in the Bridger Mountains, 8,558 feet on the Oregon Buttes, 9,040 feet in the Green Mountains, and 9,000 feet in the Dubois area, near the DuNoir River. The lowest point in the Dubois area, along the Wind River near Blue Hole, is 6,429 feet.

The northern half of the survey area is drained by the Wind River and its tributaries, which include Beaver, Poison, Badwater, and Tuff Creeks. The northern slope of the Bridger Mountains is drained by Red Creek and the Nowood River. The southern half of the survey area is drained by the Sweetwater River and its tributaries, which include Sage Hen, Crooks, Alkali, Long, Willow, Rock, and Pine Creeks. In the southern part of the survey area, Lost and Red Creeks drain into the hydrologically closed Great Divide Basin. The southwestern corner of the survey area is drained by the Green River and its tributaries, which include Pacific and Hay Creeks. The Dubois area is drained by the Wind River and its tributaries, which include the East Fork of the Wind River and Horse, DuNoir, Warm Spring, and Torrey Creeks.

The soils in the Shoshone Basin have a mesic temperature regime. The soils in the mountainous areas at Dubois, in the Bridger and Green Mountains, and on the western side of the Sweetwater Arch have a cryic temperature regime. The rest of the soils of the survey area have a frigid temperature regime.

Geology

The soils in the survey area formed in a variety of geologic materials. Along the northern border of the survey area, in the Bridger Mountains, are outcrops of Precambrian granite, gneiss, and schist, as well as resistant Paleozoic strata of the Cambrian Flathead Sandstone, the Ordovician Big Horn Dolomite, the Mississippian Madison Limestone, and poorly indurated Tertiary sandstone and variegated shale of the Wind River Formation.

The Shoshone Basin extends south from the base of the Bridger Mountains for a distance of about 50 miles. The northern part of the basin is underlain by interbedded sandstone and varicolored shale of the Tertiary Wind River Formation. Some beds in this formation are sodic. The southern part of the basin, extending to Beaver Rim, is underlain mainly by interbedded sandstone and shale of the Upper Cretaceous Cody Shale and Mesaverde Formation.

The southern part of the survey area is underlain by the White River Formation *(8, 15)*. Included in this part of the survey area are outcrops of Precambrian crystalline rock, north of Jeffrey City, and of the Tertiary Crooks Gap Conglomerate, south of Jeffrey City, in the Green Mountains.

The Dubois area is underlain dominantly by varicolored interbedded sandstone and shale of the Tertiary Indian Meadows and Wind River Formations. Adjacent to the northern and southern boundaries of the survey area are outcrops of the Mississippian Madison Limestone, sandstone and shale of the Pennsylvanian Amsden Formation, and brick red sandstone and siltstone of the Triassic Chugwater Formation.

Climate

By Jon Werner, water supply forecast specialist, Soil Conservation Service.

The climate in the eastern part of Fremont County is typical of that on high mountain plains and foothills situated on the leeward side of mountains that uplift storm masses. The average annual precipitation is 8 to 12 inches in most areas, but it ranges from less than 6 inches to more than 20 inches.

The average annual precipitation as recorded by National Weather Service stations at Boysen Dam, Lander, Riverton, and Shoshoni is 9.31 inches. The period May through August receives 48 percent (4.46 inches) of the average annual precipitation. December, January, and February receive the smallest amount, less than one-third of an inch per month. The precipitation received during the period November through March, less than 2 inches total, generally is in the form of snow. Snowpack is seldom of significant duration below an elevation of 8,000 feet.

Temperatures in the eastern part of Fremont County range from more than 100 degrees F to less than -40 degrees. Data recorded at the Boysen Dam, Riverton, and Lander stations were averaged monthly to generate the temperature plots shown in figure 3. May 15 through August 27 (103 days) is the average period when conditions are expected to be suitable for growing crops; that is, when the average minimum daily temperature is not expected to go below 45 degrees. Freezing temperatures have occurred, however, in all months, except for July and August. Average daily temperatures range from 17 degrees in January to 73 degrees in July. The probable dates of the first freeze in fall and the last freeze in spring at Boysen Dam, Dubois, Muddy Gap, Sand Draw, and South Pass City are given in table 1.

The Dubois area consists of a high mountain valley that is very dry. Dubois receives an average annual precipitation of less than 9 inches. This part of the survey area is cooler than the eastern part of Fremont County.

The average annual precipitation in the Dubois area ranges from less than 9 inches to more than 30 inches. December, January, and February receive the lowest precipitation, less than 0.30 inch (fig. 4). From November through March, the precipitation generally is in the form of snow and snowpacks form at elevations of more than about 8,000 feet.

Temperatures at the Dubois Weather Station range from a high of 98 degrees to a low of -48 degrees. There is normally no period when the average minimum temperature is expected to be more than 45 degrees.

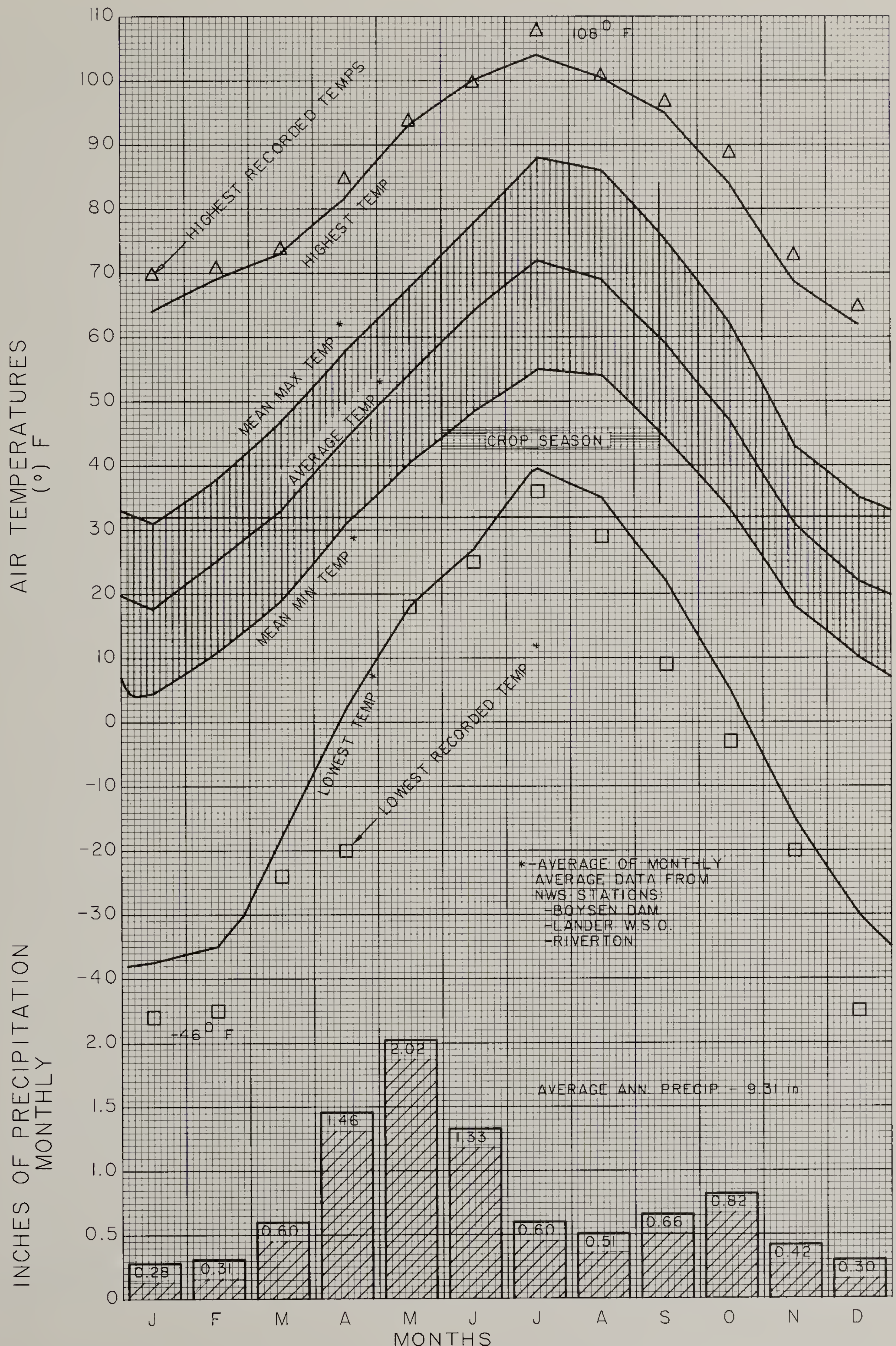

Figure 3.—Precipitation and air temperatures for the eastern part of Fremont County.

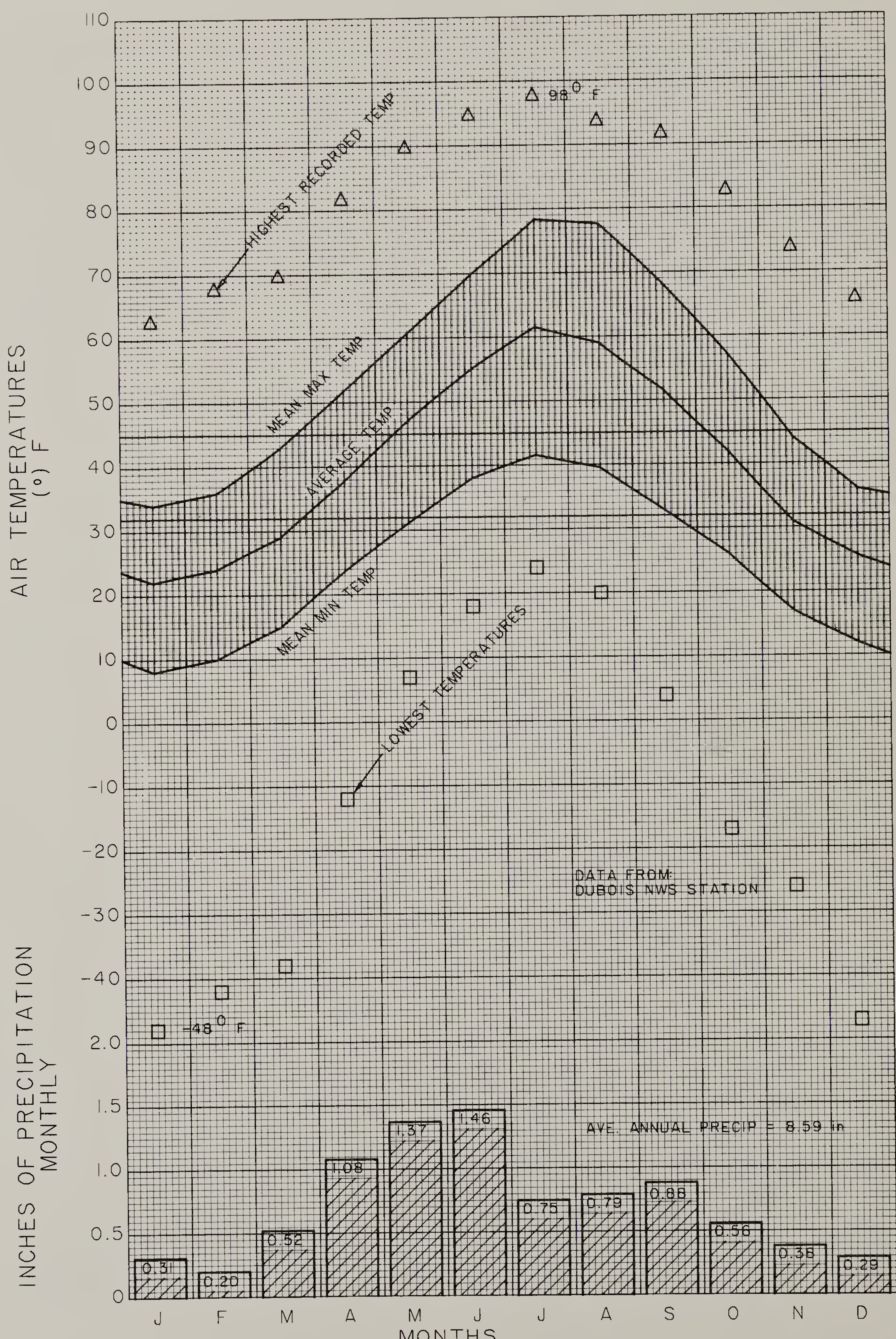

Figure 4.—Precipitation and air temperatures for the Dubois area.

Hard, freezing temperatures have occurred in every month of the year. Average daily temperatures range from 22 degrees in January to 62 degrees in July. The probable dates of the first freeze in fall and the last freeze in spring at Dubois are given in table 1.

The arid and semiarid plain and foothill parts of the survey area receive more than 50 percent of their total precipitation in the period April through June. Cool, moist conditions in spring favor the growth of native vegetation. Summer is hot and dry, and most of the precipitation received during this season is in the form of thundershowers. Winds are common in the Dubois and Sweetwater areas.

The subhumid mountain areas receive most of their precipitation in the form of snow. Snow is not uncommon during June in the Dubois area and in the southern part of the survey area.

The average annual precipitation at other weather stations in the survey area is as follows: Lysite, 5.05 inches; Oregon Trail Crossing, 7.97 inches; and Shoshoni, 5.59 inches. A survey of the Riverton area provides additional climatic information about the Shoshone Basin *(11)*. A survey of the Lander area provides climatic information applicable to the central portion of the eastern part of Fremont County *(13)*.

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 or segment of the landscape. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landscape, 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 gradually into one another as their characteristics gradually change. To construct an accurate map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

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

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

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

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

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.

Survey Procedures

The general procedures used to make this survey are described in the "National Soils Handbook" *(14)* and the "Soil Survey Manual" *(9)*. A general soil map of Wyoming was used as a reference *(16)*.

Before fieldwork began, a general soil map of the survey area was developed. The units on this map were delineated on the basis of landforms, geology, climate, and a general knowledge of the survey area. They consisted of soils classified to the subgroup level. The scale of this map was 1:253,440, or 0.25 inch per mile. Each year after the mapping season, soil scientists updated the map at the series level, using the more detailed mapping just completed as a guide.

Aerial photographs of the survey area, on which the field mapping would be done, were gathered and organized, and join lines were applied. Several scales of photographs were used in field mapping because of a lack of coverage. The scales of the photographs used were 2 inches per mile, 2.64 inches per mile, and 3.7 inches per mile.

Transects were completed to determine the kinds and percentages of soils in the map units. A transect is a series of profiles examined across a map unit, commonly in a straight line, with a specified interval between each hole. The intervals between holes depended upon the detail of mapping, the complexity of the soil pattern, and the size of the delineation. In some of the smaller areas of rangeland and irrigated units, the intervals were 100 feet, whereas in some of the larger areas of rangeland, they were 1,000 to 1,500 feet. Four-wheel-drive vehicles were used during mapping where feasible. Otherwise, access to an area was obtained by walking.

The soils in the survey area were examined with the aid of shovels, crowbars, and hand augers to a depth of 5 feet or to bedrock if the depth to bedrock was less than 5 feet. A truck-mounted soil sampler also was used where texture and moisture conditions permitted.

After the completion of field mapping, map unit delineations were transferred by hand to orthophotographic mylar sheets at a scale of 1:24,000. From there, the delineations were transferred to atlas sheets for publication.

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, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The 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 for a building or some 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 on the following pages.

Map Unit Descriptions

Cold, Subhumid Soils in Mountainous Areas

1. Rock Outcrop-Starman-Woosley

Rock outcrop and nearly level to steep, very shallow to moderately deep, well drained soils that are loamy and very gravelly or are loamy; on hills, ridges, and mountains

This unit is in the mountainous areas in the northern part of the survey area. It is characterized by nearly level to steep soils that are on mountains, hills, and ridges and are intermingled with a large amount of Rock outcrop. Slopes are 2 to 40 percent. The native vegetation is mainly grasses and shrubs and some scattered trees. Elevation is 6,800 to 9,000 feet. The annual precipitation is about 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit makes up about 2 percent of the survey area. It is about 24 percent Rock outcrop, 24 percent Starman and similar soils, 17 percent Woosley and similar soils, and 35 percent components of minor extent.

Rock outcrop occurs as exposures of limestone on the summit of hills, ridges, and mountains.

Starman soils are on hills, ridges, and mountains. They are very shallow or shallow. They formed in residuum and slope alluvium derived dominantly from limestone. They are loamy and very gravelly throughout and are underlain by hard limestone bedrock at a depth of 8 to 20 inches.

Woosley soils are on mountains. They are moderately deep. They formed in residuum and slope alluvium derived dominantly from limestone. They are loamy throughout and are underlain by hard limestone bedrock at a depth of 20 to 40 inches.

Of minor extent in this unit are Bachus, Chittum, Cloud Peak, Decross, Farlow, and Mosroc soils.

This unit is used as rangeland and wildlife habitat. It provides summer habitat for pronghorn antelope and moose, winter and year-round habitat for mule deer, winter and critical winter habitat for elk, and year-round and critical winter habitat for bighorn sheep. It also provides habitat for such species as masked shrew, coyote, bobcat, black bear, Nuttall's cottontail rabbit, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are the slope, a short growing season, and the rooting depth, droughtiness, and content of rock fragments in the Starman soils.

2. Fornor-Decross

Nearly level to steep, very deep, well drained soils that are loamy and very cobbly or are loamy; on glacial moraines, fan aprons, and toe slopes

This unit is in the western part of the survey area, near Dubois. It is characterized by nearly level to steep soils that are on glacial moraines and are intermingled with small areas of nearly level to moderately steep soils on fan aprons and toe slopes. Slopes are 1 to 30 percent. The native vegetation is mainly grasses and shrubs. Elevation is 6,800 to 8,400 feet. The annual precipitation is about 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit makes up about 1 percent of the survey area. It is about 40 percent Fornor and similar soils, 30 percent Decross and similar soils, and 30 percent components of minor extent.

Fornor soils are on glacial moraines. They formed in glacial drift. The surface layer is loamy and very cobbly. The subsoil is loamy and very gravelly. It is underlain by loamy and very gravelly material, which extends to a depth of 60 inches or more.

Decross soils are on toe slopes and fan aprons. They formed in alluvium derived from mixed sources. They are loamy throughout.

Of minor extent in this unit are Inchau, Rockinchair, Roxal, Tongue River, and Venapass soils and Rock outcrop.

This unit is used as rangeland and wildlife habitat. It provides summer habitat for pronghorn antelope and mule deer, winter habitat for elk, and winter and year-round habitat for moose. It also provides habitat for such species as masked shrew, yellow-bellied marmot, Uinta ground squirrel, coyote, red fox, long-tailed weasel, bobcat, Nuttall's cottontail rabbit, and birds commonly associated with shrub steppes.

The main limitations in the areas used as rangeland are a short growing season and the content of rock fragments in the Fornor soils.

3. Owen Creek-Tongue River-Burnette

Nearly level to moderately steep, moderately deep and very deep, well drained soils that are loamy and very stony or are loamy; on mountain slopes, fan aprons, hills, and terraces

This unit is in the Dubois area. It is characterized by nearly level to moderately steep soils on mountains, hills, terraces, and fan aprons. Slopes are 2 to 30 percent. The native vegetation is mainly that of wooded areas, but some areas are dominated by grasses and shrubs. Elevation is 7,000 to 9,000 feet. The annual precipitation is about 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is less than 60 days to 90 days.

This unit makes up about 1 percent of the survey area. It is about 30 percent Owen Creek and similar soils, 24 percent Tongue River and similar soils, 11 percent Burnette and similar soils, and 35 percent components of minor extent.

Owen Creek soils are on hillslopes and fan aprons. They are moderately deep. They formed in residuum and slope alluvium derived dominantly from shale interbedded with sandstone. The surface layer is loamy and very stony. The subsoil is clayey. It is underlain by loamy material. Soft shale bedrock is at a depth of 20 to 40 inches.

Tongue River soils are on mountain slopes. They are moderately deep. They formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. The surface layer and subsoil are loamy. The subsoil is underlain by very channery and loamy material. Soft sandstone bedrock is at a depth of 20 to 40 inches.

Burnette soils are on fan aprons and terraces. They are very deep. They formed in slope alluvium derived dominantly from shale interbedded with sandstone. The surface layer is loamy. The subsoil is clayey. It is underlain by clayey material, which extends to a depth of 60 inches or more.

Of minor extent in this unit are Decross, Farlow Variant, Fornor, Roxal, and Youga soils and Rock outcrop.

This unit is used mainly as woodland and wildlife habitat. It also is used as rangeland.

This unit provides summer habitat for pronghorn antelope, elk, and moose; winter and year-round habitat for mule deer, elk, and moose; and some areas of critical winter habitat for elk. It also provides habitat for such species as masked shrew, yellow-pine chipmunk, northern flying squirrel, western jumping mouse, porcupine, coyote, marten, long-tailed weasel, black bear, snowshoe hare, red squirrel, and birds commonly associated with conifer forests.

The main limitations in the areas used as woodland are the slope and the hazard of water erosion. The main limitations in the areas used as rangeland are a short growing season and the content of rock fragments.

4. Quander-Youga-Granile

Nearly level to steep, very deep, well drained, loamy and cobbly, loamy, or loamy and gravelly soils; on mountain slopes

This unit is in the southeastern part of the survey area. It is characterized by moderately steep and steep soils on mountain back slopes and nearly level to moderately sloping soils on foot slopes. Slopes are 2 to 45 percent. The native vegetation is mainly that of wooded areas on the Granile soils and is grasses and shrubs on the Quander and Youga soils. Elevation is 7,500 to 9,000 feet. The annual precipitation is about 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is less than 60 days to 90 days.

This unit makes up about 3 percent of the survey area. It is about 27 percent Quander and similar soils, 20 percent Youga and similar soils, 18 percent Granile and similar soils, and 35 percent components of minor extent.

Quander soils are on mountain back slopes and foot slopes. They formed in alluvium derived from various sources. The surface layer is loamy and cobbly. It is underlain by loamy and very cobbly material, which extends to a depth of 60 inches or more.

Youga soils are on mountain foot slopes. They formed in alluvium derived from various sources. They are loamy throughout.

Granile soils are on mountain slopes. They formed in alluvium derived dominantly from granite and schist. The surface layer is loamy and gravelly. The subsoil is loamy and very gravelly. It is underlain by loamy and very gravelly material, which extends to a depth of 60 inches or more.

Of minor extent in this unit are Ansel soils, Aquic Cryofluvents, the very bouldery Brownsto soils, and Dahlquist, Onason, and Rock River soils.

This unit is used mainly as rangeland and wildlife habitat. The Granile soils also are used as woodland.

This unit provides summer, winter, and year-round habitat for mule deer; summer habitat for pronghorn antelope; and year-round, critical year-round, summer, and winter habitat for elk. It also provides habitat for such species as masked shrew, yellow-pine chipmunk, northern flying squirrel, western jumping mouse, porcupine, coyote, marten, long-tailed weasel, black bear, snowshoe hare, red squirrel, and birds commonly associated with conifer forests.

The main limitations in the areas used as rangeland are the slope, a short growing season, and the content of rock fragments in the Quander soils. The main limitations in the areas used as woodland are the slope and droughtiness in the Granile soils.

Warm, Arid Soils on Flood Plains, Terraces, and Hills

5. Persayo-Clifsand-Emblem-Muff

Nearly level to steep, very shallow, shallow, moderately deep, and very deep, well drained soils that are loamy or are loamy and gravelly; on dissected fan aprons, terraces, hills, escarpments, and ridges

This unit is in the northeastern part of the survey area. It is characterized by nearly level to moderately sloping soils that are on dissected fan aprons and terraces and are intermingled with areas of moderately steep and steep soils on hills, escarpments, and ridges. Slopes are 1 to 45 percent. The native vegetation is mainly grasses and shrubs. Elevation is 4,800 to 6,500 feet. The annual precipitation is about 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit makes up about 3 percent of the survey area. It is about 30 percent Persayo and similar soils, 13 percent Clifsand and similar soils, 12 percent Emblem and similar soils, 10 percent Muff and similar soils, and 35 percent components of minor extent.

Persayo soils are on hills, ridges, and escarpments. They are very shallow or shallow. They formed in residuum and slope alluvium derived dominantly from shale. They are loamy throughout and are underlain by soft shale bedrock at a depth of 4 to 20 inches.

Clifsand soils are on dissected fan aprons, terraces, hills, and ridges. They are very deep. They formed in alluvium derived from various sources. The surface layer is loamy and gravelly. It is underlain by loamy and very gravelly material, which extends to a depth of 60 inches or more.

Emblem soils are on dissected fan aprons and terraces. They are very deep. They formed in alluvium derived from various sources. The surface layer and subsoil are loamy. The subsoil is underlain by sandy and very gravelly material, which extends to a depth of 60 inches or more.

Muff soils are on hillslopes. They are moderately deep. They formed in residuum and slope alluvium derived dominantly from shale interbedded with sandstone. They are loamy throughout and are underlain by soft shale bedrock at a depth of 20 to 40 inches. They are strongly affected by salts and alkali.

Of minor extent in this unit are Crago, Frisite, Rairdent, Worland, and Youngston soils and Rock outcrop.

This unit is used as rangeland and wildlife habitat. It provides winter and year-round habitat for pronghorn antelope and mule deer. It also provides habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, coyote, badger, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are low precipitation, the slope and droughtiness in areas of the Persayo and Clifsand soils, and alkalinity in the Muff soils.

6. Persayo-Worland-Griffy

Nearly level to steep, very shallow, shallow, moderately deep, and very deep, well drained, loamy soils; on hills, ridges, escarpments, fan aprons, and terraces

This unit is in the northeastern part of the survey area. It is characterized by moderately steep and steep soils that are on hills, ridges, and escarpments and are intermingled with areas of nearly level to moderately sloping soils on fan aprons and terraces. Slopes are 1 to 45 percent. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,500 feet. The annual precipitation is about 5 to 9 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit makes up about 7 percent of the survey area. It is about 40 percent Persayo and similar soils, 16 percent Worland and similar soils, 14 percent Griffy and similar soils, and 30 percent components of minor extent.

Persayo soils are on hills, ridges, and escarpments. They are very shallow or shallow. They formed in residuum and slope alluvium derived dominantly from shale. They are loamy throughout and are underlain by soft shale bedrock at a depth of 4 to 20 inches.

Worland soils are on hills and ridges. They are moderately deep. They formed in residuum and slope alluvium derived dominantly from sandstone. They are loamy throughout and are underlain by soft sandstone bedrock at a depth of 20 to 40 inches.

Griffy soils are on fan aprons and terraces. They are very deep. They formed in alluvium derived dominantly from sandstone. The surface layer and subsoil are loamy. The substratum to a depth of 60 inches or more also is loamy.

Of minor extent in this unit are Clifsand, Cragosen, Lostwells, and Muff soils; Rock outcrop; and Badland.

This unit is used mainly as rangeland and wildlife habitat. It provides winter and year-round habitat for pronghorn antelope and mule deer. Some areas provide critical winter habitat for mule deer. The unit also provides habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, coyote, badger, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are low precipitation, the slope, a restricted rooting depth in the Persayo soils, droughtiness in the Persayo and Worland soils, and wind erosion on the Griffy and Worland soils.

7. Griffy-Persayo

Nearly level to moderately sloping, very shallow, shallow, and very deep, well drained, loamy soils; on terraces, fan aprons, hills, and ridges

This unit is in the north-central part of the survey area. It is characterized by nearly level to moderately sloping soils on terraces, fan aprons, hills, and ridges. Slopes are 1 to 15 percent. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,500 feet. The annual precipitation is about 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit makes up about 9 percent of the survey area. It is about 46 percent Griffy and similar soils, 24 percent Persayo and similar soils, and 30 percent components of minor extent.

Griffy soils are on terraces and fan aprons. They are very deep. They formed in alluvium derived dominantly from sandstone. The surface layer and subsoil are loamy. The substratum to a depth of 60 inches or more also is loamy.

Persayo soils are on hills and ridges. They are very shallow or shallow. They formed in residuum and slope alluvium derived dominantly from shale. They are loamy throughout and are underlain by soft shale bedrock at a depth of 4 to 20 inches.

Of minor extent in this unit are Effington, Uffens, Worland, Mudray, and Youngston soils and Rock outcrop.

This unit is used mainly as rangeland. It also is used as wildlife habitat.

This unit provides winter and year-round habitat for pronghorn antelope and mule deer. Some areas provide summer habitat for pronghorn antelope. The unit also provides habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, coyote, badger, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are low precipitation, droughtiness and a restricted rooting depth in the Persayo soils, and wind erosion on the Griffy soils.

8. Youngston-Fluvaquents-Effington

Nearly level and gently sloping, very deep, well drained and poorly drained, loamy and sandy soils; on flood plains, low terraces, and fan aprons and in drainageways

This unit is in the north-central part of the survey area. It is characterized by long, narrow, intermittent drainageways and by flood plains, low terraces, and fan aprons. Slopes are 0 to 6 percent. The native vegetation is mainly grasses, sedges, and shrubs. Elevation is 4,800 to 6,300 feet. The annual precipitation is about 5 to 9 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit makes up about 2 percent of the survey area. It is about 39 percent Youngston and similar soils, 16 percent Fluvaquents and similar soils, 10 percent

Effington and similar soils, and 35 percent components of minor extent.

Youngston soils are on low terraces, on fan aprons, and in drainageways. They are well drained. They formed in alluvium derived from various sources. They are loamy throughout.

Fluvaquents are on flood plains. They are poorly drained. They formed in alluvium derived from various sources. They have sandy or loamy strata throughout. They have a seasonal high water table and are occasionally flooded.

Effington soils are in drainageways. They are well drained. They formed in alluvium derived dominantly from sodic shale. The surface layer is loamy. The subsoil is clayey or loamy. The soils are strongly affected by salts and alkali.

Of minor extent in this unit are Apron, Frisite, Persayo, Uffens, and Worland soils.

This unit is used mainly as rangeland. It also is used as wildlife habitat.

This unit provides winter, summer, and year-round habitat for pronghorn antelope. Some areas provide critical winter habitat for mule deer. The unit also provides habitat for such species as Merriam's shrew, water shrew, muskrat, beaver, raccoon, mink, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes, prairies, hay fields, areas of wetland shrubs and trees, and areas of water.

The main limitations in the areas used as rangeland are low precipitation, flooding on the Fluvaquents, and alkalinity in the Effington soils.

Warm and Cool, Semiarid Soils on Dunes and Fan Aprons

9. Hiland-Vonalee-Orpha

Nearly level to steep, very deep, well drained to excessively drained, loamy and sandy soils; on fan aprons, hillslopes, and dunes

This unit is in the northeastern part of the survey area. It is characterized by nearly level to strongly sloping soils on fan aprons and hillslopes and by steep soils on dunes. Slopes are 1 to 40 percent. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,500 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 115 to 130 days.

This unit makes up about 5 percent of the survey area. It is about 49 percent Hiland and similar soils, 19 percent Vonalee and similar soils, 10 percent Orpha and similar soils, and 22 percent components of minor extent.

Hiland soils are on fan aprons and dunes. They are well drained. They formed in eolian deposits and alluvium derived from various sources. The surface layer and subsoil are loamy. The subsoil is underlain by sandy material, which extends to a depth of 60 inches or more.

Vonalee soils are on hillslopes. They are somewhat excessively drained. They formed in eolian deposits derived from various sources. The surface layer is sandy. The subsoil is loamy. It is underlain by sandy material, which extends to a depth of 60 inches or more.

Orpha soils are on dunes. They are excessively drained. They formed in eolian sand derived from various sources. They are sandy throughout.

Of minor extent in this unit are Effington, Haverdad, Taluce, and Mudray soils; Rock outcrop; and blowouts.

This unit is used as rangeland and wildlife habitat. It provides winter and year-round habitat for pronghorn antelope and summer and year-round habitat for mule deer. It also provides habitat for such species as Merriam's shrew, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are low precipitation, wind erosion, droughtiness in the Vonalee and Orpha soils, and the slope of the Orpha soils.

10. Ryark-Zeomont

Nearly level to steep, very deep, well drained and excessively drained, loamy and sandy soils; on fan aprons and dunes

This unit is in the south-central and southeastern parts of the survey area. It is characterized by nearly level and gently sloping soils on fan aprons and by nearly level to steep soils on dunes. Slopes are 1 to 35 percent. The native vegetation is mainly grasses and shrubs. Elevation is 6,700 to 8,000 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

This unit makes up about 1 percent of the survey area. It is about 60 percent Ryark and similar soils, 20 percent Zeomont and similar soils, and 20 percent components of minor extent.

Ryark soils are on fan aprons. They are well drained. They formed in alluvium derived dominantly from sandstone. The surface layer and subsoil are loamy.

The subsoil is underlain by sandy material, which extends to a depth of 60 inches or more.

Zeomont soils are on dunes. They are excessively drained. They formed in sandy eolian material derived from various sources. They are sandy throughout.

Of minor extent in this unit are Bosler, Carmody, Dahlquist, Havre, and Onason soils and blowouts.

This unit is used mainly as rangeland and wildlife habitat. It provides winter and year-round habitat for pronghorn antelope. It also provides habitat for such species as white-tailed jackrabbit, desert cottontail rabbit, coyote, and birds commonly associated with prairies.

The main limitations in the areas used as rangeland are low precipitation, a short growing season, wind erosion, and droughtiness in the Zeomont soils.

Cool, Semiarid Soils on Hills and Fan Aprons

11. Blackhall-Rock Outcrop-Carmody

Rock outcrop and gently sloping to steep, very shallow to moderately deep, well drained, loamy soils; on hills, ridges, and knobs

This unit is in the central part of the survey area. It is characterized by gently sloping to steep soils that are on hills, ridges, and knobs and are intermingled with areas of Rock outcrop. Slopes are 5 to 45 percent. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,500 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit makes up about 2 percent of the survey area. It is about 35 percent Blackhall and similar soils, 16 percent Rock outcrop, 14 percent Carmody and similar soils, and 35 percent components of minor extent.

Blackhall soils are on hills, ridges, and knobs. They are very shallow or shallow. They formed in residuum and slope alluvium derived dominantly from sandstone. They are loamy throughout and are underlain by soft sandstone bedrock at a depth of 6 to 20 inches.

Rock outcrop occurs as exposures of soft sandstone and shale on the side slopes and summit of hills and ridges.

Carmody soils are on hills, ridges, and knobs. They are moderately deep. They formed in residuum and slope alluvium derived dominantly from sandstone. They are loamy throughout and are underlain by soft sandstone bedrock at a depth of 20 to 40 inches.

Of minor extent in this unit are Absher, Coalmont, Cragosen, Forelle, and Havre soils.

This unit is used as rangeland and wildlife habitat. It provides winter and year-round habitat for pronghorn antelope and mule deer. Some areas provide summer habitat for pronghorn antelope. The unit also provides habitat for such species as Merriam's shrew, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are low precipitation, wind erosion, the slope, a short growing season, and droughtiness and a restricted rooting depth in the Blackhall soils.

12. Forelle-Poposhia-Blazon

Nearly level to steep, very shallow, shallow, and very deep, well drained, loamy soils; on terraces, fan aprons, hills, ridges, and toe slopes

This unit is in the central and southern parts of the survey area. It is characterized by nearly level to moderately steep soils that are on terraces, fan aprons, and toe slopes and are intermingled with areas of moderately steep and steep soils on hills and ridges. Slopes are 1 to 40 percent. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,500 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

This unit makes up about 10 percent of the survey area. It is about 32 percent Forelle and similar soils, 21 percent Poposhia and similar soils, 17 percent Blazon and similar soils, and 30 percent components of minor extent.

Forelle soils are on terraces, fan aprons, and toe slopes. They are very deep. They formed in alluvium derived from various sources. They are loamy throughout.

Poposhia soils are on fan aprons and toe slopes. They are very deep. They formed in alluvium derived from various sources. They are loamy throughout.

Blazon soils are on hills and ridges. They are very shallow or shallow. They formed in residuum and slope alluvium derived dominantly from shale. They are loamy throughout and are underlain by soft shale bedrock at a depth of 4 to 20 inches.

Of minor extent in this unit are Absher, Carmody, Cragosen, and Havre soils and Rock outcrop.

This unit is used as rangeland and wildlife habitat. It provides summer, winter, and year-round habitat for pronghorn antelope. Some areas provide critical winter and critical year-round habitat for mule deer. The unit also provides habitat for such species as Merriam's shrew, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are low precipitation, a short growing season, and the slope, rooting depth, and droughtiness in areas of the Blazon soils.

13. Almy-Rallod-Blazon-Rock Outcrop

Rock outcrop and nearly level to steep, very shallow, shallow, and very deep, well drained, loamy soils; on hills, ridges, and fan aprons

This unit is in the central part of the survey area. It is characterized by moderately steep and steep soils that are on hills and ridges and are intermingled with areas of nearly level and gently sloping soils on fan aprons and with areas of Rock outcrop. Slopes are 1 to 40 percent. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,000 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit makes up about 4 percent of the survey area. It is about 23 percent Almy and similar soils, 19 percent Rallod and similar soils, 12 percent Blazon and similar soils, 11 percent Rock outcrop, and 35 percent components of minor extent.

Almy soils are on fan aprons. They are very deep. They formed in alluvium derived dominantly from sandstone interbedded with shale. They are loamy throughout.

Rallod soils are on hills and ridges. They are very shallow or shallow. They formed in residuum and slope alluvium derived dominantly from variegated shale. The surface layer is loamy. The subsoil is clayey. It is underlain by loamy material. Soft, variegated shale bedrock is at a depth of 9 to 20 inches. The soils are strongly affected by salts and alkali.

Blazon soils are on hills and ridges. They are very shallow or shallow. They formed in residuum and slope alluvium derived dominantly from shale. They are loamy throughout and are underlain by soft shale bedrock at a depth of 4 to 20 inches.

Rock outcrop occurs as exposures of soft, variegated shale and sandstone on hills and ridges.

Of minor extent in this unit are Absher, Carmody, Havre, Monbutte, and Poposhia soils.

This unit is used as rangeland and wildlife habitat. It provides winter and year-round habitat for pronghorn antelope and mule deer. It also provides habitat for such species as Merriam's shrew, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are low precipitation, a short growing season, alkalinity in the Rallod soils, and a restricted rooting depth in the Rallod and Blazon soils.

14. Rockinchair-Badland-Sinkson

Badland and nearly level to very steep, moderately deep and very deep, well drained, loamy soils; on hills, ridges, escarpments, and fan aprons

This unit is in the Dubois area. It is characterized by moderately steep and steep areas on hills and ridges, by very steep areas on escarpments, and by small areas of nearly level and gently sloping soils on fan aprons. Slopes are 1 to 150 percent. The native vegetation is mainly grasses and shrubs. Elevation is 6,500 to 8,000 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit makes up about 2 percent of the survey area. It is about 27 percent Rockinchair and similar soils, 21 percent Badland, 17 percent Sinkson and similar soils, and 35 percent components of minor extent.

Rockinchair soils are on hills and ridges. They are moderately deep. They formed in residuum and slope alluvium derived dominantly from variegated shale interbedded with sandstone. The surface layer is loamy. It is underlain by loamy material. Soft, variegated shale bedrock interbedded with sandstone is at a depth of 20 to 40 inches.

Badland occurs as barren areas of soft, highly erodible bedrock on hills and escarpments that are dissected by many ephemeral drainageways.

Sinkson soils are on fan aprons. They are very deep. They formed in alluvium derived dominantly from red sandstone and shale. They are loamy throughout.

Of minor extent in this unit are Absher, Forelle, Lander, and Thermopolis soils.

This unit is used as rangeland and wildlife habitat. It provides year-round habitat for pronghorn antelope, mule deer, and elk and summer habitat for pronghorn antelope and moose. Some areas provide critical winter habitat for elk. The unit also provides habitat for such species as Merriam's shrew, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are low precipitation, a short growing season, and the slope of the Rockinchair soils. The Badland does not support vegetation and therefore is not suitable for grazing.

15. Thermopolis-Sinkson-Almy

Nearly level to moderately steep, very shallow, shallow, and very deep, well drained, loamy soils; on hills, ridges, and fan aprons

This unit is in the northern part of the survey area and in the vicinity of Dubois. It is characterized by moderately steep soils on hills and ridges and by nearly level to moderately sloping soils on fan aprons. Slopes are 2 to 30 percent. The native vegetation is mainly grasses and shrubs. Elevation is 5,500 to 8,000 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit makes up about 1 percent of the survey area. It is about 26 percent Thermopolis and similar soils, 22 percent Sinkson and similar soils, 17 percent Almy and similar soils, and 35 percent components of minor extent.

Thermopolis soils are on hills and ridges. They are very shallow or shallow. They formed in residuum and slope alluvium derived dominantly from sandstone and siltstone. They are loamy throughout and are underlain by soft siltstone bedrock at a depth of 6 to 20 inches.

Sinkson soils are on fan aprons. They are very deep. They formed in alluvium derived dominantly from red sandstone and siltstone. They are loamy throughout.

Almy soils are on fan aprons. They are very deep. They formed in alluvium derived dominantly from interbedded sandstone and shale. They are loamy throughout.

Of minor extent in this unit are Crago and Pensore soils and Rock outcrop. Also of minor extent, in the Dubois area, are Brownsto soils on terraces and fan aprons and the moderately well drained Lander soils on flood plains.

Most areas of this unit are used as rangeland and wildlife habitat. A few areas are used as irrigated hayland.

In the Dubois area this unit provides winter and year-round habitat for mule deer, winter habitat for elk, and summer habitat for moose. In the north-central part of the survey area, the unit provides winter and year-round habitat for pronghorn antelope. It also provides habitat for such species as water shrew, white-tailed jackrabbit, long-tailed vole, coyote, badger, and birds commonly associated with shrub steppes, prairies, and hay fields.

The main limitations in the areas used as rangeland or irrigated hayland are the slope, a short growing season, and a restricted rooting depth and droughtiness in areas of the Thermopolis soils.

16. Havre-Forelle-Absher

Nearly level and gently sloping, very deep, well drained, loamy soils; on flood plains, terraces, toe slopes, and fan aprons

This unit is in the central and southern parts of the survey area. It is characterized by nearly level and gently sloping soils on flood plains, terraces, toe slopes, and fan aprons. Slopes are 0 to 8 percent. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,500 feet. The annual precipitation is about 9 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

This unit makes up about 4 percent of the survey area. It is about 25 percent Havre and similar soils, 22 percent Forelle and similar soils, 18 percent Absher and similar soils, and 35 percent components of minor extent.

Havre soils are on flood plains. They formed in alluvium derived from various sources. They are loamy throughout.

Forelle soils are on terraces, fan aprons, and toe slopes. They formed in alluvium derived from various sources. They are loamy throughout.

Absher soils are on terraces, fan aprons, and toe slopes. They formed in alluvium derived from various sources. The surface layer is loamy. The subsoil is clayey. It is underlain by loamy and clayey material, which extends to a depth of 60 inches or more. The soils are strongly affected by salts and alkali.

Of minor extent in this unit are Blazon, Carmody, Poposhia, Tisworth, and Cific soils and Badland.

This unit is used as rangeland and wildlife habitat. It provides summer, winter, and year-round habitat for pronghorn antelope and elk and year-round and critical winter habitat for mule deer. It also provides habitat for such species as Merriam's shrew, water shrew, muskrat, beaver, raccoon, mink, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes, prairies, hay fields, areas of wetland shrubs and trees, and areas of water.

The main limitations in the areas used as rangeland are low precipitation, a short growing season, and alkalinity in the Absher soils.

Cool, Semiarid Soils on Terraces, Flood Plains, and Hills

17. Rock River-Bosler-Cragosen

Nearly level to steep, shallow and very deep, well drained, loamy and gravelly soils; on terraces, toe slopes, fan aprons, hills, and ridges

This unit is in the central and southeastern parts of the survey area. It is characterized by nearly level and gently sloping soils that are on terraces, fan aprons, and toe slopes and are intermingled with small areas of gently sloping to steep soils on hills and ridges. Slopes are 1 to 60 percent. The native vegetation is mainly grasses and shrubs. Elevation is 5,700 to 7,800 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit makes up about 17 percent of the survey area. It is about 38 percent Rock River and similar soils, 18 percent Bosler and similar soils, 9 percent Cragosen and similar soils, and 35 percent components of minor extent.

Rock River soils are on terraces, fan aprons, and toe slopes. They are very deep. They formed in alluvium derived from various sources. They are loamy throughout.

Bosler soils are on terraces and fan aprons. They are very deep. They formed in alluvium derived from various sources. The surface layer and subsoil are loamy. The subsoil is underlain by sandy and very gravelly material, which extends to a depth of 60 inches or more.

Cragosen soils are on hills and ridges. They are shallow. They formed in residuum and slope alluvium derived dominantly from sandstone and conglomerate. The surface layer is loamy and gravelly. It is underlain by loamy and very gravelly material. Soft sandstone or conglomerate bedrock is at a depth of 10 to 20 inches.

Of minor extent in this unit are Blackhall, Carmody, Dahlquist, Havre, and Peyton soils and Rock outcrop.

This unit is used mainly as rangeland and wildlife habitat. It provides summer, winter, and year-round habitat for pronghorn antelope and mule deer. It also provides habitat for such species as Merriam's shrew, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are low precipitation, a short growing season, wind erosion on the Rock River and Bosler soils, and the slope, droughtiness, rooting depth, and content of rock fragments in areas of the Cragosen soils.

18. Milren-Cragosen-Bosler

Nearly level to steep, shallow and very deep, well drained soils that are loamy or are loamy and gravelly; on terraces, fan aprons, hills, and ridges

This unit is in the central and eastern parts of the survey area. It is characterized by nearly level and gently sloping soils that are on terraces and fan aprons and are intermingled with small areas of moderately steep and steep soils on hills and ridges. Slopes are 1 to 60 percent. The native vegetation is mainly grasses and shrubs. Elevation is 6,500 to 7,800 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit makes up about 6 percent of the survey area. It is about 40 percent Milren and similar soils, 13 percent Cragosen and similar soils, 12 percent Bosler and similar soils, and 35 percent components of minor extent.

Milren soils are on terraces and fan aprons. They are very deep. They formed in alluvium derived from various sources. The surface layer is loamy. The subsoil is clayey. It is underlain by loamy material, which extends to a depth of 60 inches or more.

Cragosen soils are on hills and ridges. They are shallow. They formed in residuum and slope alluvium derived dominantly from sandstone and conglomerate. The surface layer is loamy and gravelly. It is underlain by loamy and very gravelly material. Soft sandstone or conglomerate bedrock is at a depth of 10 to 20 inches.

Bosler soils are on terraces and fan aprons. They are very deep. They formed in alluvium derived from various sources. The surface layer and subsoil are loamy. The subsoil is underlain by sandy and very gravelly material, which extends to a depth of 60 inches or more.

Of minor extent in this unit are Blazon, Carmody, Dahlquist, Havre, and Rock River soils.

This unit is used as rangeland and wildlife habitat. It provides summer habitat for pronghorn antelope and summer and year-round habitat for mule deer. Some areas provide summer, winter, and year-round habitat for elk. The unit also provides habitat for such species as Merriam's shrew, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are low precipitation, a short growing season, wind erosion on the Milren and Bosler soils, and the slope, rooting depth, droughtiness, and content of rock fragments in areas of the Cragosen soils.

19. Countryman-Tisworth-Iceslew-Absher

Nearly level and gently sloping, very deep, well drained to somewhat poorly drained, loamy soils; on flood plains, terraces, fan aprons, and toe slopes

This unit is in the Dubois area and in the southern part of the survey area. It is characterized by flood plains, terraces, fan aprons, and toe slopes adjacent to the Sweetwater and DuNoir Rivers. Slopes are 1 to 8 percent. The native vegetation is mainly grasses and shrubs. Elevation is 6,500 to 8,000 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 115 days.

This unit makes up about 1 percent of the survey area. It is about 29 percent Countryman and similar soils, 17 percent Tisworth and similar soils, 11 percent Iceslew and similar soils, 8 percent Absher and similar soils, and 35 percent components of minor extent.

Countryman soils are on flood plains. They are somewhat poorly drained. They formed in alluvium derived from various sources. They are loamy throughout. A seasonal high water table fluctuates between depths of 20 and 40 inches from May through September. The soils are frequently flooded for brief periods from March through July.

Tisworth soils are on fan aprons and toe slopes. They are well drained. They formed in alluvium derived from various sources. They are loamy throughout. They are strongly affected by salts and alkali.

Iceslew soils are on flood plains and valley toe slopes. They are poorly drained. They formed in alluvium derived dominantly from sandstone and siltstone. They are loamy throughout. A seasonal high water table fluctuates between depths of 6 and 30 inches. The soils are occasionally flooded for brief periods from March through August.

Absher soils are on terraces, fan aprons, and toe slopes. They are well drained. They formed in alluvium derived from various sources. The surface layer is loamy. The subsoil is clayey. It is underlain by loamy and clayey material, which extends to a depth of 60 inches or more. The soils are strongly affected by salts and alkali.

Of minor extent in this unit are Bosler, Havre, Ryan Park, Silas, and Venapass soils. Also of minor extent are Lander and Lander Variant soils in the DuNoir Valley.

This unit is used mainly as rangeland and wildlife habitat. It also is used for irrigated hay and pasture.

In the Dubois area this unit provides summer habitat for pronghorn antelope and mule deer. Some areas provide winter and year-round habitat for moose. In the southern part of the survey area, the unit provides winter and year-round habitat for pronghorn antelope, mule deer, and moose. The habitat for mule deer and moose is considered critical. The unit also provides habitat for such species as Merriam's shrew, water shrew, muskrat, beaver, raccoon, mink, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes, prairies, hay fields, areas of wetland shrubs and trees, and areas of water.

The main limitations in the areas used as rangeland are low precipitation, a short growing season, wetness and flooding in areas of the Countryman and Iceslew soils, wind erosion on the Tisworth soils, and alkalinity in the Tisworth and Absher soils. The main limitations in the areas used for irrigated hay and pasture are flooding and the seasonal high water table in areas of the Countryman and Iceslew soils and alkalinity in the Tisworth and Absher soils.

20. Brownsto Very Bouldery-Brownsto-Decross Variant

Nearly level to steep, very deep, well drained soils that are loamy and very bouldery or are loamy; on glacial moraines, fan aprons, and terraces and in kettles and drainageways

This unit is in the Dubois area. It is characterized by gently sloping to steep soils on glacial moraines and by nearly level and gently sloping soils on fan aprons and terraces and in kettles and drainageways. Slopes are 1 to 50 percent. The native vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,500 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

This unit makes up about 1 percent of the survey area. It is about 29 percent very bouldery Brownsto soils and similar soils, 25 percent other Brownsto soils and similar soils, 11 percent Decross Variant and similar soils, and 35 percent components of minor extent.

The very bouldery Brownsto soils are on glacial moraines, fan aprons, and terraces. They formed in glacial deposits derived from various sources. About 40 percent of the surface is covered with boulders, cobbles, and gravel. The surface layer is loamy and very bouldery. It is underlain by loamy and very cobbly material, which extends to a depth of 60 inches or more.

The Brownsto soils that are not bouldery are on terraces and fan aprons. They formed in alluvium derived from various sources. The surface layer and subsoil are loamy. The subsoil is underlain by loamy and very gravelly material, which extends to a depth of 60 inches or more.

Decross Variant soils are in kettles and drainageways. They formed in alluvium derived dominantly from glacial deposits. The surface layer is loamy. It is underlain by loamy material, which extends to a depth of 60 inches or more.

Of minor extent in this unit are Almy, Lander, Lupinto, Poposhia, Rockinchair, and Sinkson soils.

This unit is used as rangeland and wildlife habitat. It provides winter and year-round habitat for pronghorn antelope, mule deer, and elk. Some areas provide summer habitat for pronghorn antelope and moose. The unit also provides habitat for such species as Merriam's shrew, water shrew, muskrat, beaver, raccoon, mink, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes, prairies, hay fields, areas of wetland shrubs and trees, and areas of water.

The main limitations in the areas used as rangeland are low precipitation, a short growing season, and the slope; the content of rock fragments and droughtiness in areas of the Brownsto soils that are not bouldery; and the very bouldery surface layer, content of rock fragments, and droughtiness in areas of the very bouldery Brownsto soils.

21. Rock Outcrop-Pensore-Asholler-Pesmore

Rock outcrop and gently sloping to steep, very shallow to moderately deep, well drained, loamy and very channery soils; on hills, ridges, and mountains

This unit is in the northern and southeastern parts of the survey area. It is characterized by gently sloping to steep soils that are on hills, ridges, and mountains and are intermingled with a large amount of Rock outcrop. Slopes are 5 to 60 percent. The native vegetation is mainly grasses and shrubs and some scattered trees. Elevation is 6,000 to 8,000 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit makes up about 5 percent of the survey area. It is about 28 percent Rock outcrop, 14 percent Pensore and similar soils, 12 percent Asholler and similar soils, 11 percent Pesmore and similar soils, and 35 percent components of minor extent.

Rock outcrop occurs as exposures of limestone, schist, gneiss, and granite on the summit of hills, ridges, and mountains.

Pensore soils are on hills and ridges. They are shallow. They formed in residuum and slope alluvium derived dominantly from limestone. They are loamy and very channery throughout and are underlain by hard limestone bedrock at a depth of 10 to 20 inches.

Asholler soils are on hills, ridges, and mountains. They are very shallow or shallow. They formed in residuum and slope alluvium derived dominantly from schist and granite. They are loamy and very channery throughout and are underlain by hard schist bedrock at a depth of 6 to 20 inches.

Pesmore soils are on hills, ridges, and mountains. They are moderately deep. They formed in residuum and slope alluvium derived dominantly from schist and granite. They are loamy and very channery throughout and are underlain by hard schist bedrock at a depth of 20 to 40 inches.

Of minor extent in this unit are Bosler, Carmody, Crago, Cragosen, and Cushool soils.

This unit is used as rangeland and wildlife habitat. In the Dubois area, it provides winter habitat for elk, winter and year-round habitat for mule deer, and summer habitat for moose. In the north-central part of the survey area, it provides winter, summer, and year-round habitat for mule deer and pronghorn antelope. Some areas provide critical winter habitat for mule deer. The unit also provides habitat for such species as Merriam's shrew, white-tailed jackrabbit, yellow-bellied marmot, thirteen-lined ground squirrel, white-tailed prairie dog, coyote, red fox, badger, desert cottontail rabbit, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are the slope, a short growing season, the content of rock fragments, droughtiness, low precipitation, and a restricted rooting depth in the Asholler soils.

Cold, Semiarid Soils on Hills, Pediments, and Terraces

22. Irigul-Gelkie-Hoodle-Rock Outcrop

Rock outcrop and nearly level to steep, very shallow, shallow, and very deep, well drained, loamy and channery, loamy, or loamy and gravelly soils; on mountains, hills, ridges, pediments, and terraces

This unit is in the southwestern part of the survey area. It is characterized by moderately steep and steep soils that are on mountains, hills, and ridges and are intermingled with areas of nearly level to moderately sloping soils on terraces and pediments and with areas of Rock outcrop. Slopes are 1 to 60 percent. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit makes up about 6 percent of the survey area. It is about 19 percent Irigul and similar soils, 17 percent Gelkie and similar soils, 15 percent Hoodle and similar soils, 14 percent Rock outcrop, and 35 percent components of minor extent.

Irigul soils are on mountains, hills, and ridges. They are very shallow or shallow. They formed in residuum and slope alluvium derived dominantly from schist and granite. The surface layer is loamy and channery. It is underlain by loamy and very channery material. Hard schist or granite bedrock is at a depth of 6 to 20 inches.

Gelkie soils are on terraces, mountain pediments, and hillslopes. They are very deep. They formed in alluvium derived dominantly from sandstone, schist, and granite. They are loamy throughout.

Hoodle soils are on pediments and terraces. They are very deep. They formed in alluvium derived dominantly from schist and granite. They are loamy and gravelly throughout.

Rock outcrop occurs as exposures of schist and granite on the summit of hills, ridges, and mountains.

Of minor extent in this unit are Abston, Ansel, Midelight, Mosroc, Uhl, and Venapass soils.

This unit is used as rangeland and wildlife habitat. It provides summer habitat for pronghorn antelope, mule deer, and elk; winter habitat for elk; and critical winter and year-round habitat for moose. It also provides habitat for such species as Merriam's shrew, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are low precipitation, a short growing season, the content of rock fragments in the Irigul and Hoodle soils, and the slope and droughtiness in areas of the Irigul soils.

23. Gelkie-Hoodle-Uhl

Nearly level to moderately sloping, very deep, well drained soils that are loamy and gravelly or are loamy; on pediments, hillslopes, terraces, and alluvial fans

This unit is in the southwestern part of the survey area. It is characterized by nearly level to moderately sloping soils on pediments, hillslopes, terraces, and alluvial fans. Slopes are 1 to 15 percent. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit makes up about 5 percent of the survey area. It is about 31 percent Gelkie and similar soils, 29 percent Hoodle and similar soils, 5 percent Uhl and similar soils, and 35 percent components of minor extent.

Gelkie soils are on mountain pediments, terraces, and hillslopes. They formed in alluvium derived dominantly from sandstone, granite, and schist. They are loamy throughout.

Hoodle soils are on terraces and pediments. They formed in alluvium derived dominantly from schist and granite. The surface layer is loamy and gravelly. The subsoil and the substratum to a depth of 60 inches or more are loamy and very gravelly.

Uhl soils are on alluvial fans. They formed in alluvium derived dominantly from sandstone, schist, and granite. They are loamy throughout.

Of minor extent in this unit are Abston, Conpeak, Irigul, Midelight, and Pishkun Variant soils and Rock outcrop.

This unit is used as rangeland and wildlife habitat. It provides summer habitat for pronghorn antelope and mule deer and winter, summer, and critical calving habitat for elk. It also provides habitat for such species as Merriam's shrew, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are low precipitation, a short growing season, and the content of rock fragments in the Hoodle soils.

24. Conpeak-Cryluha-Rock Outcrop

Rock outcrop and nearly level to steep, very shallow to moderately deep, well drained soils that are loamy or are gravelly and loamy; on hills, ridges, escarpments, fan aprons, and pediments

This unit is in the southwestern part of the survey area. It is characterized by moderately sloping to steep soils that are on hills, ridges, and escarpments and are intermingled with small areas of nearly level to moderately sloping soils on fan aprons and pediments and with areas of Rock outcrop. Slopes are 1 to 45 percent. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is about 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit makes up about 2 percent of the survey area. It is about 33 percent Conpeak and similar soils, 17 percent Cryluha and similar soils, 15 percent Rock outcrop, and 35 percent components of minor extent.

Conpeak soils are on hills and ridges. They are very shallow or shallow. They formed in residuum and slope alluvium derived dominantly from semiconsolidated sandstone. They are loamy throughout and are underlain by semiconsolidated sandstone and siltstone bedrock at a depth of 8 to 20 inches.

Cryluha soils are on fan aprons, hillslopes, and pediments. They are moderately deep. They formed in residuum and slope alluvium derived dominantly from weakly consolidated sandstone. They are loamy and gravelly throughout and are underlain by weakly consolidated sandstone bedrock at a depth of 20 to 40 inches.

Rock outcrop occurs as exposures of semiconsolidated sandstone and siltstone on escarpments and on the summit of hills and ridges.

Of minor extent in this unit are Coutis, Lymanson, Hoodle, and Uhl soils.

This unit is used as rangeland and wildlife habitat. It provides summer habitat for pronghorn antelope, mule deer, and elk; winter and year-round habitat for mule deer and elk; and critical calving habitat for elk. It also provides habitat for such species as Merriam's shrew, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail rabbit, Nuttall's cottontail rabbit, coyote, red fox, badger, and birds commonly associated with shrub steppes and prairies.

The main limitations in the areas used as rangeland are low precipitation, a short growing season, and the slope and droughtiness in areas of the Conpeak soils.

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. This soil survey was designed primarily to facilitate rangeland management. The map units therefore are more broadly defined than if the survey had been designed for cultivated areas or other intensively managed areas. More information on each map unit is given under the heading "Use and Management of the Soils."

Map Unit Composition

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 and miscellaneous areas 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; however, 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 slope, stoniness, salinity, wetness, 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, Brownsto loam, 0 to 6 percent slopes, is a phase of the Brownsto 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. Bosler-Rock River sandy loams, 1 to 8 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 in all areas. Blackhall-Carmody association, hilly, is an example.

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

Table 2 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.

Map Unit Descriptions

100—Absher-Elkol complex, 0 to 4 percent slopes. This map unit is on terraces. Areas are irregular in shape and are 30 to 400 acres in size. The native vegetation is mainly alkali-tolerant grasses and shrubs. Elevation is 5,300 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 55 percent Absher loam, 1 to 4 percent slopes, and 30 percent Elkol silty clay loam, 0 to 3 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of slick spots; Forelle loam, 1 to 4 percent slopes; Glendive sandy loam, 1 to 3 percent slopes; Havre loam, 1 to 3 percent slopes; and Poposhia loam, 1 to 4 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Absher soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown loam 1 inch thick. The upper 15 inches of the subsoil is brown, sodium-affected silty clay. The lower part to a depth of 60 inches or more is light yellowish brown, sodium-affected silty clay loam.

Permeability is very slow in the Absher soil. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Elkol soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown silty clay loam 2 inches thick. The upper 54 inches of the underlying material is brown, sodium-affected clay. The lower part to a depth of 60 inches or more is light gray very fine sandy loam.

Permeability is slow in the Elkol soil. Available water capacity is moderate. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 15 to 30 percent alkali sacaton, 10 to 20 percent basin wildrye, 5 to 10 percent rhizomatous wheatgrasses, and 10 to 25 percent greasewood. As the range condition deteriorates, inland saltgrass and greasewood increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,800 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,500 pounds in favorable years to 1,200 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, a short growing season, and alkalinity. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in poor condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIs, nonirrigated. It is in the Saline Lowland, 10- to 14-inch precipitation, High Plains Southeast range site.

101—Absher-Poposhia-Sinkson complex, 1 to 10 percent slopes. This map unit is on fan aprons, terraces, and toe slopes. Areas are elongated or irregular in shape and are 5 to 200 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,500 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 25 percent Absher loam, 1 to 8 percent slopes; 25 percent Poposhia loam, 1 to 10 percent slopes; and 25 percent Sinkson sandy clay loam, 1 to 10 percent slopes. The Absher soil is on fan aprons, terraces, and toe slopes, the Poposhia soil is on fan aprons and toe slopes, and the Sinkson soil is on fan aprons. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Almy loam, 1 to 10 percent slopes, adjacent to the Absher soil, and Rockinchair loam, 5 to 20 percent slopes, adjacent to the Poposhia soil. Included areas make up about 25 percent of the total acreage. The percentage varies from one area to another.

The Absher soil is very deep and well drained. It formed in slope alluvium derived from various sources. Typically, the surface layer is pale brown loam 4 inches thick. The upper 5 inches of the subsoil is yellowish brown, sodium-affected clay. The next 11 inches is yellowish brown, sodium-affected clay loam. The lower part to a depth of 60 inches or more is light brownish gray, sodium-affected clay loam.

Permeability is very slow in the Absher soil. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Poposhia soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 4 inches thick. The subsoil is pale brown loam 10 inches thick. The upper 13 inches of the substratum is light olive brown sandy clay loam. The lower part to a depth of 60 inches or more is light brownish gray loam. In some areas the surface layer is gravelly loam.

Permeability is moderate in the Poposhia soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Sinkson soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone and siltstone. Typically, the surface layer is reddish brown sandy clay loam 1 inch thick. The subsoil is reddish brown sandy clay loam 8 inches thick. The substratum to a depth of 60 inches or more is reddish brown loam. In some areas the surface layer is loam.

Permeability is moderate in the Sinkson soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

Most areas of this unit are used as rangeland and wildlife habitat. A few areas are used for irrigated hay and pasture.

The potential plant community on the Absher soil is mainly 20 to 40 percent gardner saltbush, 5 to 15 percent rhizomatous wheatgrasses, 5 to 15 percent bottlebrush squirreltail, and 10 to 20 percent Indian ricegrass. As the range condition deteriorates, gardner saltbush and birdfoot sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 450 pounds of air-dry vegetation per acre in normal years. Production ranges from 650 pounds in favorable years to 275 pounds in unfavorable years.

The potential plant community on the Poposhia and Sinkson soils is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, sedges and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,100 pounds in favorable years to 500 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, a short growing season, and alkalinity in the Absher soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

If this unit is used for irrigated hay and pasture, the main limitations are the slope of all three soils and alkalinity in the Absher soil. The contour ditch or sprinkler irrigation method is suitable. The furrow or border irrigation method also is suitable, especially in nearly level areas. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soils. Use of pipe, ditch lining, or drop structures in irrigation ditches facilitates irrigation and reduces the hazard of ditch erosion. Grazing during wet periods results in compaction of the surface layer, poor tilth, and excessive runoff. Proper grazing practices, rotation grazing, weed control, and applications of fertilizer are needed to ensure the maximum quality of forage. Annual applications of nitrogen and phosphate fertilizer are needed to maintain the production of high-quality forage. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing.

The Absher soil is in capability subclass VIs, nonirrigated and irrigated. It is in the Saline Upland, 10- to 14-inch precipitation, Foothills and Basins East range site. The Poposhia and Sinkson soils are in capability subclass IVe, nonirrigated and irrigated. They are in the Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site.

102—Absher Variant-Absher complex, 0 to 6 percent slopes. This map unit is on plateaus and terraces in the Great Divide Basin. Areas are irregular in shape and are 100 to 300 acres in size. The native vegetation is mainly alkali-tolerant shrubs and a few grasses. Elevation is 7,000 to 7,500 feet. The annual precipitation is 9 to 11 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 50 percent Absher Variant silty clay loam, 0 to 6 percent slopes, and 30 percent Absher sandy clay loam, 0 to 6 percent slopes. The Absher Variant soil is on plateaus, and the Absher soil is on terraces. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of slick spots; Blazon clay loam, 3 to 20 percent slopes; and Barrett Variant very channery very fine sandy loam, 5 to 15 percent slopes. These areas are on ridges. Also included are small areas of Poposhia loam, 1 to 6 percent slopes, and small areas of Rock outcrop. The Rock outcrop is on shale knobs on plateaus, terraces, and escarpments. The Poposhia soil is in areas of valley fill. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Absher Variant soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from shale. Typically, the surface layer is light olive brown silty clay loam 2 inches thick. The subsoil is light olive brown, sodium-affected clay 19 inches thick. The substratum is grayish brown clay 3 inches thick. Shale bedrock is at a depth of about 24 inches.

Permeability is slow in the Absher Variant soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is slow, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Absher soil is very deep and well drained. It formed in slope alluvium derived from various sources. Typically, the surface layer is light brownish gray sandy clay loam 4 inches thick. The upper 9 inches of the subsoil is light olive brown, sodium-affected silty clay. The lower part to a depth of 60 inches or more is light olive brown, sodium-affected clay loam.

Permeability is very slow in the Absher soil. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 25 to 35 percent gardner saltbush, 10 to 25 percent bottlebrush squirreltail, 10 to 20 percent Indian ricegrass, and 5 to 10 percent western wheatgrass. As the range condition deteriorates, gardner saltbush and birdfoot sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 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. Because this unit has been severely overgrazed, the present vegetation is dominantly gardner saltbush and birdfoot sagebrush.

The production of vegetation suitable for grazing is limited by low precipitation, alkalinity, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in poor condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIs, nonirrigated. It is in the Saline Upland, 7- to 9-inch precipitation, Green River and Great Divide Basin range site.

103—Abston-Diamondville complex, 1 to 12 percent slopes. This map unit is on hillslopes. Areas are irregular in shape and are 40 to 200 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 7,500 feet. The annual precipitation is 9 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 55 percent Abston sandy loam, 1 to 12 percent slopes, and 30 percent Diamondville loam, 1 to 12 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blazon clay loam, 3 to 12 percent slopes; Blackhall sandy loam, 5 to 12 percent slopes; and Forelle loam, 1 to 12 percent slopes. Also included are small areas of Rock River fine sandy loam, 1 to 8 percent slopes, and Ryan Park loamy fine sand, 1 to 8 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Abston soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sodic shale interbedded with sandstone. Typically, the surface layer is pale brown sandy loam 3 inches thick. The upper 3 inches of the subsoil is dark yellowish brown, sodium-affected clay loam. The next 7 inches is yellowish brown, sodium-affected sandy clay. The lower 21 inches is pale yellow and light gray sandy clay loam. Soft, sodic shale bedrock is at a depth of about 34 inches.

Permeability is slow in the Abston soil. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Diamondville soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is pale brown loam 3 inches thick. The upper 9 inches of the subsoil is yellowish brown clay loam. The lower 24 inches is light olive brown loam. Soft sandstone bedrock is at a depth of about 36 inches.

Permeability is moderately slow in the Diamondville soil. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Abston soil is mainly 15 to 25 percent western wheatgrass, 5 to 10 percent bottlebrush squirreltail, 5 to 10 percent Indian ricegrass, and 20 to 30 percent birdfoot sagebrush. As the range condition deteriorates, birdfoot sagebrush increases in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years.

The potential plant community on the Diamondville soil is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 production of vegetation suitable for grazing is limited by low precipitation, a short growing season, and alkalinity in the Abston soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Abston soil is in capability subclass VIs, nonirrigated. It is in the Impervious Clay, 10- to 14-inch precipitation, High Plains Southeast range site. The Diamondville soil is in capability subclass IVe, nonirrigated. It is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site.

104—Almy loam, 0 to 6 percent slopes. This very deep, well drained soil is on fan aprons. It formed in alluvium derived dominantly from sandstone and shale.

Areas are irregular in shape and are 5 to 640 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 7,800 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Included in this unit are small areas of Forelle fine sandy loam, 1 to 6 percent slopes; Lupinto loam, 1 to 6 percent slopes, on terraces; Monbutte fine sandy loam, 1 to 6 percent slopes; and Poposhia sandy clay loam, 1 to 6 percent slopes. Also included, on hillslopes, are small areas of Rockinchair loam, 1 to 15 percent slopes; Thermopolis loam, 2 to 15 percent slopes; and a soil that is very channery throughout. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

Typically, the surface layer of the Almy soil is reddish brown loam 1 inch thick. The upper 16 inches of the subsoil is reddish brown sandy clay loam. The lower 10 inches is light reddish brown sandy clay loam. The substratum to a depth of 60 inches or more is reddish brown sandy clay loam.

Permeability is moderate. Available water capacity is high. The 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.

Most areas of this unit are used for irrigated hay and pasture. A few areas are used as rangeland and wildlife habitat.

This unit is well suited to hay and pasture. The main limitation is a short growing season. Applications of nitrogen and phosphate fertilizer improve the growth of forage plants. Irrigation water can be applied by the sprinkler or contour ditch method. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soil. Use of pipe, ditch lining, or drop structures in irrigation ditches facilitates irrigation and reduces the hazard of ditch erosion and water losses. Leveling helps to ensure a uniform application of water. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing.

The potential plant community on this unit is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, sedges and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,100 pounds in favorable years to 500 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclasses IIIe, irrigated, and IVe, nonirrigated. It is in the Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site. It is prime farmland in areas where it is irrigated and an adequate water supply is available.

105—Almy-Monbutte-Rallod complex, 1 to 10 percent slopes. This map unit is on fan aprons, hills, and strath terraces. Areas are irregular in shape and are 40 to 400 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,400 to 6,200 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 40 percent Almy loam, 2 to 6 percent slopes; 25 percent Monbutte fine sandy loam, 1 to 6 percent slopes; and 15 percent Rallod very fine sandy loam, 3 to 10 percent slopes. The Almy soil is on fan aprons, the Monbutte soil is on strath terraces, and the Rallod soil is on hills. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of slick spots; Blazon clay loam, 3 to 10 percent slopes; Seaverson loam, 6 to 10 percent slopes, adjacent to the Rallod soil; Forelle loam, 1 to 10 percent slopes; Poposhia loam, 1 to 10 percent slopes, adjacent to the Almy soil; and, adjacent to the Monbutte soil, a soil that is similar to the Almy soil but has bedrock at a depth of 20 to 40 inches. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Almy soil is very deep and well drained. It formed in alluvium derived dominantly from variegated sandstone interbedded with shale. Typically, the surface layer is pale brown loam 2 inches thick. The upper 3 inches of the subsoil is reddish brown clay loam. The next 13 inches is yellowish red clay loam. The lower 10 inches is light reddish brown sandy clay loam. The substratum to a depth of 60 inches or more is light reddish brown and reddish brown sandy clay loam.

Permeability is moderate in the Almy soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Monbutte soil is very deep and well drained. It formed in residuum and slope alluvium derived dominantly from variegated shale. Typically, the surface layer is very pale brown fine sandy loam 4 inches thick. The upper 19 inches of the subsoil is dark reddish brown and yellowish red, sodium-affected clay. The lower part to a depth of 60 inches or more is pink and pinkish gray, sodium-affected sandy clay loam.

Permeability is slow in the Monbutte soil. Available water capacity is high. The 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 Rallod soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from variegated shale. Typically, the surface layer is pale brown very fine sandy loam 4 inches thick. The subsurface layer is brown loam 3 inches thick. The upper 7 inches of the subsoil is reddish brown and brown, sodium-affected sandy clay. The lower 4 inches is brown, sodium-affected sandy clay loam. Soft, variegated shale bedrock is at a depth of about 18 inches.

Permeability is slow in the Rallod soil. Available water capacity is low. The effective rooting depth is 9 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Almy soil is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, rabbitbrush and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 potential plant community on the Monbutte soil is mainly 40 to 50 percent thickspike wheatgrass, 15 to 25 percent green needlegrass, 5 to 10 percent bluebunch wheatgrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 10 percent big sagebrush. As the range condition deteriorates, rhizomatous wheatgrasses, Canby bluegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,000 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,300 pounds in favorable years to 500 pounds in unfavorable years.

The potential plant community on the Rallod soil is mainly 15 to 25 percent bluebunch wheatgrass, 15 to 25 percent western wheatgrass, 5 to 10 percent mutton bluegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, threadleaf sedge and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, a short growing season, alkalinity in the Monbutte and Rallod soils, and the restricted rooting depth in the Rallod soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Almy soil is in capability subclass IVe, nonirrigated. It is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Monbutte soil is in capability subclass VIe, nonirrigated. It is in the Clayey, 10- to 14-inch precipitation, High Plains Southeast range site. The Rallod soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Loamy, 10- to 14-inch precipitation, High Plains Southeast range site.

106—Ansel-Ansel Variant complex, steep. This map unit is on fan aprons and hillslopes. Slopes are 5 to 45 percent. Areas are irregular in shape and are 40 to 1,000 acres in size. The native vegetation is mainly trees and an understory of scattered grasses, forbs, and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 15 to 19 inches, the average annual air

temperature is 33 to 38 degrees F, and the frost-free period is 40 to 70 days.

This unit is about 40 percent Ansel sandy loam, 5 to 45 percent slopes, and 40 percent Ansel Variant loam, 5 to 45 percent slopes. The Ansel soil is on fan aprons, and the Ansel Variant soil is on hillslopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Hoodle very gravelly sandy loam, 2 to 15 percent slopes; Irigul channery loam, 3 to 30 percent slopes; and Midelight channery loam, 5 to 15 percent slopes. Also included are small areas of Gelkie fine sandy loam, 1 to 10 percent slopes, along drainageways and small areas of Rock outcrop on escarpments and on the summit of ridges and hills. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Ansel soil is very deep and well drained. It formed in alluvium derived dominantly from schist. Typically, the surface is covered with a mat of forest litter 2 inches thick. The surface layer is very pale brown sandy loam 5 inches thick. The next layer is pale brown sandy loam 5 inches thick. The upper 16 inches of the subsoil is brown clay loam. The lower 7 inches is yellowish brown gravelly sandy clay loam. The substratum to a depth of 60 inches or more is light olive brown gravelly sandy loam.

Permeability is moderate in the Ansel soil. Available water capacity also is moderate. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

The Ansel Variant soil is moderately deep and well drained. It formed in residuum and alluvium derived dominantly from schist. Typically, the surface is covered with a mat of forest litter 2 inches thick. The surface layer is brown loam 2 inches thick. The subsurface layer is pale brown channery sandy loam 6 inches thick. The subsoil is yellowish brown channery clay loam 14 inches thick. The substratum is brown very channery loam 8 inches thick. Hard schist bedrock is at a depth of about 30 inches.

Permeability is moderate in the Ansel Variant soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for timber production. It also is used for wildlife habitat.

This unit is well suited to timber production. The site index for lodgepole pine ranges from 50 to 60. The main limitations affecting timber production and harvesting are the slope and the available water capacity. Minimizing the risk of erosion is essential when timber is harvested. Properly designed road drainage systems that include carefully located culverts help to control erosion. Spoil from excavations is subject to rill and gully erosion and to sloughing. Roads and landings can be protected from erosion by constructing water bars and by seeding areas that have been cut and filled. Conventional methods of harvesting timber generally are suitable, but the surface may be compacted if heavy equipment is used during wet periods.

After the timber is harvested, carefully managed reforestation helps to control competition from undesirable understory plants. Properly preparing a well scarified seedbed facilitates regeneration. Plant competition delays natural regeneration but does not prevent the eventual development of a fully stocked, normal stand of trees.

Planting the trees on the contour helps to control erosion. Because the soils are sticky when wet, most planting and harvesting equipment can be used only during dry periods. Among the trees that are suitable for planting are lodgepole pine and Douglas fir.

This unit is in capability subclass VIe, nonirrigated. It is not assigned to a range site.

107—Ansel-Rock outcrop complex, hilly. This map unit is on fan aprons and hills. Slopes are 5 to 25 percent. Areas are irregular in shape and are 40 to 400 acres in size. The native vegetation is mainly trees and an understory of scattered grasses, forbs, and shrubs. Elevation is 8,000 to 8,600 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 38 degrees F, and the frost-free period is 40 to 70 days.

This unit is about 60 percent Ansel sandy loam, 5 to 25 percent slopes, and 20 percent Rock outcrop. The Ansel soil is on fan aprons, and the Rock outcrop is on the summit of knobs and hills. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Hoodle gravelly loam, 2 to 15 percent slopes, on terraces; Irigul channery loam, 5 to 25 percent slopes; and Mosroc very gravelly fine sandy loam, 5 to 15 percent slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Ansel soil is very deep and well drained. It formed in alluvium derived dominantly from schist. Typically, the surface is covered with a mat of forest litter 1 inch thick. The surface layer is pale brown sandy loam 4 inches thick. The subsoil is yellowish brown gravelly sandy clay loam 17 inches thick. The substratum to a depth of 60 inches or more is light olive brown gravelly sandy loam.

Permeability is moderate in the Ansel soil. Available water capacity also is moderate. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

The Rock outcrop occurs as exposures of granite or schist.

This unit is used mainly for timber production. It also is used for wildlife habitat.

This unit is well suited to timber production. The site index for lodgepole pine ranges from 50 to 60. Minimizing the risk of erosion is essential when timber is harvested. Properly designed road drainage systems that include carefully located culverts help to control erosion. Spoil from excavations is subject to rill and gully erosion and to sloughing. Roads and landings can be protected from erosion by constructing water bars and by seeding areas that have been cut and filled.

The Rock outcrop can interfere with felling, yarding, and other activities involving the use of equipment. After the timber is harvested, carefully managed reforestation helps to control competition from undesirable understory plants. Plant competition delays natural regeneration but does not prevent the eventual development of a fully stocked, normal stand of trees. Planting the trees on the contour helps to control erosion. Conventional methods of harvesting timber generally are suitable, but the soil may be compacted if heavy equipment is used during wet periods. Because the soil is sticky when wet, most planting and harvesting equipment can be used only during dry periods. Among the trees that are suitable for planting are lodgepole pine and Douglas fir.

The Ansel soil is in capability subclass VIe, nonirrigated. The Rock outcrop is in capability class VIII, nonirrigated. This unit is not assigned to a range site.

108—Apron-Lostwells complex, 0 to 10 percent slopes. This map unit is on fan aprons and terraces. Areas are irregular in shape and are 40 to 150 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 4,800 to 5,500 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 45 percent Apron sandy loam, 0 to 10 percent slopes, and 40 percent Lostwells loam, 1 to 8 percent slopes. The Apron soil is on fan aprons, and the Lostwells soil is on fan aprons and terraces. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Youngston and Binton clay loams adjacent to the Lostwells soil. Also included, in small areas adjacent to the Apron soil, is a soil that is similar to the Apron soil but is sodic. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Apron soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown sandy loam 4 inches thick. The underlying material to a depth of 60 inches or more also is pale brown sandy loam.

Permeability is moderately rapid in the Apron soil. Available water capacity is high. The 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 severe.

The Lostwells soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown loam 5 inches thick. The upper 9 inches of the underlying material is light yellowish brown sandy loam. The next 36 inches is pale brown sandy clay loam. The lower part to a depth of 60 inches or more is pale olive loam. The underlying material has a few thin strata of clay loam and loamy sand throughout.

Permeability is moderate in the Lostwells soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Apron soil is mainly 30 to 50 percent needleandthread, 15 to 25 percent Indian ricegrass, 5 to 10 percent rhizomatous wheatgrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, yucca, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years.

The potential plant community on the Lostwells soil is mainly 10 to 20 percent Indian ricegrass, 20 to 40 percent rhizomatous wheatgrasses, 10 to 20 percent needleandthread, and 5 to 15 percent big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and by wind erosion on the Apron soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIe, nonirrigated. The Apron soil is in the Sandy, 5- to 9-inch precipitation, Wind River Basin range site. The Lostwells soil is in the Loamy, 5- to 9-inch precipitation, Wind River Basin range site.

109—Apron-Wallson-Worland association, 1 to 15 percent slopes. This map unit is on hills, ridges, and fan aprons. Areas are irregular in shape and are 60 to 400 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 35 percent Apron loamy sand, 1 to 10 percent slopes; 30 percent Wallson sandy loam, 1 to 10 percent slopes; and 20 percent Worland loamy sand, 2 to 15 percent slopes. The Apron soil is on fan aprons, the Wallson soil is on toe slopes, and the Worland soil is on hills and ridges.

Included in this unit are small areas of Frisite fine sandy loam, 1 to 10 percent slopes, adjacent to the Apron soil; Oceanet sandy loam, 5 to 45 percent slopes, adjacent to the Worland soil; and Youngston clay loam, 1 to 6 percent slopes, adjacent to the Apron and Wallson soils. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Apron soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown loamy sand 8 inches thick. The underlying material to a depth of 60 inches or more is light yellowish brown sandy loam.

Permeability is moderately rapid in the Apron soil. Available water capacity is high. The 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 Wallson soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone. Typically, the surface layer is light yellowish brown sandy loam 3 inches thick. The upper part of the subsoil is yellowish brown sandy loam 19 inches thick. The lower part to a depth of 60 inches or more is pale brown and very pale brown sandy loam.

Permeability is moderately rapid in the Wallson soil. Available water capacity is high. The 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 severe.

The Worland soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is light yellowish brown loamy sand 5 inches thick. The underlying material is light yellowish brown sandy loam 20 inches thick. Soft sandstone bedrock is at a depth of about 25 inches.

Permeability is moderately rapid in the Worland soil. Available water capacity is low. The 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 severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 30 to 50 percent needleandthread, 15 to 25 percent Indian ricegrass, 5 to 10 percent rhizomatous wheatgrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, yucca, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and wind erosion and by droughtiness in the Worland soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIe, nonirrigated. It is in the Sandy, 5- to 9-inch precipitation, Wind River Basin range site.

110—Aquic Cryofluvents-Ansel complex, 1 to 10 percent slopes. This map unit is on mountains. Areas are irregular in shape and are 200 to 600 acres in size. The native vegetation is mainly timber and an understory of grasses and forbs. Elevation is 8,500 to 9,000 feet. The annual precipitation is 18 to 22 inches, the average annual air temperature is 33 to 38 degrees F, and the frost-free period is 40 to 60 days.

This unit is about 55 percent Aquic Cryofluvents, 1 to 10 percent slopes, and 30 percent Ansel loam, 3 to 10 percent slopes. The Aquic Cryofluvents are on the summit of mountains, and the Ansel soil is on mountainsides. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Granile gravelly sandy loam, 5 to 15 percent slopes, and Youga loam, 2 to 10 percent slopes. Also included are small areas of very poorly drained soils that are similar to the Aquic Cryofluvents but have slopes of 1 to 5 percent and are ponded in spring and small areas of a somewhat poorly drained soil. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Aquic Cryofluvents are very deep and poorly drained. They formed in alluvium derived dominantly from conglomerate. They vary considerably within short distances. Typically, the surface is covered with a mat of undecomposed forest litter 2 inches thick. The surface layer is about 2 inches of dark brown gravelly sandy loam or gravelly loam. The underlying material to a depth of 60 inches or more is brown to light yellowish brown extremely gravelly sandy clay loam, very gravelly sandy clay loam, extremely gravelly sandy loam, very gravelly sandy loam, gravelly sandy clay loam, or gravelly sandy loam.

Permeability is moderate or moderately rapid in the Aquic Cryofluvents. Available water capacity is moderate or high. The 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 or severe. The water table fluctuates between depths of 6 and 24 inches from January through December.

The Ansel soil is very deep and well drained. It formed in alluvium derived dominantly from schist. Typically, the surface is covered with a mat of forest litter 2 inches thick. The surface layer is grayish brown loam 3 inches thick. The next layer is pale brown loam 4 inches thick. The subsoil is light yellowish brown sandy clay loam 20 inches thick. The substratum to a depth of 60 inches or more is pale brown gravelly sandy clay loam.

Permeability is moderate in the Ansel soil. Available water capacity also is moderate. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as woodland. It also is used for wildlife habitat.

This unit is moderately well suited to timber production. The site index for lodgepole pine ranges from 55 to 60. The main limitation affecting timber production and harvesting is the wetness of the Aquic Cryofluvents. The use of equipment is limited unless drainage is improved. Minimizing the risk of erosion is essential when timber is harvested. Properly designed road drainage systems that include carefully located culverts help to control erosion. Spoil from excavations is subject to rill and gully erosion and to sloughing. Roads and landings can be protected from erosion by constructing water bars and by seeding areas that have been cut and filled.

After the timber is harvested, carefully managed reforestation helps to control competition from undesirable understory plants. Properly preparing a well scarified seedbed facilitates revegetation. Plant competition delays natural regeneration but does not prevent the eventual development of a fully stocked, normal stand of trees. Hand planting of nursery stock commonly is necessary to establish or improve a stand.

Conventional methods of harvesting timber can be used. Because the soils are sticky when wet, most planting and harvesting equipment can be used only during dry periods.

This unit is in capability subclass VIe, nonirrigated. It is not assigned to a range site.

111—Badland. This map unit consists of barren land that is dissected by many intermittent drainage channels. Local relief generally ranges from 5 to 400 feet. Slopes are 5 to 150 percent. Areas are irregular in shape and are 10 to 1,000 acres in size. Elevation is 5,200 to 8,500 feet. The annual precipitation is 7 to 14 inches, the average annual air temperature is 39 to 49 degrees F, and the frost-free period is 80 to 130 days.

Runoff is very rapid, and geologic erosion is very active.

Included in this unit are small areas of Thermopolis loam, 2 to 30 percent slopes, on hills; Rockinchair fine sandy loam, 1 to 40 percent slopes, on hills; and Absher loam, 1 to 8 percent slopes, on fan aprons in the Dubois area. Also included, on hillslopes, are small areas of Birdsley sandy clay loam, 1 to 15 percent slopes, in the Shoshoni area; Blazon loam, 3 to 30 percent slopes; Seaverson clay loam, 6 to 20 percent slopes, in the Sand Draw area; and Poposhia loam, 1 to 10 percent slopes, and Tisworth fine sandy loam, 1 to 8 percent slopes, on fan aprons in the Great Divide Basin. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

This unit is used for wildlife habitat and for recreational purposes.

This unit is in capability class VIII, nonirrigated. It is not assigned to a range site.

112—Badland-Birdsley complex, steep. This map unit is on hills and ridges. Slopes are 0 to 20 percent. Areas are irregular in shape and are 40 to 400 acres in size. The Badland supports no vegetation. The native vegetation on the Birdsley soil is mainly grasses and shrubs. Elevation is 5,000 to 6,500 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 50 percent Badland and 30 percent Birdsley sandy clay loam, 0 to 20 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Mudray sandy loam, 1 to 8 percent slopes; Oceanet sandy loam, 5 to 40 percent slopes; and Worland sandy loam, 1 to 35 percent slopes. Also included are small areas of Youngston clay loam, 1 to 6 percent slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Badland occurs as steep, barren land that is dissected by many intermittent drainageways. Local relief generally ranges from 5 to 400 feet. Runoff is very rapid, and geologic erosion is very active.

The Birdsley soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sodic shale. Typically, the surface layer is pale olive sandy clay loam 2 inches thick. The underlying material is pale olive, sodium-affected sandy clay loam 12 inches thick. Soft, sodic shale bedrock is at a depth of about 14 inches.

Permeability is very slow in the Birdsley soil. Available water capacity is low. The effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used for wildlife habitat and for recreational purposes.

The potential plant community on the Birdsley soil is mainly 20 to 40 percent birdfoot sagebrush, 10 to 20 percent bottlebrush squirreltail, 20 to 30 percent western wheatgrass, and 5 to 15 percent Indian ricegrass. As the range condition deteriorates, birdfoot sagebrush increases in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 200 pounds of air-dry vegetation per acre in normal years. Production ranges from 300 pounds in favorable years to 100 pounds in unfavorable years.

The production of vegetation suitable for grazing in areas of the Birdsley soil is limited by low precipitation, a short growing season, alkalinity, droughtiness, and the hazard of water erosion. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Badland is in capability class VIII. It is not assigned to a range site. The Birdsley soil is in capability subclass VIIe, nonirrigated. It is in the Impervious Clay, 5- to 9-inch precipitation, Wind River Basin range site.

113—Badland-Seaverson-Blazon complex, steep. This map unit is on hills and ridges. Slopes are 6 to 40 percent. Areas are irregular in shape and are 40 to 200 acres in size. The Badland supports no vegetation. The native vegetation on the Seaverson and Blazon soils is mainly grasses and shrubs. Elevation is 5,300 to 6,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Badland; 20 percent Seaverson clay loam, 6 to 40 percent slopes; and 20 percent Blazon clay loam, 6 to 40 percent slopes. The Seaverson and Blazon soils are on hills and ridges. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blackhall sandy loam, 6 to 40 percent slopes; Carmody fine sandy loam, 6 to 40 percent slopes; Poposhia loam, 1 to 20 percent slopes; and Rallod loam, 6 to 20 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Badland occurs as steep, barren land that is dissected by many intermittent drainage channels. Local relief generally ranges from 5 to 400 feet. Runoff is very rapid, and geologic erosion is very active.

The Seaverson soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from variegated, sodic shale. Typically, the surface layer is reddish brown clay loam 2 inches thick. The underlying material is reddish brown, sodium-affected clay loam 8 inches thick. Soft, variegated, sodic shale bedrock is at a depth of about 10 inches.

Permeability is very slow in the Seaverson soil. Available water capacity is low. The 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 Blazon soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from shale. Typically, the surface layer is light brownish gray clay loam 2 inches thick. The underlying material is light olive brown clay loam 17 inches thick. Soft shale bedrock is at a depth of about 19 inches.

Permeability is moderately slow in the Blazon soil. Available water capacity is low. The 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.

This unit is used for wildlife habitat and for recreational purposes.

The potential plant community on the Blazon and Seaverson soils is mainly 20 to 40 percent rhizomatous wheatgrasses, 5 to 15 percent bluebunch wheatgrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 10 percent winterfat. As the range condition deteriorates, bluegrasses and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 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.

The production of vegetation suitable for wildlife grazing is limited by low precipitation, a short growing season, alkalinity, droughtiness, the slope, and the hazard of water erosion. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Badland is in capability class VIII, nonirrigated. It is not assigned to a range site. The Blazon and Seaverson soils are in capability subclass VIIe, nonirrigated. The Blazon soil is in the Shallow Clayey, 10- to 14-inch precipitation, High Plains Southeast range site. The Seaverson soil is in the Saline Upland, 10- to 14-inch precipitation, High Plains Southeast range site.

114—Binton-Youngston clay loams, 0 to 3 percent slopes. This map unit is on low terraces and fan aprons. Areas are irregular in shape and are 25 to 120 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,500 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 45 percent Binton clay loam, 0 to 3 percent slopes, and 40 percent Youngston clay loam, 1 to 3 percent slopes. The Binton soil is on low terraces, and the Youngston soil is on fan aprons. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of seepy soils and Apron sandy loam, 0 to 3 percent slopes, adjacent to the Binton soil and small areas of Lostwells sandy clay loam, 0 to 3 percent slopes, adjacent to the Youngston soil. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Binton soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown clay loam 3 inches thick. The underlying material to a depth of 60 inches or more is light yellowish brown, sodium-affected clay loam stratified with thin lenses of very fine sandy loam, silty clay loam, silty clay, and sandy clay loam.

Permeability is slow in the Binton soil. Available water capacity is moderate. The 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 Youngston soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown clay loam 2 inches thick. The underlying material to a depth of 60 inches or more is brown clay loam stratified with lenses of loam, very fine sandy loam, and sandy clay loam.

Permeability is moderately slow in the Youngston soil. Available water capacity is high. The 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. In most areas this soil is not subject to flooding. In a few areas near ephemeral drainageways, however, it is occasionally flooded.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Binton soil is mainly 15 to 25 percent alkali sacaton, 10 to 25 percent basin wildrye, 5 to 15 percent western wheatgrass, and 10 to 20 percent greasewood. As the range condition deteriorates, greasewood and inland saltgrass increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,600 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Youngston soil is mainly 25 to 45 percent rhizomatous wheatgrasses, 15 to 25 percent bottlebrush squirreltail, 5 to 10 percent Indian ricegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, blue grama, birdfoot sagebrush, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 300 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 production of vegetation suitable for grazing is limited by low precipitation, a slow rate of water intake, and alkalinity in the Binton soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Binton soil is in capability subclass VIs, nonirrigated. It is in the Saline Lowland, 5- to 9-inch precipitation, Wind River Basin range site. The Youngston soil is in capability subclass VIe, nonirrigated. It is in the Clayey, 5- to 9-inch precipitation, Wind River Basin range site.

115—Birdsley-Mudray complex, 3 to 15 percent slopes. This map unit is on hills and ridges. Areas are irregular in shape and are 20 to 600 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 55 percent Birdsley sandy clay loam, 3 to 15 percent slopes, and 30 percent Mudray sandy loam, 3 to 8 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Binton clay loam, 0 to 3 percent slopes; Effington sandy loam, 1 to 6 percent slopes; Oceanet sandy loam, 5 to 45 percent slopes; and Youngston clay loam, 1 to 6 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Birdsley soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sodic shale. Typically, the surface layer is light brownish gray sandy clay loam 2 inches thick. The underlying material is light olive brown, sodium-affected sandy clay loam 11 inches thick. Soft, sodic shale bedrock is at a depth of about 13 inches.

Permeability is very slow in the Birdsley soil. Available water capacity is low. The effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Mudray soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sodic shale. Typically, the surface layer is pale brown sandy loam 2 inches thick. The upper 10 inches of the subsoil is yellowish brown, sodium-affected sandy clay. The next 4 inches is light yellowish brown, sodium-affected clay loam. The lower 3 inches is olive silty clay loam. Soft, sodic shale bedrock is at a depth of about 19 inches.

Permeability is very slow in the Mudray soil. Available water capacity is low. The 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.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 40 percent birdfoot sagebrush, 10 to 20 percent bottlebrush squirreltail, 20 to 30 percent western wheatgrass, and 5 to 15 percent Indian ricegrass. As the range condition deteriorates, birdfoot sagebrush increases in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 200 pounds of air-dry vegetation per acre in normal years. Production ranges from 300 pounds in favorable years to 100 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by the restricted rooting depth, low precipitation, alkalinity, and droughtiness. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Loss of the surface layer severely decreases the potential for production of the plants suitable for grazing.

The Birdsley soil is in capability subclass VIIe, nonirrigated. The Mudray soil is in capability subclass VIIs, nonirrigated. Both soils are in the Impervious Clay, 5- to 9-inch precipitation, Wind River Basin range site.

116—Blackhall-Rock outcrop complex, steep. This map unit is on hills, ridges, knobs, and escarpments. Slopes are 25 to 45 percent. Areas are irregular in shape and are 10 to 300 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 60 percent Blackhall loam, 25 to 45 percent slopes, and 25 percent Rock outcrop. The Blackhall soil is on hills, ridges, and knobs, and the Rock outcrop is on escarpments. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Cragosen gravelly loam, 5 to 45 percent slopes; Coalmont loam, 5 to 20 percent slopes; and Milren loam, 1 to 8 percent slopes. Also included are small areas of Blackhall sandy loam that has slopes of 45 to 99 percent. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Blackhall soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is very pale brown loam 2 inches thick. The subsoil is very pale brown sandy loam 9 inches thick. Soft sandstone bedrock is at a depth of about 11 inches.

Permeability is moderate in the Blackhall soil. Available water capacity is low. The 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 Rock outcrop occurs as exposures of soft sandstone and siltstone.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Blackhall soil is mainly 15 to 25 percent bluebunch wheatgrass, 5 to 15 percent Indian ricegrass, 5 to 15 percent needleandthread, and 5 to 10 percent big sagebrush. As the range condition deteriorates, Sandberg bluegrass, threadleaf sedge, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, the restricted rooting depth, droughtiness, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Blackhall soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Sandy, 10- to 14-inch precipitation, High Plains Southeast range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

117—Blackhall-Carmody association, hilly. This map unit is on hills, ridges, and knobs. Slopes are 5 to 40 percent. Areas are irregular in shape and are 40 to 250 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,500 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Blackhall fine sandy loam, 5 to 45 percent slopes, and 35 percent Carmody fine sandy loam, 5 to 25 percent slopes. The Blackhall soil is on hills, ridges, and knobs, and the Carmody soil is on hills.

Included in this unit are small areas of Blazon clay loam, 5 to 40 percent slopes; Diamondville loam, 5 to 15 percent slopes; Poposhia loam, 1 to 20 percent slopes; and Luhon loam, 5 to 10 percent slopes. Also included are small areas of Rock outcrop. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Blackhall soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is brown fine sandy loam 2 inches thick. The subsoil is yellowish brown, brown, and pale brown sandy loam 15 inches thick. Soft sandstone bedrock is at a depth of about 17 inches.

Permeability is moderate in the Blackhall soil. Available water capacity is low. The effective rooting depth is 6 to 20 inches. Runoff is rapid, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

The Carmody soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is brown fine sandy loam 4 inches thick. The underlying material is pale brown and light yellowish brown very fine sandy loam 20 inches thick. Soft sandstone bedrock is at a depth of about 24 inches.

Permeability is moderate in the Carmody soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Blackhall soil is mainly 15 to 25 percent bluebunch wheatgrass, 5 to 15 percent Indian ricegrass, 5 to 15 percent needleandthread, and 5 to 10 percent big sagebrush. As the range condition deteriorates, threadleaf sedge, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Carmody soil is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, silver sagebrush, rabbitbrush, and forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, wind erosion, and the slope and by the restricted rooting depth and droughtiness in the Blackhall soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed on the Carmody soil if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Blackhall soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Sandy, 10- to 14-inch precipitation, High Plains Southeast range site. The Carmody soil is in capability subclass VIe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

118—Blazon-Rock outcrop-Carmody complex, hilly. This map unit is on hills, ridges, and escarpments. Slopes are 3 to 40 percent. Areas are irregular in shape and are 40 to 400 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 50 percent Blazon clay loam, 3 to

40 percent slopes; 20 percent Rock outcrop; and 15 percent Carmody gravelly sandy loam, 2 to 30 percent slopes. The Blazon and Carmody soils are on hills and ridges, and the Rock outcrop is on the summit of hills and ridges and on escarpments. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blackhall fine sandy loam, 20 to 30 percent slopes, adjacent to the Carmody soil; Poposhia loam, 2 to 30 percent slopes, on toe slopes; and Rallod very fine sandy loam, 3 to 20 percent slopes, adjacent to the Blazon soil. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Blazon soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from shale. Typically, the surface layer is light brownish gray clay loam 2 inches thick. The underlying material is light olive brown and light brownish gray clay loam 17 inches thick. Soft, sandy shale bedrock is at a depth of about 19 inches.

Permeability is moderately slow in the Blazon soil. Available water capacity is low. The 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 Rock outcrop occurs as exposures of soft shale interbedded with sandstone.

The Carmody soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is brown gravelly sandy loam 5 inches thick. The underlying material is pale brown and light yellowish brown very fine sandy loam 15 inches thick. Soft sandstone bedrock is at a depth of about 20 inches.

Permeability is moderate in the Carmody soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Blazon soil is mainly 20 to 40 percent rhizomatous wheatgrasses, 5 to 15 percent bluebunch wheatgrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 10 percent winterfat. As the range condition deteriorates, bluegrass and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 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.

The potential plant community on the Carmody soil is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, silver sagebrush, rabbitbrush, and forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season and by the droughtiness and restricted rooting depth in the Blazon soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding is suitable on the Carmody soil and may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. If the plant cover is removed during seeding on the Carmody soil, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed (fig. 5).

The Blazon soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Clayey, 10- to 14-inch precipitation, High Plains Southeast range site. The Carmody soil is in capability subclass VIe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

119—Bluerim-Onason complex, hilly. This map unit is on hills and ridges. Slopes are 3 to 30 percent. Areas are irregular in shape and are 100 to 600 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,500 to 7,600 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 55 percent Bluerim sandy loam, 3 to 15 percent slopes, and 30 percent Onason gravelly

Figure 5.—An area of Blazon-Rock outcrop-Carmody complex, hilly, in the background and Diamondville-Forelle association, rolling, in the foreground. Properly located fences and watering facilities may be needed to prevent overgrazing of the less sloping areas.

sandy loam, 5 to 30 percent slopes. The Bluerim soil is on the side slopes of hills and ridges, and the Onason soil is on the summit and shoulder slopes of hills and ridges. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Abston fine sandy loam, 3 to 12 percent slopes; Blazon clay loam, 3 to 30 percent slopes; and Cragosen gravelly loam, 3 to 30 percent slopes. These areas are on the summit of hills and ridges. Also included are small areas of Ryark sandy loam, 3 to 10 percent slopes, on fan aprons and small areas of Rock outcrop on the summit of hills and ridges. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Bluerim soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is brown sandy loam 3 inches thick. The upper 9 inches of the subsoil is light brown sandy clay loam. The lower 5 inches is light yellowish brown sandy loam. The substratum is very pale brown sandy loam 19 inches thick. Soft, noncalcareous sandstone bedrock is at a depth of about 36 inches.

Permeability is moderate in the Bluerim soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Onason soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, 30 percent of the surface is covered with gravel and cobbles. The upper 2 inches of the surface layer is brown gravelly sandy loam. The lower 4 inches is yellowish brown gravelly sandy loam. The underlying material is light yellowish brown gravelly sandy loam 11 inches thick. Soft, coarse grained sandstone bedrock is at a depth of about 17 inches.

Permeability is moderately rapid in the Onason soil. Available water capacity is low. The effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Bluerim soil is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, rabbitbrush and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Onason soil is mainly 15 to 25 percent bluebunch wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent Indian ricegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, threadleaf sedge, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by a short growing season and low precipitation and by droughtiness and the restricted rooting depth in the Onason soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding, which is suitable on the Bluerim soil, may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Bluerim soil is in capability subclass VIe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site. The Onason soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

120—Bosler-Rock River sandy loams, 1 to 8 percent slopes. This map unit is on fan aprons and terraces. Areas are irregular in shape and are 40 to 400 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,800 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Bosler sandy loam, 1 to 6 percent slopes, and 40 percent Rock River sandy loam, 1 to 8 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Cragosen gravelly loam, 3 to 25 percent slopes; Forelle loam, 1 to 8 percent slopes; and Cushool sandy loam, 2 to 10 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Bosler soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, about 10 percent of the surface is covered with gravel. The surface layer is yellowish brown sandy loam 3 inches thick. The upper 10 inches of the subsoil is yellowish brown sandy clay loam. The next 18 inches is brown sandy clay loam. The lower part to a depth of 60 inches or more is very pale brown very gravelly loamy sand.

Permeability is moderate in the Bosler soil. Available water capacity also is moderate. The 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 Rock River soil is very deep and well drained. It formed in alluvium derived from various sources.

Typically, the surface layer is brown sandy loam 3 inches thick. The upper 10 inches of the subsoil is yellowish brown sandy clay loam. The lower 21 inches is pale brown sandy loam. The substratum to a depth of 60 inches or more is very pale brown sandy loam.

Permeability is moderate in the Rock River soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, silver sagebrush, rabbitbrush, and forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation and wind erosion. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

121—Bosler-Ryan Park fine sandy loams, 1 to 8 percent slopes. This map unit is on terraces and fan aprons. Areas are irregular in shape and are 5 to 400 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,300 to 6,800 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Bosler fine sandy loam, 1 to 6 percent slopes, and 30 percent Ryan Park fine sandy loam, 1 to 8 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Carmody sandy loam, 1 to 15 percent slopes, on hillslopes and small areas of Cushool sandy loam, 2 to 15 percent slopes, and Milren loam, 1 to 8 percent slopes, adjacent to the Bosler soil. Also included are small areas of Rock River sandy loam, 1 to 8 percent slopes, adjacent to the Ryan Park soil. Included areas make up about 25 percent of the total acreage. The percentage varies from one area to another.

The Bosler soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is grayish brown fine sandy loam 6 inches thick. The upper 7 inches of the subsoil is brown sandy clay loam. The next 7 inches is brown gravelly sandy clay loam. The lower part to a depth of 60 inches or more is pale brown very gravelly loamy sand.

Permeability is moderate in the Bosler soil. Available water capacity also is moderate. The 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 Ryan Park soil is very deep and well drained. It formed in alluvium and eolian deposits derived from various sources. Typically, the surface layer is brown fine sandy loam 3 inches thick. The upper 9 inches of the subsoil is brown sandy loam. The lower 10 inches is light brown loamy fine sand. The substratum to a depth of 60 inches or more is light brown loamy fine sand.

Permeability is moderately rapid in the Ryan Park soil. Available water capacity is moderate. The 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 as rangeland. It also is used for wildlife habitat. A few areas, mainly those along the Sweetwater River, are used for irrigated hay and pasture.

This unit is moderately well suited to irrigated hay and pasture. The main limitations are droughtiness, a short growing season, and a limited supply of irrigation water. Grazing during wet periods results in compaction of the surface layer, poor tilth, and excessive runoff. Proper grazing practices, rotation grazing, weed control, and applications of fertilizer are needed to ensure the maximum quality of forage. Annual applications of nitrogen fertilizer are needed to maintain the production of high-quality forage. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing.

The contour ditch or sprinkler irrigation method is suitable on this unit. Sprinkler irrigation is the best suited method. This method permits an even, controlled application of water, helps to control runoff, and minimizes the risk of erosion. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soils. Use of pipe, ditch lining, or drop structures in irrigation ditches facilitates irrigation and reduces the hazard of ditch erosion.

The potential plant community on this unit is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, silver sagebrush, rabbitbrush, and forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, a short growing season, and wind erosion. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, irrigated and nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

122—Bowbac-Hiland complex, rolling. This map unit is on hillslopes and fan aprons. Slopes are 1 to 15 percent. Areas are irregular in shape and are 40 to 150 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 6,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 115 to 130 days.

This unit is about 40 percent Bowbac fine sandy loam, 1 to 15 percent slopes, and 40 percent Hiland sandy loam, 1 to 8 percent slopes. The Bowbac soil is on hillslopes, and the Hiland soil is on fan aprons. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Taluce sandy loam, 5 to 35 percent slopes. Also included are small areas of Effington loam, 1 to 8 percent slopes, on flood plains and small areas of a soil that is similar to the Bowbac soil but has bedrock within a depth of 20 inches. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Bowbac soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. Typically, the surface layer is yellowish brown fine sandy loam 3 inches thick. The upper 12 inches of the subsoil is brown sandy clay loam. The next 5 inches is olive yellow fine sandy loam. The lower 6 inches is very pale brown fine sandy loam. Soft sandstone bedrock is at a depth of about 26 inches.

Permeability is moderate in the Bowbac soil. Available water capacity is low. The 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 severe.

The Hiland soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown sandy loam 2 inches thick. The upper 14 inches of the subsoil is brown sandy clay loam. The lower 10 inches is brown sandy loam. The substratum to a depth of 60 inches or more is light gray sandy loam.

Permeability is moderate in the Hiland soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, rabbitbrush and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation and wind erosion and by droughtiness in the Bowbac soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

123—Brownsto loam, 0 to 6 percent slopes. This very deep, well drained soil is on terraces and fan aprons. It formed in alluvium and glaciofluvial deposits derived from various sources. Areas are irregular in shape and are 5 to 320 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,500 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

Included in this unit are small areas of Crago gravelly loam, 1 to 6 percent slopes; Decross Variant sandy loam, 1 to 6 percent slopes; Poposhia loam, 1 to 6 percent slopes; and Sinkson loam, 1 to 6 percent slopes. Included areas make up about 25 percent of the total acreage. The percentage varies from one area to another.

Typically, the surface layer of the Brownsto soil is light yellowish brown loam 2 inches thick. The upper 5 inches of the subsoil is brown loam. The next 2 inches is light brown sandy clay loam. The next 18 inches is very pale brown very gravelly sandy loam. The lower part to a depth of 60 inches or more is brown very gravelly sandy loam that is weakly cemented with calcium carbonate and has discontinuous strata of gravelly sandy loam and very gravelly sand. In some areas the surface layer is gravelly or bouldery.

Permeability is moderate. Available water capacity is low. The 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.

Most areas of this unit are used as rangeland (fig. 6) and wildlife habitat. A few areas are used for irrigated hay and pasture.

The potential plant community on this unit is mainly 20 to 35 percent bluebunch wheatgrass, 10 to 20 percent rhizomatous wheatgrasses, 5 to 15 percent needlegrasses, and 5 to 10 percent black sagebrush. As the range condition deteriorates, bluegrasses, sedges, and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, droughtiness, the content of rock fragments, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

If this unit is used for irrigated hay and pasture, the main limitations are droughtiness and a short growing season. Some areas also are limited by a gravelly surface. Grazing during wet periods results in compaction of the surface layer, poor tilth, and excessive runoff. Proper grazing practices, rotation grazing, weed control, and applications of fertilizer are needed to ensure the maximum quality of forage. Annual applications of nitrogen and phosphate fertilizer are needed to maintain the production of high-quality forage. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing.

The contour ditch or sprinkler irrigation method is suitable on this unit. The furrow or border method also is suitable in nearly level areas. Sprinkler irrigation is the best suited method. This method permits an even, controlled application of water, helps to control runoff, and minimizes the risk of erosion. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soil. Use of pipe, ditch lining, or drop structures in irrigation ditches facilitates

Figure 6.—Rangeland in an area of Brownsto loam, 0 to 6 percent slopes, on terraces. This soil is suitable for livestock grazing.

irrigation and reduces the hazard of ditch erosion.

This unit is in capability subclass IVe, irrigated and nonirrigated. It is in the Shallow Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site.

124—Brownsto sandy clay loam, 1 to 10 percent slopes. This very deep, well drained soil is on fan aprons. It formed in glaciofluvial deposits derived from various sources. Areas are long and narrow and are 40 to 100 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,800 to 7,300 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

Included in this unit are small areas of Brownsto sandy loam, 1 to 10 percent slopes; Poposhia loam, 1 to 10 percent slopes; and Sinkson loam, 1 to 10 percent slopes. Included areas make up about 10 percent of the total acreage. The percentage varies from one area to another.

Typically, the surface layer of the Brownsto soil is pale brown sandy clay loam 6 inches thick. The upper 21 inches of the subsoil is very pale brown gravelly sandy clay loam. The lower part to a depth of 60 inches or more is very pale brown very gravelly sandy loam. In some areas the surface layer is gravelly sandy loam, and in other areas the surface is bouldery.

Permeability is moderate. Available water capacity also is moderate. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, sedges and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,100 pounds in favorable years to 500 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, a short growing season, and the content of rock fragments. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. It is in the Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site.

125—Brownsto very bouldery-Decross Variant-Brownsto complex, hilly. This map unit is in kettles and on glacial moraines, fan aprons, and terraces. Slopes are 1 to 50 percent. Areas are irregular in shape and are 100 to 2,500 acres in size. The native vegetation is mainly grasses and shrubs and scattered limber pine. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

This unit is about 55 percent Brownsto very bouldery sandy clay loam, 1 to 50 percent slopes; 15 percent Decross Variant sandy loam, 1 to 8 percent slopes; and 15 percent Brownsto sandy loam, 1 to 10 percent slopes. The very bouldery Brownsto soil is on glacial moraines, fan aprons, and terraces, and the other Brownsto soil is on terraces and fan aprons. The Decross Variant soil is in kettles. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Rockinchair loam, 1 to 40 percent slopes, and Thermopolis loam, 2 to 30 percent slopes. These areas are on hillslopes. Also included are small areas of Poposhia loam, 1 to 10 percent slopes, adjacent to the Decross Variant soil; small areas of Rock outcrop on terrace escarpments adjacent to the Brownsto soil; and, in the Green Mountain area, small areas of Dahlquist very cobbly sandy clay loam, 2 to 25 percent slopes, adjacent to the very bouldery Brownsto soil. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The very bouldery Brownsto soil is very deep and well drained. It formed in glacial deposits derived from various sources. Typically, 10 percent of the surface is covered with boulders, 10 percent with cobbles, and 20 percent with gravel. The surface layer is dark yellowish brown very bouldery sandy clay loam 8 inches thick. The upper 16 inches of the subsoil is brown very gravelly sandy loam. The lower part to a depth of 60 inches or more is brown very cobbly sandy clay loam.

Permeability is moderate in the very bouldery Brownsto soil. Available water capacity is low. The 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 Decross Variant soil is very deep and well drained. It formed in alluvium derived dominantly from glacial deposits. Typically, the surface layer is yellowish brown sandy loam 2 inches thick. The upper 12 inches of the subsoil is yellowish brown and dark yellowish brown sandy clay loam. The lower part to a depth of 60 inches or more is light yellowish brown sandy clay loam. In some areas the surface layer is very gravelly sandy loam.

Permeability is moderate in the Decross Variant soil. Available water capacity is high. The 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.

Brownsto sandy loam is very deep and well drained. It formed in glacial drift derived from various sources. Typically, the surface layer is brown sandy loam 4 inches thick. The upper 9 inches of the subsoil is yellowish brown sandy clay loam. The next 9 inches is white gravelly sandy clay loam. The lower part to a depth of 60 inches or more is very pale brown very gravelly sandy clay loam.

Permeability is moderate in Brownsto sandy loam. Available water capacity also is moderate. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the very bouldery Brownsto soil is mainly 10 to 30 percent bluebunch wheatgrass, 10 to 20 percent needleandthread, 5 to 10 percent antelope bitterbrush, and 5 to 10 percent black sagebrush. As the range condition deteriorates, black sagebrush and bluegrasses increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 650 pounds of air-dry vegetation per acre in normal years. Production ranges from 900 pounds in favorable years to 400 pounds in unfavorable years.

The potential plant community on the Decross Variant soil is mainly 15 to 30 percent basin wildrye, 15 to 30 percent green needlegrass, and 10 to 20 percent needleandthread. As the range condition deteriorates, rhizomatous wheatgrasses and silver sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 1,800 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,400 pounds in favorable years to 1,200 pounds in unfavorable years.

The potential plant community on Brownsto sandy loam is mainly 20 to 35 percent bluebunch wheatgrass, 10 to 20 percent rhizomatous wheatgrasses, 5 to 15 percent needlegrasses, and 5 to 10 percent black sagebrush. As the range condition deteriorates, bluegrasses, sedges, and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season and by droughtiness in the very bouldery Brownsto soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Because of the areas that have a very bouldery surface, mechanical methods of reseeding and brush control are very limited. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The very bouldery Brownsto soil is in capability subclass VIs, nonirrigated. It is in the Coarse Upland, 10- to 14-inch precipitation, Foothills and Basins East range site. The Decross Variant soil and Brownsto sandy loam are in capability subclass IVe, nonirrigated. The Decross Variant soil is in the Overflow, 10- to 14-inch precipitation, Foothills and Basins East range site. Brownsto sandy loam is in the Shallow Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site.

126—Burnette loam, 3 to 10 percent slopes. This very deep, well drained soil is on fan aprons and terraces. It formed in residuum and slope alluvium derived dominantly from shale interbedded with sandstone. Areas are irregular in shape and are 20 to 800 acres in size. The native vegetation is mainly grasses and shrubs, but areas near seeps are dominated by aspen. Elevation is 7,500 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Included in this unit are small areas of Decross loam, 3 to 10 percent slopes; Fornor loam, 3 to 10 percent slopes, on moraines; Owen Creek very stony clay loam, 2 to 10 percent slopes; and Gelkie loam, 2 to 10 percent slopes. The Decross soil is in areas of valley fill. Also included are small areas of a soil that is similar to the Burnette soil but has slopes of 10 to 25 percent or a strongly alkaline subsoil and small areas of Haplaquolls, 0 to 3 percent slopes, on flood plains. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

Typically, the surface layer of the Burnette soil is brown loam 2 inches thick. The upper 6 inches of the subsoil is brown clay loam. The next 10 inches is dark grayish brown clay. The lower part to a depth of 60 inches or more is pale olive clay.

Permeability is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Kingspike fescue, 10 to 25 percent Idaho fescue, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 1,350 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,600 pounds in favorable years to 1,100 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The map unit is in capability subclass VIe, nonirrigated. It is in the Loamy, 15- to 19-inch precipitation, Foothills and Mountains East range site.

127—Chittum-Bachus-Rock outcrop association, hilly. This map unit is on hills. Slopes are 2 to 25 percent. Areas are irregular in shape and are 160 to 640 acres in size. The native vegetation is mainly grasses and shrubs and a few juniper trees. Elevation is 6,800 to 8,500 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 35 percent Chittum loam, 5 to 25 percent slopes; 30 percent Bachus loam, 2 to 20 percent slopes; and 15 percent Rock outcrop. Areas adjacent to Natrona County have a higher percentage of the Chittum soil. The Chittum soil is on hillslopes, the Bachus soil is on dip slopes on cuestas, and the Rock outcrop is on escarpments and the top of hills on cuestas.

Included in this unit are small areas of Decross loam, 1 to 25 percent slopes; Mosroc very gravelly fine sandy loam, 1 to 12 percent slopes; and Venapass loam, 0 to 3 percent slopes. The Decross soil is on the lower part of back slopes, the Mosroc soil is on back slopes, and the Venapass soil is in areas of valley fill at the base of the back slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Chittum soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from quartzitic sandstone. Typically, the surface layer is dark brown loam 3 inches thick. The subsoil is dark reddish brown loam 8 inches thick. Hard, quartzitic sandstone bedrock is at a depth of about 11 inches.

Permeability is moderate in the Chittum soil. Available water capacity is low. The effective rooting depth is 8 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Bachus soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from quartzitic sandstone. Typically, the surface layer is very dark brown loam 5 inches thick. The upper 8 inches of the subsoil is dark brown loam. The lower 11 inches is reddish brown clay loam. Hard, quartzitic sandstone bedrock is at a depth of about 24 inches.

Permeability is moderate in the Bachus soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Rock outcrop occurs as exposures of hard quartzitic sandstone.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Chittum soil is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Idaho fescue, 10 to 25 percent Kingspike fescue, and 0 to 10 percent mountainmahogany. As the range condition deteriorates, big sagebrush and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 850 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.

The potential plant community on the Bachus soil is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Kingspike fescue, 10 to 25 percent Idaho fescue, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 1,350 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,600 pounds in favorable years to 1,100 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by droughtiness and a short growing season and by the restricted rooting depth in the Chittum soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Chittum soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Loamy, 15- to 19-inch precipitation, Foothills and Mountains East range site. The Bachus soil is in capability subclass VIe, nonirrigated. It is in the Loamy, 15- to 19-inch precipitation, Foothills and Mountains East range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

128—Cific-Hoodle complex, sloping. This map unit is on strath terraces and pediments. Slopes are 1 to 15 percent. Areas are irregular in shape and are 75 to 500 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,100 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 55 percent Cific very gravelly sandy loam, 1 to 15 percent slopes, and 25 percent Hoodle gravelly sandy loam, 2 to 10 percent slopes. The Cific soil is on strath terraces, and the Hoodle soil is on pediments and strath terraces. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Gelkie Variant loam, 1 to 10 percent slopes, on hillslopes and small areas of Rock outcrop on escarpments. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Cific soil is moderately deep and well drained. It formed in glacial drift underlain by residuum derived dominantly from variegated shale. Typically, 40 percent of the surface is covered with gravel and cobbles. The surface layer is yellowish brown very gravelly sandy loam 2 inches thick. The upper 5 inches of the subsoil is brown gravelly fine sandy loam. The next 7 inches is reddish brown gravelly clay loam. The next 10 inches is brown gravelly loam. The lower 6 inches is olive channery loam. Soft, variegated shale bedrock is at a depth of about 30 inches.

Permeability is moderate in the Cific soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

The Hoodle soil is very deep and well drained. It formed in alluvium derived dominantly from granite and schist. Typically, 25 percent of the surface is covered with gravel and channery fragments. The surface layer is brown gravelly sandy loam 3 inches thick. The upper 10 inches of the subsoil is dark brown and yellowish brown very gravelly sandy clay loam. The lower 17 inches is light brownish gray very gravelly sandy loam. The substratum to a depth of 60 inches or more is light gray very gravelly sandy loam.

Permeability is moderate in the Hoodle soil. Available water capacity is low. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 40 to 50 percent bluebunch wheatgrass, 5 to 10 percent Indian ricegrass, 5 to 10 percent needleandthread, and 5 to 10 percent perennial forbs. As the range condition deteriorates, sedges and shrubs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, droughtiness, the content of rock fragments, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. The rock fragments on the surface restrict reseeding through methods that involve tillage. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Cific soil is in capability subclass VIe, nonirrigated. The Hoodle soil is in capability subclass VIs, nonirrigated. Both soils are in the Gravelly, 10- to 14-inch precipitation, High Plains Southeast range site.

129—Clifsand-Persayo complex, hilly. This map unit is on terraces, escarpments, dissected fan aprons, ridges, and hills. Slopes are 2 to 40 percent. Areas are irregular in shape and are 50 to 450 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 4,800 to 6,200 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 45 percent Clifsand gravelly loam, 2 to 30 percent slopes, and 30 percent Persayo loam, 10 to 40 percent slopes. The Clifsand soil is on terraces, dissected fan aprons, and the summit of hills and ridges, and the Persayo soil is on the shoulder slopes and back slopes of hills and on escarpments and ridges. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Emblem sandy loam, 1 to 8 percent slopes, adjacent to the Clifsand soil; Oceanet sandy loam, 5 to 45 percent slopes; Saddle sandy loam, 1 to 12 percent slopes; and Worland sandy loam, 2 to 25 percent slopes, adjacent to the Persayo soil. Included areas make up about 25 percent of the total acreage. The percentage varies from one area to another.

The Clifsand soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, 50 percent of the surface is covered with gravel. The surface layer is pale brown gravelly loam 3 inches thick. The upper 4 inches of the subsoil is brown gravelly loam. The lower part to a depth of 60 inches or more is very pale brown very gravelly sandy loam.

Permeability is moderately rapid in the Clifsand soil. Available water capacity is low. The 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 Persayo soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from shale. Typically, the surface layer is light brownish gray loam 2 inches thick. The underlying material is light brownish gray clay loam 13 inches thick. Soft shale bedrock is at a depth of about 15 inches.

Permeability is moderately slow in the Persayo soil. Available water capacity is low. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Clifsand soil is mainly 20 to 40 percent bluebunch wheatgrass, 10 to 20 percent needleandthread, 10 to 25 percent western wheatgrass, 0 to 10 percent Indian ricegrass, and 0 to 5 percent big sagebrush. As the range condition deteriorates, big sagebrush, blue grama, threadleaf sedge, and forbs increase in abundance. As the range condition further deteriorates, annual grasses, weeds, and pricklypear invade. The potential plant community produces about 200 pounds of air-dry vegetation per acre in normal years. Production ranges from 300 pounds in favorable years to 100 pounds in unfavorable years.

The potential plant community on the Persayo soil is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent bottlebrush squirreltail, 5 to 15 percent Indian ricegrass, and 0 to 10 percent gardner saltbush. As the range condition deteriorates, big sagebrush and birdfoot sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 125 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and droughtiness and by the restricted rooting depth in the Persayo soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Because of the rock fragments on the surface of the Clifsand soil, the shallowness of the Persayo soil, and the slope of both soils, broadcasting is the best seeding method. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Clifsand soil is in capability subclass VIs, nonirrigated. It is in the Gravelly, 5- to 9-inch precipitation, Wind River Basin range site. The Persayo soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Clayey, 5- to 9-inch precipitation, Wind River Basin range site.

130—Cloud Peak-Farlow complex, 10 to 30 percent slopes. This map unit is on mountainsides. Areas are irregular in shape and are 40 to 320 acres in size. The native vegetation is mainly trees and an understory of scattered shrubs, grasses, and forbs. Elevation is 7,500 to 9,000 feet. The annual precipitation is 15 to 22 inches, the average annual air temperature is 33 to 38 degrees F, and the frost-free period is less than 60 days.

This unit is about 40 percent Cloud Peak gravelly loam, 10 to 30 percent slopes, and 40 percent Farlow gravelly clay loam, 10 to 30 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Decross loam, 3 to 20 percent slopes; Inchau sandy clay loam, 10 to 30 percent slopes; Starman very gravelly loam, 5 to 45 percent slopes; Woosley loam, 5 to 30 percent slopes; and Tongue River loam, 10 to 30 percent slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Cloud Peak soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from limestone. Typically, the surface is covered with a mat of undecomposed forest litter 2 inches thick. The surface layer is brown gravelly loam 1 inch thick. The upper 5 inches of the subsoil is yellowish brown very channery clay loam. The next 9 inches is yellowish brown extremely channery clay loam. The lower 15 inches is very pale brown extremely channery loam. Hard limestone bedrock is at a depth of about 30 inches. In some areas the surface layer is very gravelly.

Permeability is moderate in the Cloud Peak soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Farlow soil is deep and well drained. It formed in residuum and slope alluvium derived dominantly from limestone. Typically, the surface is covered with a mat of undecomposed forest litter 1 inch thick. The surface layer is dark grayish brown gravelly clay loam 6 inches thick. The subsoil is brown extremely channery clay loam 49 inches thick. Hard limestone bedrock is at a depth of about 55 inches.

Permeability is moderate in the Farlow soil. Available water capacity is low. The effective rooting depth is 40 to 60 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly as woodland. It also is used for wildlife habitat.

This unit is well suited to timber production. The site index for lodgepole pine ranges from 55 to 65. The site index for Douglas fir ranges from 60 to 70. Erosion is the main hazard affecting timber production and harvesting. Properly designed road drainage systems that include carefully located culverts help to control erosion. Spoil from excavations is subject to rill and gully erosion and to sloughing. Roads and landings can be protected from erosion by constructing water bars and by seeding areas that have been cut and filled. Conventional methods of harvesting timber can be used. The high-lead logging method is more efficient than most other methods and is less damaging to the surface.

After the timber is harvested, carefully managed reforestation helps to control competition from undesirable understory plants. Plant competition delays natural regeneration but does not prevent the eventual development of a fully stocked, normal stand of trees. Planting the trees on the contour helps to control erosion. Because the soils are sticky when wet, most planting and harvesting equipment can be used only during dry periods.

The Cloud Peak soil is in capability subclass VIIs, nonirrigated. The Farlow soil is in capability subclass VIe, nonirrigated. The soils are not assigned to a range site.

131—Coalmont-Milren-Cragosen complex, rolling. This map unit is on hills, ridges, fan aprons, and terraces. Slopes are 1 to 30 percent. Areas are irregular in shape and are 40 to 300 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 40 percent Coalmont loam, 2 to 20 percent slopes; 25 percent Milren loam, 1 to 8 percent slopes; and 15 percent Cragosen gravelly loam, 5 to 30 percent slopes. The Coalmont soil is on ridges and hillslopes, the Milren soil is on fan aprons, and the Cragosen soil is on terrace escarpments and hillslopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Bosler fine sandy loam, 1 to 8 percent slopes, and Forelle loam, 1 to 20 percent slopes, adjacent to the Milren soil and small areas of Cushool sandy loam, 5 to 25 percent slopes, adjacent to the Coalmont soil. Also included, in areas adjacent to the Milren soil, is a soil that is similar to the Milren soil but is not characterized by an abrupt textural change. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Coalmont soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from shale interbedded with sandstone. Typically, the surface layer is grayish brown loam 2 inches thick. The upper 14 inches of the subsoil is olive clay. The lower 7 inches is olive clay loam. The substratum is olive clay loam 7 inches thick. Soft shale bedrock is at a depth of about 30 inches.

Permeability is slow in the Coalmont soil. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Milren soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 3 inches thick. The upper 15 inches of the subsoil is yellowish brown sandy clay. The next 5 inches is yellowish brown clay. The lower 7 inches is pale brown loam. The substratum to a depth of 60 inches or more is very pale brown loam.

Permeability is slow in the Milren soil. Available water capacity is high. The 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 Cragosen soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone and conglomerate. Typically, 30 percent of the surface is covered with gravel and cobbles. The surface layer is pale brown gravelly loam 2 inches thick. The subsoil is light yellowish brown very gravelly loam 10 inches thick. Soft sandstone bedrock is at a depth of about 12 inches.

Permeability is moderate in the Cragosen soil. Available water capacity is low. The 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 mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Coalmont and Milren soils is mainly 40 to 50 percent thickspike wheatgrass, 15 to 25 percent green needlegrass, 5 to 10 percent bluebunch wheatgrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 10 percent big sagebrush. As the range condition deteriorates, rhizomatous wheatgrasses, Canby bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,000 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,300 pounds in favorable years to 500 pounds in unfavorable years.

The potential plant community on the Cragosen soil is mainly 15 to 25 percent bluebunch wheatgrass, 15 to 25 percent western wheatgrass, 5 to 10 percent mutton bluegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, threadleaf sedge and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season and by droughtiness and the restricted rooting depth in the Cragosen soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Coalmont soil is in capability subclass VIe, nonirrigated. The Milren soil is in capability subclass IVe, nonirrigated. The Coalmont and Milren soils are in the Clayey, 10- to 14-inch precipitation, High Plains Southeast range site. The Cragosen soil is in capability subclass VIIs, nonirrigated. It is in the Shallow Loamy, 10- to 14-inch precipitation, High Plains Southeast range site.

132—Conpeak-Rock outcrop-Cryluha complex, hilly. This map unit is on pediments, fan aprons, ridges, and hills. Areas are irregular in shape and are 50 to 500 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air

temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 45 percent Conpeak fine sandy loam, 10 to 45 percent slopes; 25 percent Rock outcrop; and 15 percent Cryluha gravelly sandy loam, 2 to 15 percent slopes. The Conpeak soil is on ridges and hillslopes, the Rock outcrop is on the summit of ridges and hills and in narrow bands on hillslopes, and the Cryluha soil is on pediments, fan aprons, and hillslopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Coutis fine sandy loam, 2 to 20 percent slopes, and Lymanson gravelly loam, 4 to 20 percent slopes. The Coutis soil is on lee slopes and in areas of valley fill, and the Lymanson soil is on the sides slopes of hills and ridges. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Conpeak soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from semiconsolidated sandstone. Typically, 30 percent of the surface is covered with fragments of semiconsolidated sandstone and siltstone. The surface layer is pale brown fine sandy loam 2 inches thick. The subsoil is very pale brown fine sandy loam 11 inches thick. Soft sandstone bedrock is at a depth of 13 inches.

Permeability is moderate in the Conpeak soil. Available water capacity is low. The effective rooting depth is 8 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

The Rock outcrop occurs as exposures of weakly consolidated sandstone, siltstone, and limestone.

The Cryluha soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from weakly consolidated sandstone. Typically, 25 percent of the surface is covered with gravel. The surface layer is brown gravelly sandy loam 8 inches thick. The upper 19 inches of the subsoil is very pale brown gravelly loam. The lower 3 inches is very pale brown fine sandy loam. Weakly consolidated, calcareous sandstone bedrock is at a depth of about 30 inches.

Permeability is moderate in the Cryluha soil. Available water capacity is low. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Conpeak and Cryluha soils is mainly 15 to 25 percent bluebunch wheatgrass, 5 to 15 percent Indian ricegrass, 5 to 15 percent needleandthread, and 5 to 10 percent big sagebrush. As the range condition deteriorates, threadleaf sedge, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, droughtiness, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Conpeak soil is in capability subclass VIIe, nonirrigated. The Cryluha soil is in capability subclass VIe, nonirrigated. Both soils are in the Shallow Sandy, 10- to 14-inch precipitation, High Plains Southeast range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

133—Countryman-Absher complex, 0 to 3 percent slopes. This map unit is on flood plains and terraces and in drainageways. Areas are irregular in shape and are 5 to 200 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,800 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the annual frost-free period is 90 to 110 days.

This unit is about 55 percent Countryman fine sandy loam, 0 to 3 percent slopes, and 30 percent Absher loam, 1 to 3 percent slopes. The Countryman soil is on flood plains and in drainageways, and the Absher soil is on terraces. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Bosler fine sandy loam, 1 to 3 percent slopes; Iceslew very fine sandy loam, 0 to 3 percent slopes; Tisworth loamy sand, 0 to 3 percent slopes; and Haplaquolls, 0 to 3 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Countryman soil is very deep and somewhat poorly drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown fine sandy loam 2 inches thick. The upper 23 inches of the underlying material is brown very fine sandy loam. The lower part to a depth of 60 inches or more is brown fine sandy loam stratified with thin lenses of loamy fine sand, loam, and clay loam.

Permeability is moderate in the Countryman soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The seasonal high water table fluctuates between depths of 1.5 and 3.5 feet during the period May through July. This soil is frequently flooded for brief periods from March through July.

The Absher soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is grayish brown loam 3 inches thick. The subsoil is grayish brown, sodium-affected silty clay 15 inches thick. The substratum to a depth of 60 inches or more is grayish brown clay loam.

Permeability is very slow in the Absher soil. Available water capacity is moderate. The 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 as rangeland and wildlife habitat. Some areas along the Sweetwater River are used for irrigated hay and pasture.

The potential plant community on the Countryman soil is mainly 50 to 60 percent alkali sacaton, 15 to 25 percent basin wildrye, 5 to 10 percent inland saltgrass, and 5 to 10 percent rubber rabbitbrush. As the range condition deteriorates, greasewood and inland saltgrass increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Absher soil is mainly 15 to 30 percent alkali sacaton, 10 to 20 percent basin wildrye, 5 to 10 percent rhizomatous wheatgrasses, and 10 to 25 percent greasewood. As the range condition deteriorates, greasewood and inland saltgrass increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,800 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,500 pounds in favorable years to 1,200 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, salinity and alkalinity, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

If this unit is used for hay and pasture, the main management concerns are the hazard of flooding, salinity and alkalinity, and the seasonal high water table in the Countryman soil. The salinity of these soils limits forage production. Leaching the salts is difficult because of the high water table in the Countryman soil and the very slow permeability in the Absher soil. Salt-tolerant species should be selected for planting.

Grazing during wet periods results in compaction of the surface layer, poor tilth, and excessive runoff. Proper grazing practices, rotation grazing, weed control, and applications of fertilizer are needed to ensure the maximum quality of forage. Annual applications of nitrogen fertilizer are needed to maintain the production of high-quality forage. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing.

The furrow, border, or sprinkler irrigation method is suitable on this unit. The method used generally is governed by the crop that is grown. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soils. For the efficient application and removal of irrigation water, leveling is needed in the more sloping areas.

The Countryman soil is in capability subclasses IVw, irrigated, and VIw, nonirrigated. It is in the Saline Subirrigated, 10- to 14-inch precipitation, High Plains Southeast range site. The Absher soil is in capability subclass VIs, nonirrigated and irrigated. It is in the

Saline Lowland, 10- to 14-inch precipitation, High Plains Southeast range site.

134—Coutis fine sandy loam, rolling. This very deep, well drained soil is in drainageways and depressional areas among rolling hills. It formed in alluvium derived from various sources. Slopes are 2 to 15 percent. Areas are irregular in shape and are 5 to 70 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days. The soil receives additional moisture from melting snowdrifts.

Included in this unit are small areas of Conpeak fine sandy loam, 2 to 15 percent slopes, on hillslopes and ridges and Pishkun very gravelly sandy loam, 3 to 15 percent slopes, on terrace escarpments. Also included are small areas of Gelkie loam, 10 to 25 percent slopes, on the north-facing slopes south of Pacific Creek. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

Typically, the surface layer of the Coutis soil is dark brown fine sandy loam 4 inches thick. The subsurface layer is dark grayish brown fine sandy loam 26 inches thick. The underlying material to a depth of 60 inches or more is dark brown fine sandy loam.

Permeability is moderately rapid. Available water capacity is high. The 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 severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, silver sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, wind erosion, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

135—Crago-Pensore association, undulating. This map unit is on fan aprons, hills, ridges, and piedmonts. Slopes are 1 to 20 percent. Areas are irregular in shape and are 40 to 320 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 60 percent Crago gravelly loam, 1 to 10 percent slopes, and 20 percent Pensore very channery sandy clay loam, 6 to 20 percent slopes. The Crago soil is on fan aprons, foot slopes, and piedmonts, and the Pensore soil is on the summit and shoulder slopes of hills and ridges.

Included in this unit are small areas of Blackhall fine sandy loam, 3 to 40 percent slopes, and Carmody fine sandy loam, 3 to 20 percent slopes. Also included are small areas of Cushool sandy loam, 1 to 8 percent slopes, on fan aprons and small areas of Rock outcrop on the summit of hills and ridges. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Crago soil is very deep and well drained. It formed in alluvium derived dominantly from limestone. Typically, 30 percent of the surface is covered with gravel and cobbles. The surface layer is brown gravelly loam 3 inches thick. The subsoil to a depth of 60 inches or more is pale brown extremely gravelly loam.

Permeability is moderate in the Crago soil. Available water capacity is low. The 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.

The Pensore soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from limestone. Typically, 35 percent of the surface is covered with channery fragments and gravel. The surface layer is brown very channery sandy clay loam 3 inches thick. The subsoil is brown very channery sandy clay loam 10 inches thick. Hard limestone bedrock is at a depth of about 13 inches.

Permeability is moderate in the Pensore soil. Available water capacity is very low. The 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 slight.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 35 percent bluebunch wheatgrass, 10 to 20 percent rhizomatous wheatgrasses, 5 to 15 percent needlegrasses, and 5 to 10 percent black sagebrush. As the range condition deteriorates, bluegrasses, sedges, and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, a short growing season, droughtiness, and the content of rock fragments and by the restricted rooting depth in the Pensore soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Because of rock fragments on the surface, broadcasting is the best seeding method. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Crago soil is in capability subclass VIs, nonirrigated. The Pensore soil is in capability subclass VIIs, nonirrigated. Both soils are in the Shallow Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site.

136—Cragosen-Carmody-Blazon complex, hilly. This map unit is on hills and ridges. Slopes are 6 to 40 percent. Areas are irregular in shape and are 40 to 320 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 50 percent Cragosen gravelly loam, 6 to 40 percent slopes; 20 percent Carmody gravelly sandy loam, 6 to 40 percent slopes; and 15 percent Blazon sandy clay loam, 6 to 40 percent slopes. The Cragosen and Blazon soils are on the summit of hills and ridges, and the Carmody soil is on the back slopes of hills and ridges. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blackhall fine sandy loam, 6 to 40 percent slopes, and Coalmont fine sandy loam, 2 to 20 percent slopes. Also included are small areas of Bosler fine sandy loam, 1 to 8 percent slopes, and Milren sandy loam, 1 to 8 percent slopes, on fan aprons; a soil that is similar to the Cragosen soil but has bedrock at a depth of more than 20 inches; and Cragosen gravelly loam, 40 to 60 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Cragosen soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone and conglomerate. Typically, 30 percent of the surface is covered with gravel and cobbles. The surface layer is pale brown gravelly loam 2 inches thick. The upper 4 inches of the subsoil also is pale brown gravelly loam. The lower 6 inches is light gray very gravelly sandy loam. Soft sandstone bedrock is at a depth of about 12 inches.

Permeability is moderate in the Cragosen soil. Available water capacity is low. The 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 Carmody soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is pale brown gravelly sandy loam 1 inch thick. The upper 5 inches of the underlying material is yellowish brown sandy loam. The lower 16 inches is very pale brown fine sandy loam. Soft sandstone bedrock is at a depth of about 22 inches.

Permeability is moderate in the Carmody soil. Available water capacity is low. The 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 Blazon soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from shale. Typically, the surface layer is dark yellowish brown sandy clay loam 3 inches thick. The underlying material is light olive gray clay loam 12 inches thick. Soft shale bedrock is at a depth of about 15 inches. In some areas the surface layer is gravelly sandy clay loam.

Permeability is moderately slow in the Blazon soil.

Available water capacity is low. The 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.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Cragosen soil is mainly 15 to 25 percent bluebunch wheatgrass, 15 to 25 percent western wheatgrass, 5 to 10 percent mutton bluegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, threadleaf sedge and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Carmody soil is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, silver sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Blazon soil is mainly 20 to 40 percent rhizomatous wheatgrasses, 5 to 15 percent bluebunch wheatgrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 10 percent winterfat. As the range condition deteriorates, bluegrasses and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 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.

The production of vegetation suitable for grazing is limited by low precipitation, droughtiness, and a short growing season and by the restricted rooting depth in the Cragosen and Blazon soils. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Cragosen soil is in capability subclass VIIs, nonirrigated. It is in the Shallow Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Carmody soil is in capability subclass VIe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site. The Blazon soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Clayey, 10- to 14-inch precipitation, High Plains Southeast range site.

137—Cragosen-Rock outcrop-Carmody complex, hilly. This map unit is on hills and ridges. Slopes are 3 to 60 percent. Areas are irregular in shape and are 40 to 320 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Cragosen gravelly loam, 5 to 60 percent slopes; 25 percent Rock outcrop; and 15 percent Carmody sandy loam, 3 to 40 percent slopes. The Cragosen soil is on the summit and shoulder slopes of hills and ridges, the Rock outcrop is on the summit of hills and ridges, and the Carmody soil is on the side slopes of hills and ridges. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blackhall fine sandy loam, 5 to 40 percent slopes; Blazon clay loam, 3 to 40 percent slopes; and Cushool sandy loam, 2 to 25 percent slopes. Also included are small areas of Coalmont fine sandy loam, 2 to 20 percent slopes, and Bosler fine sandy loam, 1 to 8 percent slopes, on fan aprons and terraces. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Cragosen soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone and conglomerate. Typically, 40 percent of the surface is covered with gravel. The surface layer is dark yellowish brown gravelly loam 4 inches thick. The subsoil is light yellowish brown very gravelly sandy loam 15 inches thick. Soft sandstone bedrock is at a depth of about 19 inches.

Permeability is moderate in the Cragosen soil. Available water capacity is very low. The 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 Rock outcrop occurs as exposures of soft sandstone and conglomerate.

The Carmody soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, 30 percent of the surface is covered with gravel. The surface layer is pale brown sandy loam 1 inch thick. The underlying material is pale brown and very pale brown very fine sandy loam 34 inches thick. Soft sandstone bedrock is at a depth of about 35 inches.

Permeability is moderate in the Carmody soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Cragosen soil is mainly 15 to 25 percent bluebunch wheatgrass, 15 to 25 percent western wheatgrass, 5 to 10 percent mutton bluegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, threadleaf sedge and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Carmody soil is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, droughtiness, and a short growing season. It also is limited by the restricted rooting depth in the Cragosen soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Cragosen soil is in capability subclass VIIs, nonirrigated. It is in the Shallow Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site. The Carmody soil is in capability subclass VIe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

138—Cragosen-Bosler-Cushool association, rolling. This map unit is on hills, terraces, ridges, and fan aprons. Slopes are 3 to 30 percent. Areas are irregular in shape and are 10 to 800 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 35 percent Cragosen gravelly loam, 6 to 30 percent slopes; 30 percent Bosler sandy loam, 3 to 8 percent slopes; and 20 percent Cushool sandy loam, 3 to 25 percent slopes. The Cragosen soil is on hills and ridges, the Bosler soil is on terraces and fan aprons, and the Cushool soil is on hillslopes.

Included in this unit are small areas of Blackhall fine sandy loam, 5 to 30 percent slopes; Blazon clay loam, 5 to 30 percent slopes; and Carmody fine sandy loam, 3 to 30 percent slopes. Also included are small areas of Rock River fine sandy loam, 2 to 8 percent slopes, adjacent to the Bosler soil. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Cragosen soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone and conglomerate. Typically, about 40 percent of the surface is covered with gravel and cobbles. The surface layer is brown gravelly loam 6 inches thick. The subsoil is very pale brown very gravelly loam 4 inches thick. Soft conglomerate bedrock is at a depth of about 10 inches.

Permeability is moderate in the Cragosen soil. Available water capacity is low. The effective rooting depth is 10 to 20 inches. Runoff is rapid, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

The Bosler soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown sandy loam 2 inches thick. The upper 13 inches of the subsoil is dark yellowish brown sandy clay loam. The next 5 inches is light gray sandy clay loam. The next 4 inches is very pale brown loamy sand. The lower part to a depth of 60 inches or more is very pale brown very gravelly loamy sand.

Permeability is moderate in the Bosler soil. Available water capacity is low. The 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 Cushool soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is yellowish brown sandy loam 3 inches thick. The upper 13 inches of the subsoil is yellowish brown sandy clay loam. The next 7 inches is pale brown sandy clay loam. The lower 13 inches is light yellowish brown fine sandy loam. Soft sandstone bedrock is at a depth of about 36 inches.

Permeability is moderate in the Cushool soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Cragosen soil is mainly 15 to 25 percent bluebunch wheatgrass, 15 to 25 percent western wheatgrass, 5 to 10 percent mutton bluegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, threadleaf sedge and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Bosler and Cushool soils is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, a short growing season, and droughtiness and by the restricted rooting depth in the Cragosen soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Cragosen soil is in capability subclass VIIs, nonirrigated. It is in the Shallow Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Bosler and Cushool soils are in capability subclass IVe, nonirrigated. They are in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

139—Cryluha-Conpeak association, 1 to 15 percent slopes. This map unit is on pediments, fan aprons, hills, and ridges. Areas are irregular in shape and are 75 to 400 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 55 percent Cryluha gravelly sandy loam, 1 to 7 percent slopes, and 30 percent Conpeak fine sandy loam, 2 to 15 percent slopes. The Cryluha soil is on fan aprons and hillslopes, and the Conpeak soil is on the side slopes of ridges and hills and on pediments.

Included in this unit are small areas of Coutis fine sandy loam, 2 to 15 percent slopes, on the lee slopes of hills; Lymanson gravelly loam on the side slopes of hills and ridges; and Rock outcrop on escarpments. Also included are small areas of a soil that is similar to the Cryluha soil but has sandstone bedrock below a depth of 40 inches. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Cryluha soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from weakly consolidated sandstone. Typically, 25 percent of the surface is covered with gravel. The upper 5 inches of the surface layer is brown gravelly sandy loam. The lower 8 inches is pale brown gravelly loam. The upper 6 inches of the subsoil is very pale brown gravelly fine sandy loam. The lower 8 inches is very pale brown gravelly loam. Weakly consolidated, calcareous sandstone bedrock is at a depth of about 27 inches.

Permeability is moderate in the Cryluha soil. Available water capacity is low. The 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.

The Conpeak soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from semiconsolidated sandstone. Typically, 30 percent of the surface is covered with semiconsolidated sandstone and siltstone fragments. The surface layer is light brownish gray fine sandy loam 2 inches thick. The subsoil is pale brown and light brownish gray fine sandy loam 12 inches thick. Soft, fine grained sandstone bedrock is at a depth of about 14 inches.

Permeability is moderate in the Conpeak soil. Available water capacity is low. The effective rooting depth is 8 to 20 inches. Runoff is slow, and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 15 to 25 percent bluebunch wheatgrass, 15 to 25 percent needleandthread, 5 to 15 percent Indian ricegrass, and 5 to 10 percent black sagebrush. As the range condition deteriorates, Sandberg bluegrass, threadleaf sedge, and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, droughtiness, wind erosion, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Cryluha soil is in capability subclass VIe, nonirrigated. The Conpeak soil is in capability subclass VIIe, nonirrigated. Both soils are in the Shallow Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

140—Cushool-Rock River association, 1 to 15 percent slopes. This map unit is on fan aprons, terraces, and hillslopes. Areas are irregular in shape and are 40 to 600 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,700 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 55 percent Cushool sandy loam, 3 to 15 percent slopes, and 35 percent Rock River fine sandy loam, 1 to 8 percent slopes. The Cushool soil is on hillslopes and fan aprons, and the Rock River soil is on terraces and fan aprons.

Included in this unit are small areas of Almy loam, 1 to 10 percent slopes; Bosler fine sandy loam, 1 to 8 percent slopes; Diamondville loam, 1 to 15 percent slopes; and Forelle loam, 1 to 15 percent slopes. Also included are small areas of Blackhall fine sandy loam, 8 to 25 percent slopes, and Cragosen gravelly loam, 10 to 30 percent slopes. Included areas make up about 10 percent of the total acreage. The percentage varies from one area to another.

The Cushool soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is brown sandy loam 3 inches thick. The upper 14 inches of the subsoil is brown sandy clay loam. The next 6 inches is pale brown sandy clay loam. The lower 12 inches is very pale brown fine sandy loam. Soft sandstone bedrock is at a depth of about 35 inches. In some areas the surface layer is fine sandy loam.

Permeability is moderate in the Cushool soil. Available water capacity is low. The 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 severe.

The Rock River soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown fine sandy loam 3 inches thick. The upper 15 inches of the subsoil is brown sandy clay loam. The lower 16 inches is pale brown sandy clay loam. The substratum to a depth of 60 inches or more is light brownish gray sandy clay loam. In some areas the surface layer is sandy loam.

Permeability is moderate in the Rock River soil. Available water capacity is high. The 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 severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, wind erosion, and a short growing season and by droughtiness in the Cushool soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

141—Dahlquist-Rock River complex, 1 to 12 percent slopes. This map unit is on fan aprons and fan piedmonts. Areas are irregular in shape and are 40 to 640 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 55 percent Dahlquist very cobbly loam, 2 to 12 percent slopes, and 25 percent Rock River sandy loam, 1 to 8 percent slopes. The Dahlquist soil is on fan aprons and fan piedmonts, and the Rock River soil is on fan aprons. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Dahlquist very cobbly loam, 12 to 25 percent slopes; in the vicinity of Shoshoni and Lysite, small areas of Bosler fine sandy loam, 1 to 8 percent slopes, Cushool fine sandy loam, 2 to 15 percent slopes, and Rock outcrop; and small areas of Blazon clay loam, 3 to 15 percent slopes, and Pesmore very channery sandy clay loam, 10 to 15 percent slopes. Also included, in the vicinity of Jeffrey City, are small areas of Bosler fine sandy loam, 1 to 8 percent slopes; Brownsto very cobbly loam, 1 to 12 percent slopes; Carmody fine sandy loam, 2 to 15 percent slopes; Milvar stony loam, 1 to 6 percent slopes; and a soil that is similar to the Dahlquist soil but is moderately deep. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Dahlquist soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, 20 percent of the surface is covered with gravel, cobbles, and stones. The surface layer is brown very cobbly loam 3 inches thick. The upper part of the subsoil is brown and yellowish brown very gravelly sandy clay loam 11 inches thick. The lower part to a depth of 60 inches or more is light yellowish brown extremely cobbly sandy loam. In some areas the surface layer is bouldery loam.

Permeability is moderate in the Dahlquist soil. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

The Rock River soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is grayish brown sandy loam 4 inches thick. The upper part of the subsoil is brown sandy clay loam 17 inches thick. The lower part is pale brown sandy loam 19 inches thick. The substratum to a depth of 60 inches or more is very pale brown sandy loam. In some areas the surface layer is bouldery loam.

Permeability is moderate in the Rock River soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Dahlquist soil is mainly 10 to 20 percent bluebunch wheatgrass, 5 to 10 percent mutton bluegrass, 5 to 10 percent western wheatgrass, and 5 to 10 percent black sagebrush. As the range condition deteriorates, western wheatgrass and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 potential plant community on the Rock River soil is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush.

As the range condition deteriorates, big sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season and by droughtiness and the content of rock fragments in the Dahlquist soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. The rock fragments on the surface of the Dahlquist soil hinder seeding methods that involve tillage and mechanical methods of brush control. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Dahlquist soil is in capability subclass VIs, nonirrigated. It is in the Coarse Upland, 10- to 14-inch precipitation, High Plains Southeast range site. The Rock River soil is in capability subclass IVe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

142—Diamondville-Forelle association, rolling. This map unit is on hills and fan aprons. Slopes are 2 to 15 percent. Areas are irregular in shape and are 40 to 640 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 50 percent Diamondville loam, 2 to 15 percent slopes, and 30 percent Forelle loam, 2 to 15 percent slopes. The Diamondville soil is on hillslopes, and the Forelle soil is on toe slopes and fan aprons.

Included in this unit are small areas of Blackhall fine sandy loam, 5 to 45 percent slopes; Blazon clay loam, 3 to 40 percent slopes; and Carmody fine sandy loam, 2 to 40 percent slopes. Also included are small areas of Poposhia loam, 1 to 15 percent slopes; Rock River fine sandy loam, 1 to 8 percent slopes; and Cushool sandy loam, 2 to 15 percent slopes. The Blackhall, Blazon, Carmody, and Cushool soils are adjacent to the Diamondville soil, and the Poposhia and Rock River soils are adjacent to the Forelle soil. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Diamondville soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is pale brown loam 2 inches thick. The upper 11 inches of the subsoil is brown and light brown clay loam. The lower 11 inches is pale brown and light yellowish brown loam. Soft sandstone bedrock is at a depth of about 24 inches.

Permeability is moderately slow in the Diamondville soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Forelle soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is grayish brown loam 6 inches thick. The upper 12 inches of the subsoil is brown clay loam. The next 4 inches is pale brown clay loam. The lower 4 inches is pale brown loam. The substratum to a depth of 60 inches or more also is pale brown loam.

Permeability is moderately slow in the Forelle soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. It is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site.

143—Effington-Mudray complex, 0 to 8 percent slopes. This map unit is on hillslopes and in drainageways. Areas are irregular in shape and are 30 to 150 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,000 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 55 percent Effington loam, 0 to 8 percent slopes, and 25 percent Mudray clay loam, 1 to 8 percent slopes. The Effington soil is in drainageways, and the Mudray soil is on hillslopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Persayo clay loam, 3 to 10 percent slopes, adjacent to the Mudray soil. Also included are small areas of Saddle sandy loam, 1 to 8 percent slopes, and Youngston loam, 1 to 6 percent slopes, adjacent to the Effington soil. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Effington soil is very deep and well drained. It formed in alluvium derived dominantly from sodic shale. Typically, the surface layer is very pale brown loam 2 inches thick. The upper 3 inches of the subsoil is dark brown clay loam. The next 6 inches is yellowish brown, sodium-affected sandy clay. The next 11 inches is pale brown, sodium-affected clay loam. The lower part to a depth of 60 inches or more is pale brown clay loam.

Permeability is very slow in the Effington soil. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Mudray soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sodic shale. Typically, the surface layer is light brownish gray clay loam 2 inches thick. The subsoil is olive, sodium-affected clay 12 inches thick. Soft, sodic shale bedrock is at a depth of about 14 inches. In some areas the surface layer is sandy loam.

Permeability is very slow in the Mudray soil. Available water capacity is low. The effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 40 percent birdfoot sagebrush, 10 to 20 percent bottlebrush squirreltail, 20 to 30 percent western wheatgrass, and 5 to 15 percent Indian ricegrass. As the range condition deteriorates, birdfoot sagebrush and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 200 pounds of air-dry vegetation per acre in normal years. Production ranges from 300 pounds in favorable years to 100 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by alkalinity, low precipitation, and droughtiness and by the restricted rooting depth in the Mudray soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Effington soil is in capability subclass VIs, nonirrigated. The Mudray soil is in capability subclass VIIs, nonirrigated. Both soils are in the Impervious Clay, 5- to 9-inch precipitation, Wind River Basin range site.

144—Emblem-Clifsand-Rairdent complex, 1 to 25 percent slopes. This map unit is on dissected fan aprons and terraces. Areas are irregular in shape and are 50 to 600 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 4,800 to 6,200 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 30 percent Emblem sandy loam, 1 to 8 percent slopes; 30 percent Clifsand very gravelly loam, 2 to 25 percent slopes; and 30 percent Rairdent loam, 1 to 8 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Frisite loam, 1 to 10 percent slopes, and Griffy sandy loam, 1 to 10 percent slopes. Also included are small areas of Persayo clay loam, 3 to 25 percent slopes, on terrace escarpments. Included areas make up about 10 percent of the total acreage. The percentage varies from one area to another.

The Emblem soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, 20 percent of the surface is covered with gravel. The surface layer is light yellowish brown sandy loam 2 inches thick. The upper 8 inches of the subsoil is yellowish brown loam. The next 10 inches is pale brown loam. The next 10 inches is pale brown gravelly loamy sand. The lower part to a depth of 60 inches or more is light gray very gravelly loamy sand. In some areas the surface layer is loam.

Permeability is moderate in the Emblem soil. Available water capacity is low. The 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.

The Clifsand soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, about 50 percent of the surface is covered with gravel. The surface layer is brown very gravelly loam 4 inches thick. The upper 2 inches of the subsoil is very pale brown very gravelly sandy loam. The lower part to a depth of 60 inches or more is light olive brown very gravelly sandy loam. In some areas the surface layer is gravelly sandy clay loam or loam.

Permeability is moderately rapid in the Clifsand soil. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate.

The Rairdent soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is yellowish brown loam 2 inches thick. The upper 5 inches of the subsoil also is yellowish brown loam. The next 38 inches is light yellowish brown loam that has many large, soft masses of gypsum crystals. The lower part to a depth of 60 inches or more is pale yellow loam. In some areas the surface layer is sandy loam.

Permeability is moderate in the Rairdent soil. Available water capacity also is moderate. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Emblem and Rairdent soils is mainly 20 to 40 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, 10 to 20 percent needleandthread, and 5 to 15 percent big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years.

The potential plant community on the Clifsand soil is mainly 20 to 40 percent bluebunch wheatgrass, 10 to 20 percent needleandthread, 10 to 25 percent western wheatgrass, 0 to 10 percent Indian ricegrass, and 0 to 15 percent big sagebrush. As the range condition deteriorates, big sagebrush, blue grama, threadleaf sedge, and forbs increase in abundance. As the range condition further deteriorates, annual grasses, weeds, and pricklypear invade. The potential plant community produces about 200 pounds of air-dry vegetation per acre in normal years. Production ranges from 300 pounds in favorable years to 100 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, by the content of salts in the Rairdent soil, and by droughtiness and the content of rock fragments in the Clifsand soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur.

The Emblem and Rairdent soils are in capability subclass VIe, nonirrigated. They are in the Loamy, 5- to 9-inch precipitation, Wind River Basin range site. The Clifsand soil is in capability subclass VIs, nonirrigated. It is in the Gravelly, 5- to 9-inch precipitation, Wind River range site.

145—Fluvaquents. These soils are on flood plains. They formed in alluvium derived from various sources. Slopes are 0 to 3 percent. Areas are long and narrow and are 80 to 900 acres in size. The native vegetation is mainly grasses, sedges, rushes, and greasewood. Elevation is 5,400 to 5,700 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 115 to 130 days.

These soils are very deep and poorly drained. Commonly, the surface layer is covered with a mat of peat 2 inches thick. The surface layer is olive gray loam or sandy loam 4 inches thick. The upper 10 inches of the underlying material is brown sandy loam, loam, or clay loam. The lower part to a depth of 60 inches or more is olive, stratified silty clay loam, loam, or sandy loam.

Included in this unit are small areas of salt-affected, somewhat poorly drained Aquic Ustifluvents on valley side slopes and on the higher terraces. Also included are small areas of Haplaquolls in depressions and soils that have a water table below a depth of 4 feet. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

Permeability commonly is moderately slow in the Fluvaquents, but it ranges to moderately rapid. Available water capacity commonly is high, but it is moderate in some areas. The effective rooting depth is 60 inches or more. Runoff is ponded or very slow, and the hazard of water erosion is slight. The hazard of wind erosion also is slight. The seasonal high water table is at a depth of 0.5 foot to 2.0 feet early in spring and in summer. The water table is at a depth of 2 to 4 feet during the rest of the year. These soils are occasionally flooded for brief periods in May and June. They are moderately saline or strongly saline and are moderately alkaline or strongly alkaline.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 40 to 50 percent alkali sacaton, 15 to 25 percent Nuttall alkaligrass, 5 to 15 percent basin wildrye, and 5 percent greasewood. As the range condition deteriorates, inland saltgrass increases in abundance. As the range condition further deteriorates, annual grasses, weeds, and foxtail barley invade. The potential plant community produces about 2,400 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,600 pounds in favorable years to 1,800 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by salinity and alkalinity and by wetness. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIw, nonirrigated. It is in the Saline Subirrigated, 5- to 9-inch precipitation, Wind River Basin range site.

146—Fluvaquents-Youngston complex, 0 to 3 percent slopes. This map unit is on fan aprons, terraces, and flood plains. Areas are long and narrow and are 10 to 500 acres in size. The native vegetation is mainly grasses, sedges, and shrubs. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 115 to 130 days.

This unit is about 60 percent Fluvaquents, 0 to 3 percent slopes, and 25 percent Youngston loam, 0 to 3 percent slopes. The Fluvaquents are on low flood plains, and the Youngston soil is on low terraces and fan aprons. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Effington sandy loam, 1 to 6 percent slopes, and Lostwells sandy clay loam, 0 to 8 percent slopes. Also included are Apron sandy loam, 1 to 8 percent slopes, on alluvial fan aprons; Frisite fine sandy loam, 1 to 5 percent slopes, on alluvial fan aprons and in areas of valley fill; and sand and gravel bars on the bottom of drainageways. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Fluvaquents are very deep and poorly drained. They formed in alluvium derived from various sources. Commonly, the surface layer is light brownish gray sandy loam or loam 4 inches thick. The underlying material to a depth of 60 inches or more is grayish brown sandy loam, sandy clay loam, or clay loam stratified with lenses of sand to clay.

Permeability is moderate in the Fluvaquents. Available water capacity is moderate or high. The effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of wind erosion also is slight. A saline seasonal high water table is at a depth of 1.0 to 2.5 feet during the period May through July. These soils are occasionally flooded for brief periods from February through June.

The Youngston soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is grayish brown loam 3 inches thick. The underlying material to a depth of 60 inches or more is light olive brown clay loam stratified with thin lenses of fine sandy loam, sandy clay loam, and silty clay loam.

Permeability is moderately slow in the Youngston soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Fluvaquents is mainly 40 to 50 percent alkali sacaton, 15 to 25 percent Nuttall alkaligrass, 5 to 15 percent basin wildrye, and 5 percent greasewood. As the range condition deteriorates, inland saltgrass increases in abundance. As the range condition further deteriorates, annual grasses, weeds, and foxtail barley invade. The potential plant community produces about 2,400 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,600 pounds in favorable years to 1,800 pounds in unfavorable years.

The potential plant community on the Youngston soil is mainly 25 to 45 percent rhizomatous wheatgrasses, 15 to 25 percent bottlebrush squirreltail, 5 to 10 percent Indian ricegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, blue grama, birdfoot sagebrush, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 300 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 production of vegetation suitable for grazing is limited by low precipitation and by salinity and wetness in the Fluvaquents. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Fluvaquents are in capability subclass VIw, nonirrigated. They are in the Saline Subirrigated, 5- to 9-inch precipitation, Wind River Basin range site. The Youngston soil is in capability subclass VIe, nonirrigated. It is in the Clayey, 5- to 9-inch precipitation, Wind River Basin range site.

147—Forelle-Luhon loams, 1 to 10 percent slopes. This map unit is on fan aprons, terraces, and toe slopes. Areas are irregular in shape and are 40 to 800 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 50 percent Forelle loam, 1 to 10 percent slopes, and 30 percent Luhon loam, 1 to 10 percent slopes. The Forelle soil is on fan aprons and toe slopes, and the Luhon soil is on fan aprons and terraces. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blazon clay loam, 3 to 20 percent slopes, and Brownsto loam, 1 to 10 percent slopes, adjacent to the Luhon soil. Also included are small areas of Diamondville loam, 1 to 10 percent slopes, and Rockinchair loam, 1 to 10 percent slopes, adjacent to the Forelle soil. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Forelle soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 2 inches thick. The upper 5 inches of the subsoil is yellowish brown clay loam. The next 7 inches is pale brown clay loam. The lower 17 inches is light brownish gray sandy clay loam. The substratum to a depth of 60 inches or more is light brownish gray clay loam. In some areas the surface layer is fine sandy loam or cobbly loam.

Permeability is moderately slow in the Forelle soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Luhon soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown loam 1 inch thick. The upper 6 inches of the subsoil is brown loam. The lower part to a depth of 60 inches or more is light yellowish brown loam.

Permeability is moderate in the Luhon soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Forelle soil is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, sedges and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,100 pounds in favorable years to 500 pounds in unfavorable years.

The potential plant community on the Luhon soil is mainly 20 to 35 percent bluebunch wheatgrass, 10 to 20 percent rhizomatous wheatgrasses, 5 to 15 percent needlegrasses, and 5 to 10 percent black sagebrush. As the range condition deteriorates, bluegrasses, sedges, and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. The Forelle soil is in the Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site. The Luhon soil is in the Shallow Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site.

148—Forelle-Poposhia association, 2 to 12 percent slopes. This map unit is on toe slopes and fan aprons. Areas are irregular in shape and are 80 to 1,000 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Forelle loam, 2 to 8 percent slopes, and 40 percent Poposhia loam, 2 to 12 percent slopes. The Forelle soil is on fan aprons, and the Poposhia soil is on toe slopes and fan aprons.

Included in this unit are small areas of Absher fine sandy loam, 1 to 8 percent slopes; Diamondville loam, 2 to 12 percent slopes, on hillslopes; and Elkol silty clay loam, 0 to 3 percent slopes. Also included are small areas of Blazon clay loam, 15 to 30 percent slopes, on hillslopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Forelle soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 2 inches thick. The upper 14 inches of the subsoil is brown clay loam. The lower 8 inches is light yellowish brown loam. The substratum to a depth of 60 inches or more is very pale brown sandy loam stratified with thin lenses of loam and loamy sand.

Permeability is moderately slow in the Forelle soil. Available water capacity is high. The 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 soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 3 inches thick. The subsoil is pale brown clay loam 12 inches thick. The substratum to a depth of 60 inches or more is pale brown loam.

Permeability is moderate in the Poposhia soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Forelle soil is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, rubber rabbitbrush and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 potential plant community on the Poposhia soil is mainly 40 to 50 percent thickspike wheatgrass, 15 to 25 percent green needlegrass, 5 to 10 percent bluebunch wheatgrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 10 percent big sagebrush. As the range condition deteriorates, rhizomatous wheatgrasses, Canby bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,000 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,300 pounds in favorable years to 500 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. The Forelle soil is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Poposhia soil is in the Clayey, 10- to 14-inch precipitation, High Plains Southeast range site.

149—Fornor-Decross complex, hilly. This map unit is on glacial moraines, fan aprons, and toe slopes. Slopes are 1 to 30 percent. Areas are irregular in shape and are 40 to 1,000 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,800 to 8,400 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 50 percent Fornor very cobbly loam, 2 to 30 percent slopes, and 30 percent Decross loam, 1 to 25 percent slopes. The Fornor soil is on glacial moraines, and the Decross soil is on toe slopes and fan aprons. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Absher fine sandy loam, 1 to 8 percent slopes, along drainageways; Roxal sandy clay loam, 10 to 30 percent slopes, on pediment escarpments; Burnette loam, 3 to 10 percent slopes; and Youga loam, 3 to 10 percent slopes. Also included are small areas of Gelkie sandy loam, 2 to 25 percent slopes; a very deep, pale brown, loamy soil in areas where slopes are 1 to 20 percent; and Fornor very cobbly loam, 30 to 40 percent slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Fornor soil is very deep and well drained. It formed in glacial drift. Typically, 40 percent of the surface is covered with gravel, cobbles, and stones. The surface layer is brown very cobbly loam 2 inches thick. The upper 11 inches of the subsoil is dark brown very gravelly sandy clay loam. The lower 6 inches is pale brown extremely gravelly sandy clay loam. The upper 6 inches of the substratum is pale brown extremely gravelly sandy clay loam. The lower part to a depth of 60 inches or more is very pale brown very gravelly loam. In some areas the surface layer is loam, gravelly loam, or very gravelly loam.

Permeability is moderate in the Fornor soil. Available water capacity also is moderate. The 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 Decross soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 8 inches thick. The upper 13 inches of the subsoil is brown clay loam. The lower part to a depth of 60 inches or more is pale brown loam.

Permeability is moderate in the Decross soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Fornor soil is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Idaho fescue, 5 to 10 percent Kingspike fescue, and 5 to 10 percent antelope bitterbrush. As the range condition deteriorates, Sandberg bluegrass and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 950 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,100 pounds in favorable years to 600 pounds in unfavorable years.

The potential plant community on the Decross soil is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Kingspike fescue, 10 to 25 percent Idaho fescue, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 1,350 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,600 pounds in favorable years to 1,100 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by a short growing season and by the content of rock fragments in the Fornor soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. The rock fragments on the surface of the Fornor soil hinder seeding methods that involve tillage and mechanical methods of brush control. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIe, nonirrigated. The Fornor soil is in the Coarse Upland, 15- to 19-inch precipitation, Foothills and Mountains East range site. The Decross soil is in the Loamy, 15- to 19-inch precipitation, Foothills and Mountains East range site.

150—Frisite-Emblem loams, 1 to 8 percent slopes. This map unit is on dissected terraces. Areas are irregular in shape and are 5 to 640 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,200 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 45 percent Frisite loam, 1 to 8 percent slopes, and 35 percent Emblem loam, 1 to 8 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Birdsley sandy clay loam, 1 to 8 percent slopes, on hillslopes; Clifsand gravelly loam, 2 to 8 percent slopes; and Rairdent sandy loam, 1 to 8 percent slopes. Also included are small areas of Muff loam, 1 to 8 percent slopes, on hillslopes and small areas of Uffens loam, 1 to 8 percent slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Frisite soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is yellowish brown loam 3 inches thick. The upper 20 inches of the subsoil is yellowish brown clay loam. The lower 17 inches is light yellowish brown loam. The substratum to a depth of 60 inches or more is yellowish brown loam.

Permeability is moderate in the Frisite soil. Available water capacity is high. The 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.

The Emblem soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is yellowish brown loam 3 inches thick. The upper 18 inches of the subsoil also is yellowish brown loam. The lower part to a depth of 60 inches or more is very pale brown very gravelly loamy sand.

Permeability is moderate in the Emblem soil. Available water capacity is low. The 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 as rangeland and wildlife habitat. It also is used for irrigated hay and pasture.

The potential plant community on this unit is mainly 10 to 20 percent Indian ricegrass, 20 to 40 percent rhizomatous wheatgrasses, 10 to 20 percent needleandthread, and 5 to 15 percent big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur.

This unit is well suited to irrigated hay and pasture. Grazing during wet periods results in compaction of the surface layer, poor tilth, and excessive runoff. Proper grazing practices, rotation grazing, weed control, and applications of fertilizer are needed to ensure the maximum quality of forage. Annual applications of nitrogen and phosphate fertilizer are needed to maintain the production of high-quality forage. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing. Leveling helps to ensure a uniform application of water.

The contour ditch or sprinkler irrigation method is suitable on this unit (fig. 7). The furrow or border method also is suitable, especially in nearly level areas. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soils. A rotation system that includes grasses, legumes, or

Figure 7.—An irrigated area of Frisite-Emblem loams, 1 to 8 percent slopes. Because of the complex slopes, the best irrigation methods are contour ditch and sprinkler systems.

grass-legume mixtures helps to maintain fertility and tilth.

This unit is in capability subclasses IIIe, irrigated, and VIe, nonirrigated. It is in the Loamy, 5- to 9-inch precipitation, Wind River Basin range site.

151—Frisite-Youngston complex, 1 to 8 percent slopes. This map unit is on fan aprons and terraces. Areas are irregular in shape and are 5 to 320 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 60 percent Frisite fine sandy loam, 1 to 8 percent slopes, and 20 percent Youngston loam, 1 to 5 percent slopes. The Frisite soil is on fan aprons and high terraces, and the Youngston soil is on low terraces. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Apron sandy loam, 1 to 8 percent slopes; Effington sandy loam, 1 to 8 percent slopes; and Griffy sandy loam, 1 to 10 percent slopes. Also included, on hillslopes, are small areas of Lostwells sandy clay loam, 1 to 10 percent slopes, and Saddle sandy loam, 1 to 12 percent slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Frisite soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown fine sandy loam 3 inches thick. The upper 3 inches of the subsoil is yellowish brown loam. The next 10 inches is pale brown clay loam. The lower 25 inches is light gray loam. The substratum to a depth of 60 inches or more is light yellowish brown loam. In some areas the surface layer is loam.

Permeability is moderate in the Frisite soil. Available water capacity is high. The 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.

The Youngston soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is very pale brown loam 4 inches thick. The underlying material to a depth of 60 inches or more is pale brown loam stratified with lenses of fine sandy loam, sandy clay loam, and silt loam.

Permeability is moderately slow in the Youngston soil. Available water capacity is high. The 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 as rangeland and wildlife habitat. It also is used for irrigated hay and pasture.

The potential plant community on the Frisite soil is mainly 10 to 20 percent Indian ricegrass, 20 to 40 percent rhizomatous wheatgrasses, 10 to 20 percent needleandthread, and 5 to 15 percent big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years.

The potential plant community on the Youngston soil is mainly 25 to 45 percent rhizomatous wheatgrasses, 15 to 25 percent bottlebrush squirreltail, 5 to 10 percent Indian ricegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, blue grama, birdfoot sagebrush, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 300 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 production of vegetation suitable for grazing is limited by low precipitation. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is well suited to irrigated hay and pasture. Applications of nitrogen and phosphate fertilizer improve the growth of forage plants. Grazing during wet periods results in compaction of the surface layer, poor tilth, and excessive runoff. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing. Proper grazing practices, applications of fertilizer, and rotation grazing help to maintain the quality of forage. Irrigation water can be applied by the sprinkler or flood method. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soils. Leveling helps to ensure a uniform application of water.

This unit is in capability subclasses IIIe, irrigated, and VIe, nonirrigated. The Frisite soil is in the Loamy, 5- to 9-inch precipitation, Wind River Basin range site. The Youngston soil is in the Clayey, 5- to 9-inch precipitation, Wind River Basin range site.

152—Gelkie Variant-Barrett Variant association, undulating. This map unit is on dissected terraces, mountain foot slopes, ridges, and dip slopes on cuestas. Slopes range from 2 to 15 percent. Areas are irregular in shape and are 40 to 150 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 45 percent Gelkie Variant loam, 2 to 8 percent slopes, and 40 percent Barrett Variant very channery very fine sandy loam, 2 to 15 percent slopes. The Gelkie Variant soil is on terraces and mountain foot slopes, and the Barrett Variant soil is on ridges and dip slopes on cuestas.

Included in this unit are small areas of Poposhia loam, 2 to 15 percent slopes, and Blazon clay loam, 3 to 15 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Gelkie Variant soil is deep and well drained. It formed in alluvium derived dominantly from sandstone interbedded with shale. Typically, the surface layer is brown loam 2 inches thick. The upper 7 inches of the subsoil is brown clay loam. The next 7 inches is pale brown silty clay loam. The lower 26 inches is light yellowish brown and light olive brown clay loam. Soft, sandy shale bedrock is at a depth of about 42 inches.

Permeability is moderately slow in the Gelkie Variant soil. Available water capacity is high. The effective rooting depth is 40 to 60 inches. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Barrett Variant soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from soft shale. Typically, 25 percent of the surface is covered with gravel and channery fragments. The surface layer is light brownish gray very channery very fine sandy loam 4 inches thick. The upper 7 inches of the underlying material is light brownish gray very channery loam. The lower 7 inches is light brownish gray very channery silty clay loam. Soft shale bedrock is at a depth of about 18 inches.

Permeability is moderate in the Barrett Variant soil. Available water capacity is low. The 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 slight.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Gelkie Variant soil is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 potential plant community on the Barrett Variant soil is mainly 10 to 25 percent western wheatgrass, 10 to 25 percent bottlebrush squirreltail, 10 to 25 percent Indian ricegrass, and 40 to 50 percent gardner saltbush. As the range condition deteriorates, gardner saltbush and birdfoot sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season and by droughtiness and the restricted rooting depth in the Barrett Variant soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Gelkie Variant soil is in capability subclass IVe, nonirrigated. It is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Barrett Variant soil is in capability subclass VIIe, nonirrigated. It is in the Saline Upland, 10- to 14-inch precipitation, High Plains Southeast range site.

153—Granile-Ansel complex, hilly. This map unit is on mountains and hills. Slopes are 5 to 45 percent. Areas are irregular in shape and are 60 to 1,000 acres in size. The native vegetation is mainly trees and an understory of grasses, forbs, and shrubs. Elevation is 8,000 to 9,000 feet. The annual precipitation is 18 to 22 inches, the average annual air temperature is 33 to 38 degrees F, and the frost-free period is 40 to 60 days.

This unit is about 60 percent Granile gravelly sandy loam, 5 to 30 percent slopes, and 25 percent Ansel sandy loam, 5 to 45 percent slopes. The Granile soil is on the foot slopes and back slopes of mountains, and the Ansel soil is on the foot slopes and back slopes of hills. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Youga loam, 2 to 25 percent slopes; Venapass loam, 0 to 3 percent slopes; Silas loam, 0 to 3 percent slopes, in drainageways at the base of ridges; and Quander sandy loam, 5 to 40 percent slopes. Also included are small areas of a soil that is similar to the Granile soil but is moderately well drained. Included areas make up about

15 percent of the total acreage. The percentage varies from one area to another.

The Granile soil is very deep and well drained. It formed in alluvium derived dominantly from granite and schist. Typically, the surface is covered with a mat of undecomposed needles, twigs, and leaves 1 inch thick. The surface layer is dark grayish brown gravelly sandy loam 2 inches thick. The subsurface layer is light brownish gray gravelly sandy loam 5 inches thick. The subsoil is pale yellow very gravelly sandy clay loam 39 inches thick. The substratum to a depth of 60 inches or more is light gray very gravelly sandy loam.

Permeability is moderate in the Granile soil. Available water capacity also is moderate. The 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 Ansel soil is very deep and well drained. It formed in alluvium derived dominantly from schist. Typically, the surface is covered with a mat of undecomposed forest litter 2 inches thick. The surface layer is pale brown sandy loam 10 inches thick. The subsoil is light yellowish brown sandy clay loam 14 inches thick. The substratum to a depth of 60 inches or more is very pale brown sandy clay loam.

Permeability is moderate in the Ansel soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

This unit is well suited to timber production. The site index for lodgepole pine ranges from 55 to 60. The main limitation affecting timber production and harvesting is the slope. The Granile soil also is limited by droughtiness. Minimizing the risk of erosion is essential when timber is harvested. Properly designed road drainage systems that include carefully located culverts help to control erosion. Spoil from excavations is subject to rill and gully erosion and to sloughing. Roads and landings can be protected from erosion by constructing water bars and by seeding areas that have been cut and filled.

Conventional methods of harvesting timber generally are suitable, but the surface may be compacted if heavy equipment is used during wet periods. The high-lead logging method is more efficient than most other methods and is less damaging to the surface. In the steeper areas the slope limits the kinds of equipment that can be used. Planting the trees on the contour helps to control erosion. Because the soil is sticky when wet, most planting and harvesting equipment can be used only during dry periods. Unsheltered trees are subject to windthrow.

The Granile soil is in capability subclass VIs, nonirrigated. The Ansel soil is in capability subclass VIe, nonirrigated. The soils are not assigned to a range site.

154—Griffy-Saddle-Wallson association, undulating. This map unit is on terraces, fan aprons, hills, ridges, and pediments. Slopes are 1 to 12 percent. Areas are irregular in shape and are 20 to 1,500 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is about 35 percent Griffy sandy loam, 1 to 8 percent slopes; 35 percent Saddle sandy loam, 1 to 12 percent slopes; and 15 percent Wallson loamy fine sand, 1 to 8 percent slopes. The Griffy soil is on terraces and fan aprons, the Saddle soil is on pediments, hillslopes, and ridges, and the Wallson soil is on fan aprons and toe slopes.

Included in this unit are small areas of Frisite fine sandy loam, 1 to 10 percent slopes, adjacent to the Griffy soil, and small areas of Oceanet sandy loam, 5 to 45 percent slopes. Also included are small areas of Rock outcrop on the summit of ridges and small areas of Saddle sandy loam, 12 to 20 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Griffy soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone interbedded with shale. Typically, the surface layer is pale brown sandy loam 2 inches thick. The upper 4 inches of the subsoil is yellowish brown sandy loam. The next 7 inches is dark yellowish brown sandy clay loam. The next 13 inches is yellowish brown and very pale brown sandy loam. The lower part to a depth of 60 inches or more is yellowish brown fine sandy loam.

Permeability is moderate in the Griffy soil. Available water capacity also is moderate. The 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 Saddle soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. Typically, the surface layer is brown sandy loam 2 inches thick. The upper 11 inches of the subsoil is yellowish brown sandy clay loam. The next 3 inches is pale brown fine sandy loam. The lower 17 inches is light yellowish brown fine sandy loam. Soft, calcareous sandstone bedrock is at a depth of about 33 inches.

Permeability is moderate in the Saddle soil. Available water capacity is low. The 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 Wallson soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone. Typically, the surface layer is very pale brown loamy fine sand 4 inches thick. The upper part of the subsoil is yellowish brown fine sandy loam 17 inches thick. The lower part to a depth of 60 inches or more is light gray fine sandy loam.

Permeability is moderately rapid in the Wallson soil. Available water capacity is moderate. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 30 to 50 percent needleandthread, 15 to 25 percent Indian ricegrass, 5 to 10 percent rhizomatous wheatgrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, yucca, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and wind erosion and by droughtiness in the Saddle soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIe, nonirrigated. It is in the Sandy, 5- to 9-inch precipitation, Wind River Basin range site.

155—Haplaquolls-Aquic Ustifluvents complex, nearly level. This map unit is on flood plains. Slopes are 0 to 3 percent. Areas are irregular in shape and are 5 to 300 acres in size. The native vegetation is mainly grasses, sedges, shrubs, and scattered willows. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 50 percent Haplaquolls, 0 to 3 percent slopes, and 40 percent Aquic Ustifluvents, 0 to 3 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Riverwash. Included areas make up about 10 percent of the total acreage. The percentage varies from one area to another.

The Haplaquolls are very deep and are very poorly drained or poorly drained. They formed in alluvium derived from various sources. They vary considerably within short distances. Typically, the surface layer is very dark brown sandy loam, loam, or silty clay loam. The underlying material is very dark gray sandy loam, sandy clay loam, loam, silty clay loam, or clay. In some areas it is underlain at various depths by sand or gravel, or both.

Permeability is rapid to slow in the Haplaquolls. Available water capacity is low to high. The effective rooting depth is limited by a fluctuating high water table at a depth of 0.5 foot to 1.5 feet from January through December. Runoff is ponded, and the hazard of water erosion is slight. The hazard of wind erosion is moderate. These soils are frequently flooded for very long periods from May through August.

The Aquic Ustifluvents are very deep and are somewhat poorly drained or poorly drained. They formed in alluvium derived from various sources. They vary considerably within short distances. Typically, the surface layer is brown sandy loam, loam, or clay loam 2 inches thick. The underlying material is brown or very pale brown sandy loam, sandy clay loam, loam, silty clay loam, or clay. In some areas it is underlain at various depths by sand or gravel, or both.

Permeability is rapid to slow in the Aquic Ustifluvents. Available water capacity is low to high. The effective rooting depth is limited by a seasonal high water table at a depth of 1.5 to 3.0 feet from April through September. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate. These soils are occasionally flooded for brief periods from April through August. The flooding is a result of snowmelt during April and May and of high-intensity storms in other months.

Most areas of this unit are used for irrigated hay and pasture or for wildlife habitat. A few areas are used as rangeland.

The main limitation in the areas used for irrigated hay and pasture is wetness, which restricts the choice of plants and the period of cutting or grazing and increases the risk of winterkill. The use of equipment is limited during spring and during other wet periods. Grazing should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock. Rotation grazing helps to maintain the quality of forage. Applications of nitrogen and phosphate fertilizer improve the growth of forage plants.

Irrigation water can be applied by the sprinkler, contour ditch, border, or furrow method. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soils. Leveling helps to ensure a uniform application of water.

The potential plant community on the Haplaquolls is mainly 15 to 25 percent Nebraska sedge, 10 to 20 percent northern reedgrass, 10 to 20 percent tufted hairgrass, and 5 to 15 percent willows. As the range condition deteriorates, willows and roses increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 5,400 pounds of air-dry vegetation per acre in normal years. Production ranges from 6,500 pounds in favorable years to 4,500 pounds in unfavorable years.

The potential plant community on the Aquic Ustifluvents is mainly 35 to 50 percent basin wildrye, 15 to 25 percent slender wheatgrass, 5 to 10 percent tufted hairgrass, and 5 to 10 percent willows. As the range condition deteriorates, forbs and willows increase in abundance. As the range condition further deteriorates, Kentucky bluegrass and annual forbs invade. The potential plant community produces about 3,600 pounds of air-dry vegetation per acre in normal years. Production ranges from 4,500 pounds in favorable years to 2,800 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by the flooding and by the wetness of the Haplaquolls. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Haplaquolls are in capability subclass Vw, irrigated and nonirrigated. They are in the Wetland, 10- to 14-inch precipitation, Foothills and Basins East range site. The Aquic Ustifluvents are in capability subclasses IIIc, irrigated, and IVc, nonirrigated. They are in the Subirrigated, 10- to 14-inch precipitation, Foothills and Basins East range site.

156—Haverdad-Clarkelen complex, 0 to 3 percent slopes. This map unit is on flood plains. Areas are long and narrow and are 20 to 200 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 6,200 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 50 percent Haverdad loam, 0 to 3 percent slopes, and 35 percent Clarkelen sandy loam, 0 to 3 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Riverwash; Hiland sandy loam, 1 to 3 percent slopes, on fan aprons; and Effington loam, 0 to 3 percent slopes. Also included are small areas of soils that are similar to the Haverdad and Clarkelen soils but are moderately well drained. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Haverdad soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the upper 2 inches of the surface layer is pale brown loam. The lower 8 inches is brown loam. The upper 24 inches of the underlying material is light yellowish brown loam stratified with thin lenses of sandy clay loam, sandy loam, and loamy sand. The lower part to a depth of 60 inches or more is pale brown loam stratified with thin lenses of sandy loam, loamy sand, sandy clay loam, and clay loam.

Permeability is moderate in the Haverdad soil. Available water capacity is high. The 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 soil is subject to rare flooding from April through June.

The Clarkelen soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown sandy loam 2 inches thick. The subsurface layer is brown loam 3 inches thick. The underlying material to a depth of 60 inches or more is yellowish brown sandy loam stratified with thin lenses of loamy sand and loam.

Permeability is moderately rapid in the Clarkelen soil. Available water capacity is moderate. The 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 soil is subject to rare flooding from April through June.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 25 to 35 percent rhizomatous wheatgrasses, 10 to 20 percent slender wheatgrass, 10 to 20 percent needlegrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and bluegrasses increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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.

The production of vegetation suitable for grazing is limited by low precipitation. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIe, nonirrigated. It is in the Loamy Overflow, 10- to 14-inch precipitation, High Plains Southeast range site.

157—Havre-Absher-Forelle loams, 0 to 6 percent slopes. This map unit is on flood plains, terraces, and toe slopes. Areas are irregular in shape and are 5 to 640 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 40 percent Havre loam, 0 to 3 percent slopes; 20 percent Absher loam, 1 to 6 percent slopes; and 20 percent Forelle loam, 1 to 6 percent slopes. The Havre soil is on flood plains, the Absher soil is on terraces and toe slopes, and the Forelle soil is on toe slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of slick spots; Elkol silty clay loam, 0 to 3 percent slopes; Glendive sandy loam, 0 to 3 percent slopes; and Poposhia loam, 1 to 3 percent slopes. Also included are small areas of Diamondville loam, 1 to 6 percent slopes, on hillslopes and small areas of Haplaquolls, 0 to 3 percent slopes, and Aquic Ustifluvents, 0 to 3 percent slopes, in the DuNoir drainage area, near Dubois. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Havre soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 3 inches thick. The underlying material to a depth of 60 inches or more is light olive brown loam stratified with lenses of fine sandy loam, clay loam, and silty clay loam.

Permeability is moderate in the Havre soil. Available water capacity is high. The 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 Absher soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 3 inches thick. The upper 15 inches of the subsoil is brown, sodium-affected silty clay loam. The next 6 inches is grayish brown, sodium-affected silty clay loam. The substratum to a depth of 60 inches or more is pale brown silty clay loam stratified with lenses of loam, clay loam, and clay.

Permeability is very slow in the Absher soil. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Forelle soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is yellowish brown loam 8 inches thick. The upper 16 inches of the subsoil is yellowish brown clay loam. The lower 8 inches is light yellowish brown clay loam. The substratum to a depth of 60 inches or more is very pale brown clay loam.

Permeability is moderately slow in the Forelle soil. Available water capacity is high. The 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 as rangeland and wildlife habitat. It also is used for irrigated hay and pasture.

The potential plant community on the Havre soil is mainly 25 to 35 percent rhizomatous wheatgrasses, 10 to 20 percent slender wheatgrass, 10 to 20 percent needlegrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, bluegrasses and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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.

The potential plant community on the Absher soil is mainly 15 to 30 percent alkali sacaton, 10 to 20 percent basin wildrye, 5 to 10 percent rhizomatous wheatgrasses, and 10 to 25 percent greasewood. As the range condition deteriorates, inland saltgrass and greasewood increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,800 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,500 pounds in favorable years to 1,200 pounds in unfavorable years.

The potential plant community on the Forelle soil is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season and by alkalinity in the Absher soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is moderately well suited to irrigated hay and pasture. The main limitations are a short growing season and alkalinity in the Absher soil. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition and control erosion. Irrigation water can be applied by the flood or sprinkler method. Leveling helps to ensure a uniform application of water. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soils. Annual applications of nitrogen and phosphate fertilizer are needed to maintain the production of high-quality forage.

The Havre soil is in capability subclasses IVc, nonirrigated, and IIIc, irrigated. It is in the Loamy Overflow, 10- to 14-inch precipitation, High Plains Southeast range site. The Absher soil is in capability subclass VIs, irrigated and nonirrigated. It is in the Saline Lowland, 10- to 14-inch precipitation, High Plains Southeast range site. The Forelle soil is in capability subclasses IVe, nonirrigated, and IIIe, irrigated. It is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site.

158—Havre-Forelle-Glendive complex, 0 to 3 percent slopes. This map unit is on flood plains and toe slopes. Areas are long and narrow and are 30 to 400 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days. The Havre and Glendive soils receive additional moisture in the form of runoff from the higher adjacent areas.

This unit is about 45 percent Havre loam, 0 to 3 percent slopes; 20 percent Forelle loam, 1 to 3 percent slopes; and 15 percent Glendive sandy loam, 0 to 3 percent slopes. The Havre and Glendive soils are on flood plains, and the Forelle soil is on toe slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Bosler sandy loam, 1 to 3 percent slopes, and Rock River sandy loam, 1 to 3 percent slopes. Also included is a somewhat poorly drained, coarse textured soil in the Green Mountain area. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Havre soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 4 inches thick. The underlying material to a depth of 60 inches or more is yellowish brown and light yellowish brown sandy clay loam stratified with lenses of very fine sandy loam, fine sandy loam, and clay loam.

Permeability is moderate in the Havre soil. Available water capacity is high. The 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 Forelle soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is very pale brown loam 5 inches thick. The subsoil is pale brown clay loam 14 inches thick. The substratum to a depth of 60 inches or more is light yellowish brown sandy loam.

Permeability is moderately slow in the Forelle soil. Available water capacity is high. The 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 Glendive soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown sandy loam 4 inches thick. The underlying material to a depth of 60 inches or more is pale brown sandy loam stratified with thin lenses of loamy sand, loam, and sandy clay loam.

Permeability is moderately rapid in the Glendive soil. Available water capacity is moderate. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Havre and Glendive soils is mainly 25 to 35 percent rhizomatous wheatgrasses, 10 to 20 percent slender wheatgrass, 10 to 20 percent needlegrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, bluegrasses and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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.

The potential plant community on the Forelle soil is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, rabbitbrush and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVc, nonirrigated. The Havre and Glendive soils are in the Loamy Overflow, 10- to 14-inch precipitation, High Plains Southeast range site. The Forelle soil is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site.

159—Havre-Havre Variant-Elkol complex, 0 to 3 percent slopes. This map unit is on flood plains and terraces and in swales and seep areas. Areas are long and narrow and are 10 to 1,000 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 50 percent Havre loam, 1 to 3 percent slopes; 15 percent Havre Variant loam, 0 to 3 percent slopes; and 15 percent Elkol clay, 0 to 3 percent slopes. The Havre soil is on flood plains, the Havre Variant soil is in swales and seep areas, and the Elkol soil is on terraces. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Absher loam, 0 to 3 percent slopes, Glendive sandy loam, 0 to 3 percent slopes; and Poposhia loam, 1 to 3 percent slopes. Also included are small areas of Forelle loam, 1 to 3 percent slopes, on fan aprons. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Havre soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is light yellowish brown loam 2 inches thick. The underlying material to a depth of 60 inches or more is yellowish brown loam stratified with thin lenses of fine sandy loam and clay loam.

Permeability is moderate in the Havre soil. Available water capacity is high. The 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 Havre Variant soil is very deep and somewhat poorly drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 1 inch thick. The underlying material to a depth of 60 inches or more is brown sandy clay loam stratified with thin lenses of sand to clay loam.

Permeability is moderate in the Havre Variant soil. Available water capacity is high. The 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. A saline seasonal high water table fluctuates between depths of 1.0 and 3.5 feet during the period April through September.

The Elkol soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown clay 2 inches thick. The underlying material to a depth of 60 inches or more is yellowish brown, sodium-affected clay.

Permeability is slow in the Elkol soil. Available water capacity is moderate. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Havre soil is mainly 25 to 35 percent rhizomatous wheatgrasses, 10 to 20 percent slender wheatgrass, 10 to 20 percent needlegrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, bluegrasses and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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.

The potential plant community on the Havre Variant soil is mainly 50 to 60 percent alkali sacaton, 15 to 25 percent basin wildrye, 5 to 10 percent inland saltgrass, and 5 to 10 percent rubber rabbitbrush. As the range condition deteriorates, greasewood and inland saltgrass increase in abundance. As the range condition further deteriorates, annual grasses and forbs invade. The potential plant community produces about 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 Elkol soil is mainly 15 to 30 percent alkali sacaton, 10 to 20 percent basin wildrye, 5 to 10 percent rhizomatous wheatgrasses, and 10 to 25 percent greasewood. As the range condition deteriorates, inland saltgrass and greasewood increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,800 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,500 pounds in favorable years to 1,200 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season and by salinity in the Havre Variant soil and alkalinity in the Elkol soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Havre soil is in capability subclass IVc, nonirrigated. It is in the Loamy Overflow, 10- to 14-inch precipitation, High Plains Southeast range site. The Havre Variant soil is in capability subclass VIw, nonirrigated. It is in the Saline Subirrigated, 10- to 14-inch precipitation, High Plains Southeast range site. The Elkol soil is in capability subclass VIs, nonirrigated. It is in the Saline Lowland, 10- to 14-inch precipitation, High Plains Southeast range site.

160—Highpoint-Rock outcrop complex, steep. This map unit is on ridges. Slopes are 15 to 50 percent. Areas are irregular in shape and are 40 to 320 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Highpoint channery clay loam, 15 to 50 percent slopes, and 35 percent Rock outcrop. The Highpoint soil is on ridges, and the Rock outcrop occurs as bands on the summit of ridges. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blackhall fine sandy loam, 5 to 40 percent slopes; Blazon clay loam, 10 to 40 percent slopes; Carmody fine sandy loam, 5 to 40 percent slopes; and Cragosen gravelly loam, 5 to 50 percent slopes. Also included are small areas of Poposhia loam, 1 to 10 percent slopes, on fan aprons and toe slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Highpoint soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from fissile shale. Typically, the surface layer is light brownish gray channery clay loam 1 inch thick. The underlying material is light brownish gray very channery clay loam 10 inches thick. Fissile shale bedrock is at a depth of about 11 inches.

Permeability is moderate in the Highpoint soil. Available water capacity is low. The 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 slight.

The Rock outcrop occurs as exposures of fissile shale.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Highpoint soil is mainly 20 to 40 percent rhizomatous wheatgrasses, 5 to 15 percent bluebunch wheatgrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 10 percent winterfat. As the range condition deteriorates, bluegrasses and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 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.

The production of vegetation suitable for grazing is limited by low precipitation, the restricted rooting depth, droughtiness, the content of rock fragments, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Highpoint soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Clayey, 10- to 14-inch precipitation, High Plains Southeast range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

161—Hiland sandy loam, 1 to 15 percent slopes. This very deep, well drained soil is on stabilized dunes and fan aprons. It formed in eolian deposits and alluvium derived from various sources. Areas are irregular in shape and are 40 to 600 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 115 to 130 days.

Included in this unit are small areas of Bowbac fine sandy loam, 1 to 15 percent slopes, and Vonalee loamy sand, 1 to 12 percent slopes, on hillslopes. Included areas make up about 25 percent of the total acreage.

Typically, the surface layer of the Hiland soil is brown sandy loam 3 inches thick. The upper 12 inches of the subsoil is yellowish brown sandy clay loam. The next 18 inches is light yellowish brown sandy loam. The substratum to a depth of 60 inches or more is light yellowish brown loamy sand.

Permeability is moderate. Available water capacity also is moderate. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation and wind erosion. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

162—Hoodle-Rock outcrop complex, 1 to 8 percent slopes. This map unit is on terraces, knobs, and the summit of hills. Areas are irregular in shape and are 40 to 200 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 8,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 65 percent Hoodle gravelly sandy loam, 1 to 8 percent slopes, and 20 percent Rock outcrop. The Hoodle soil is on terraces, and the Rock outcrop is on knobs and the summit of hills. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Irigul channery loam, 3 to 8 percent slopes; Mosroc very gravelly fine sandy loam, 1 to 8 percent slopes, on hillslopes; and Gelkie loam, 2 to 8 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Hoodle soil is very deep and well drained. It formed in alluvium derived dominantly from granite and schist. Typically, the surface layer is brown gravelly sandy loam 3 inches thick. The upper 7 inches of the subsoil is dark brown very gravelly sandy clay loam. The next 6 inches is yellowish brown very gravelly sandy clay loam. The lower 22 inches is light brownish gray very gravelly sandy loam. The substratum to a depth of 60 inches or more is light gray very gravelly sandy loam.

Permeability is moderate in the Hoodle soil. Available water capacity is low. The 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 Rock outcrop occurs as exposures of granite or schist.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Hoodle soil is mainly 40 to 50 percent bluebunch wheatgrass, 5 to 10 percent Indian ricegrass, 5 to 10 percent needleandthread, and 5 to 10 percent perennial forbs. As the range condition deteriorates, sedges and shrubs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by droughtiness, low precipitation, a short growing season, and the content of rock fragments. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Hoodle soil is in capability subclass VIs, nonirrigated. It is in the Gravelly, 10- to 14-inch precipitation, High Plains Southeast range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

163—Hoodle-Gelkie association, 2 to 15 percent slopes. This map unit is on dissected mountain pediments. Areas are irregular in shape and are 80 to 640 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days. The Gelkie soil receives additional moisture in the form of runoff from melting snowdrifts.

This unit is about 55 percent Hoodle gravelly loam, 2 to 15 percent slopes, and 25 percent Gelkie loam, 2 to 10 percent slopes.

Included in this unit are small areas of Abston fine sandy loam, 2 to 8 percent slopes, on hillslopes; Lymanson gravelly loam, 4 to 15 percent slopes, on hillslopes, ridges, and pediments; and Midelight channery loam, 1 to 15 percent slopes, on hillslopes. Also included are small areas of Irigul channery loam, 15 to 25 percent slopes, on hillslopes and ridges. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Hoodle soil is very deep and well drained. It formed in alluvium derived dominantly from granite and schist. Typically, 25 percent of the surface is covered with gravel and channery fragments. The surface layer is brown gravelly loam 3 inches thick. The upper 7 inches of the subsoil is dark brown very gravelly sandy clay loam. The next 3 inches is yellowish brown very gravelly sandy clay loam. The lower 17 inches is light brownish gray very gravelly sandy loam. The substratum to a depth of 60 inches or more is light gray very gravelly sandy loam.

Permeability is moderate in the Hoodle soil. Available water capacity is low. The 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 slight.

The Gelkie soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone. Typically, the surface layer is brown loam 7 inches thick. The upper 22 inches of the subsoil is brown sandy clay loam. The lower 6 inches is very pale brown sandy loam. The substratum to a depth of 60 inches or more also is very pale brown sandy loam.

Permeability is moderate in the Gelkie soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Hoodle soil is mainly 40 to 50 percent bluebunch wheatgrass, 5 to 10 percent Indian ricegrass, 5 to 10 percent needleandthread, and 5 to 10 percent perennial forbs. As the range condition deteriorates, sedges and shrubs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Gelkie soil is mainly 25 to 35 percent rhizomatous wheatgrasses, 10 to 20 percent slender wheatgrass, 10 to 20 percent needlegrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and bluegrasses increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season and by the content of rock fragments in the Hoodle soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Because of the rock fragments on the surface of the Hoodle soil, broadcasting is the best seeding method. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Hoodle soil is in capability subclass VIs, nonirrigated. It is in the Gravelly, 10- to 14-inch precipitation, High Plains Southeast range site. The Gelkie soil is in capability subclass VIe, nonirrigated. It is in the Loamy Overflow, 10- to 14-inch precipitation, High Plains Southeast range site.

164—Iceslew-Countryman complex, 0 to 3 percent slopes. This map unit is on flood plains and valley toe slopes. Areas are irregular in shape and are 10 to 1,000 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,800 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 115 days.

This unit is about 55 percent Iceslew very fine sandy loam, 0 to 3 percent slopes, and 30 percent Countryman loam, 0 to 3 percent slopes. The Iceslew soil is on flood plains and valley toe slopes, and the Countryman soil is on flood plains. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Absher loam, 1 to 8 percent slopes, and Ryan Park loamy fine sand, 1 to 10 percent slopes, on fan aprons. Also included are small areas of Bosler fine sandy loam, 1 to 8 percent slopes, on terraces; Forelle loam, 1 to 8 percent slopes, on toe slopes; and Iceslew very fine sandy loam, 3 to 6 percent slopes, in seeps on toe slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Iceslew soil is very deep and poorly drained. It formed in alluvium derived dominantly from sandstone and siltstone. Typically, the surface layer is pale brown very fine sandy loam 2 inches thick. The upper 6 inches of the underlying material is pale brown loam. The next 4 inches is light brownish gray sandy loam. The next 20 inches is pale brown loam. The lower part to a depth of 60 inches or more is olive gray loam that is stratified with thin lenses of fine sandy loam and very fine sandy loam and has dark gray and brown mottles.

Permeability is moderate in the Iceslew soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is ponded, and the hazard of water erosion is slight. The hazard of wind erosion also is slight. In spring the water table is 1 foot above to 20 inches below the surface. During the rest of the year, it is at a depth of 6 to 30 inches. This soil is occasionally flooded for brief periods from March through August.

The Countryman soil is very deep and somewhat poorly drained. It formed in alluvium derived from various sources. Typically, the surface layer is dark brown loam 2 inches thick. The upper 13 inches of the underlying material is dark brown and brown very fine sandy loam. The next 6 inches is dark grayish brown sandy loam. The lower part to a depth of 60 inches or more is dark grayish brown sandy loam stratified with thin lenses of fine sandy loam and loam.

Permeability is moderate in the Countryman soil.

Available water capacity is high. The 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. A saline seasonal high water table is at a depth of 1.5 to 3.5 feet during the period May through September. This soil is occasionally flooded for brief periods from March through July.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 50 to 60 percent alkali sacaton, 15 to 25 percent basin wildrye, 5 to 10 percent inland saltgrass, and 5 to 10 percent rubber rabbitbrush. As the range condition deteriorates, inland saltgrass and greasewood increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by flooding, salinity, wetness, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Iceslew soil is in capability subclass VIw, nonirrigated. The Countryman soil is in capability subclass IVw, nonirrigated. Both soils are in the Saline Subirrigated, 10- to 14-inch precipitation, High Plains Southeast range site.

165—Inchau-Youga loams, 10 to 30 percent slopes. This map unit is on mountains and hills. Areas are irregular in shape and are 40 to 320 acres in size. The native vegetation is mainly grasses and shrubs and scattered trees. Elevation is 7,400 to 8,500 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 40 percent Inchau loam, 10 to 30 percent slopes, and 40 percent Youga loam, 10 to 30 percent slopes. The Inchau soil is on the side slopes of mountains and hills, and the Youga soil is on foot slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Farlow Variant loam, 10 to 30 percent slopes; Tongue River loam, 10 to 30 percent slopes; and Burnette loam, 3 to 10 percent slopes. Also included are small areas of Roxal sandy clay loam, 30 to 65 percent slopes, and small areas of Owen Creek stony clay loam, 2 to 15 percent slopes, on hillslopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Inchau soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. Typically, the surface layer is dark grayish brown loam 1 inch thick. The upper 9 inches of the subsoil is dark grayish brown clay loam. The next 13 inches is brown and light yellowish brown sandy clay loam. The lower 5 inches is light yellowish brown sandy clay loam. Soft sandstone bedrock is at a depth of about 28 inches. In some areas the surface layer is sandy clay loam.

Permeability is moderate in the Inchau soil. Available water capacity also is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Youga soil is very deep and well drained. It formed in residuum and slope alluvium derived from various sources. Typically, the surface layer is very dark grayish brown loam 2 inches thick. The subsoil is brown sandy clay loam 23 inches thick. The substratum to a depth of 60 inches or more is light olive brown and light yellowish brown sandy clay loam. In some areas the surface layer is gravelly loam.

Permeability is moderate in the Youga soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Kingspike fescue, 10 to 25 percent Idaho fescue, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 1,350 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,600 pounds in favorable years to 1,100 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited mainly by a short growing season. Also, the slope limits access by livestock in the steeper areas. As a result, the less sloping areas tend to be overgrazed. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIe, nonirrigated. It is in the Loamy, 15- to 19-inch precipitation, Foothills and Mountains East range site.

166—Irigul-Midelight-Rock outcrop association, rolling. This map unit is on mountains, hills, and pediments. Slopes are 1 to 15 percent. Areas are irregular in shape and are 10 to 600 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 35 percent Irigul channery loam, 3 to 15 percent slopes; 30 percent Midelight channery loam, 1 to 15 percent slopes; and 15 percent Rock outcrop. The Irigul soil is on mountains and hills, the Midelight soil is on hills and pediments, and the Rock outcrop is on escarpments and the summit of ridges and in narrow bands on hills.

Included in this unit are small areas of Lymanson gravelly loam, 4 to 25 percent slopes. Also included are small areas of Uhl loam, 0 to 6 percent slopes, along drainageways at the base of hills and small areas of Hoodle very gravelly loam, 2 to 15 percent slopes, on strath terraces. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Irigul soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from granite and schist. Typically, 40 percent of the surface is covered with channery fragments and stones. The upper 3 inches of the surface layer is dark brown channery loam. The lower 6 inches is dark yellowish brown channery loam. The substratum is brown very channery loam 6 inches thick. Hard schist bedrock is at a depth of about 15 inches.

Permeability is moderate in the Irigul soil. Available water capacity is low. The effective rooting depth is 6 to 20 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

The Midelight soil is deep and well drained. It formed in residuum and slope alluvium derived dominantly from schist and gneiss. Typically, 35 percent of the surface is covered with small channery fragments and stones. The surface layer is brown channery loam 5 inches thick. The subsoil is yellowish brown very channery loam 16 inches thick. The substratum is light olive brown very channery loam 20 inches thick. Hard schist bedrock is at a depth of about 41 inches.

Permeability is moderate in the Midelight soil. Available water capacity is low. The effective rooting depth is 40 to 60 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

The Rock outcrop occurs as exposures of schist, gneiss, and granite.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Irigul soil is mainly 20 to 40 percent bluebunch wheatgrass, 5 to 15 percent Indian ricegrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 15 percent rhizomatous wheatgrasses. As the range condition deteriorates, big sagebrush, low rabbitbrush, and unpalatable forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,000 pounds in favorable years to 600 pounds in unfavorable years.

The potential plant community on the Midelight soil is mainly 40 to 50 percent bluebunch wheatgrass, 5 to 10 percent Indian ricegrass, 5 to 10 percent needleandthread, and 5 to 10 percent perennial forbs. As the range condition deteriorates, sedges and shrubs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season, by the restricted rooting depth and droughtiness in the Irigul soil, and by the rock fragments on the surface of the Midelight soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Mechanical treatment is not practical because of the Rock outcrop and the rock fragments on the surface of the Midelight soil. Brush can be controlled by aerial spraying or prescribed burning. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Broadcasting is a suitable method of seeding.

The Irigul soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Midelight soil is in capability subclass VIe, nonirrigated. It is in the Gravelly, 10- to 14-inch precipitation, High Plains Southeast range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

167—Irigul-Rock outcrop complex, steep. This map unit is on mountains and hills. Slopes are 6 to 60 percent. Areas are irregular in shape and are 40 to 400 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 55 percent Irigul very channery loam, 6 to 60 percent slopes, and 30 percent Rock outcrop. The Irigul soil is on mountainsides and hillslopes, and the Rock outcrop is on the summit of mountain ridges and on escarpments. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Ansel loam, 5 to 45 percent slopes, and Midelight channery loam. Also included are small areas of Hoodle very gravelly loam, 1 to 6 percent slopes, on terraces. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Irigul soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from granite and schist. Typically, 40 percent of the surface is covered with channery fragments. The upper 7 inches of the surface layer is brown very channery loam. The lower 4 inches is dark yellowish brown very channery loam. Hard schist bedrock is at a depth of about 11 inches.

Permeability is moderate in the Irigul soil. Available water capacity is low. The effective rooting depth is 7 to 20 inches. Runoff is medium or rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Rock outcrop occurs as exposures of schist and granite.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Irigul soil is mainly 20 to 40 percent bluebunch wheatgrass, 5 to 15 percent Indian ricegrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 15 percent rhizomatous wheatgrasses. As the range condition deteriorates, big sagebrush, low rabbitbrush, and undesirable forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,000 pounds in favorable years to 600 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by the restricted rooting depth, low precipitation, a short growing season, droughtiness, and the content of rock fragments. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Mechanical treatment is not practical because of the Rock outcrop, the rock fragments on the surface, and the slope. Brush can be controlled by aerial spraying or prescribed burning. Range seeding may be needed if the amount of desirable vegetation left is not sufficient for natural seeding to occur. Broadcasting is a suitable method of seeding. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Irigul soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

168—Lander-Lander Variant loams, 0 to 3 percent slopes. This map unit is on flood plains. Areas are long and narrow and are 5 to 300 acres in size. The native vegetation is mainly grasses and shrubs and scattered willow and cottonwood. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Lander loam, 0 to 3 percent slopes, and 40 percent Lander Variant loam, 0 to 3 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Haplaquolls, 0 to 3 percent slopes; Countryman loam, 0 to 3 percent slopes; Aquic Ustifluvents, 0 to 3 percent slopes; and Lander loam, 3 to 6 percent slopes. Also included are small areas of Riverwash. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Lander soil is very deep and somewhat poorly drained. It formed in alluvium derived from various sources. Typically, the surface layer is grayish brown loam 13 inches thick. The underlying material to a depth of 60 inches or more is light brownish gray and light olive gray loam.

Permeability is moderate in the Lander soil. Available water capacity is high. The 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 seasonal high water table fluctuates between depths of 1.5 and 3.5 feet during the period May through September. In most areas this soil is occasionally flooded for brief periods from April through August. In areas along DuNoir Creek, however, it is subject to flooding of long duration during periods of heavy runoff in the spring.

The Lander Variant soil is very deep and somewhat poorly drained. It formed in alluvium derived from various sources. Typically, the surface layer is dark brown loam 15 inches thick. The underlying material to a depth of 60 inches or more is dark brown very gravelly sand stratified with a few thin lenses of fine sandy loam, loam, and silt loam.

Permeability is moderate in the Lander Variant soil. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The seasonal high water table fluctuates between depths of 1.5 and 3.5 feet during the period May through September. This soil is occasionally flooded for brief periods from April through August.

This unit is used mainly as rangeland and wildlife habitat. It also is used for irrigated hay and pasture.

The potential plant community on this unit is mainly 35 to 50 percent basin wildrye, 15 to 25 percent slender wheatgrass, 5 to 10 percent tufted hairgrass, and 5 to 10 percent willows. As the range condition deteriorates, forbs and willows increase in abundance. As the range condition further deteriorates, Kentucky bluegrass and annual forbs invade. The potential plant community produces about 3,600 pounds of air-dry vegetation per acre in normal years. Production ranges from 4,500 pounds in favorable years to 2,800 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur.

If this unit is used for irrigated hay and pasture, the main management concerns are the hazard of flooding and a short growing season. Proper grazing practices, rotation grazing, weed control, and applications of fertilizer are needed to ensure the maximum quality of forage. Grazing should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing. Irrigation water can be applied by the contour ditch, border, furrow, or sprinkler method. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soils. Leveling helps to ensure a uniform application of water.

This unit is in capability subclasses IVw, nonirrigated, and IIIw, irrigated. It is in the Subirrigated, 10- to 14-inch precipitation, Foothills and Basins East range site.

169—Luhon-Rock River-Forelle complex, undulating. This map unit is on fan aprons, toe slopes, and terraces. Slopes are 1 to 8 percent. Areas are irregular in shape and are 80 to 640 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Luhon loam, 1 to 8 percent slopes; 25 percent Rock River fine sandy loam, 3 to 8 percent slopes; and 15 percent Forelle loam, 1 to 8 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blackhall fine sandy loam, 5 to 25 percent slopes, on hills, ridges, and knobs; Carmody fine sandy loam, 2 to 20 percent slopes, on hills and ridges; and Cragosen gravelly loam, 3 to 25 percent slopes, on the summit of hills and ridges. Also included are small areas of Bosler fine sandy loam, 1 to 8 percent slopes, and small areas of Rock outcrop on the summit of hills and ridges. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Luhon soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 4 inches thick. The upper 9 inches of the subsoil is pale brown loam. The next part is white loam 14 inches thick. The lower part to a depth of 60 inches or more is very pale brown loam.

Permeability is moderate in the Luhon soil. Available water capacity is high. The 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 Rock River soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown fine sandy loam 3 inches thick. The upper 17 inches of the subsoil is yellowish brown and light yellowish brown sandy clay loam. The lower 14 inches is pale brown fine sandy loam. The substratum to a depth of 60 inches or more is very pale brown fine sandy loam.

Permeability is moderate in the Rock River soil. Available water capacity is high. The 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 Forelle soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 6 inches thick. The upper 8 inches of the subsoil is dark brown and brown clay loam. The next 4 inches is pale brown clay loam. The lower 12 inches is light gray loam. The substratum to a depth of 60 inches or more is very pale brown loam.

Permeability is moderately slow in the Forelle soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Luhon soil is mainly 15 to 25 percent bluebunch wheatgrass, 15 to 25 percent western wheatgrass, 5 to 10 percent mutton bluegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, threadleaf sedge and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Rock River soil is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Forelle soil is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. The Luhon soil is in the Shallow Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Rock River soil is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site. The Forelle soil is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site.

170—Lupinto loam, 1 to 6 percent slopes. This very deep, well drained soil is on terraces. It formed in alluvium derived from various sources. Areas are irregular in shape and are 15 to 1,000 acres in size. The native vegetation is mainly grasses and shrubs.

Elevation is 7,000 to 8,300 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Included in this unit are small areas of Almy loam, 1 to 6 percent slopes; Forelle loam, 1 to 6 percent slopes; Monbutte loam, 1 to 6 percent slopes; and Decross Variant, 1 to 8 percent slopes. Also included are Lupinto loam, 6 to 10 percent slopes, in an area between Pole Creek and the East Fork River and soils that are similar to the Lupinto soil but have slopes of 1 to 8 percent and are darker. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

Typically, the surface layer of the Lupinto soil is brown loam 2 inches thick. The upper 7 inches of the subsoil is brown sandy clay loam. The next 14 inches is white sandy loam. The lower part to a depth of 60 inches or more is white very gravelly clay loam. In some areas the surface layer is gravelly loam or sandy clay loam.

Permeability is moderate. Available water capacity also is moderate. The 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.

Most areas of this unit are used as rangeland and wildlife habitat. A few areas are used for irrigated hay and pasture.

The potential plant community on this unit is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, sedges and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,100 pounds in favorable years to 500 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

If this unit is used for irrigated hay and pasture, the main limitations are a short growing season and a gravelly surface in some areas. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition and control erosion. Annual applications of nitrogen and phosphate fertilizer are needed to maintain the production of high-quality forage. Irrigation water can be applied by the contour ditch, border, furrow, or sprinkler method. Leveling helps to ensure a uniform application of water. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soil. Maintaining crop residue on or near the surface helps to control runoff and wind erosion and maintain tilth and the content of organic matter.

This unit is in capability subclasses IVc, nonirrigated, and IIIe, irrigated. It is in the Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site.

171—Lymanson-Abston-Gelkie association, hilly. This map unit is on hills. Slopes are 1 to 30 percent. Areas are irregular in shape and are 40 to 600 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days. The Gelkie soil receives additional moisture in the form of runoff from melting snowdrifts.

This unit is about 45 percent Lymanson gravelly loam, 4 to 30 percent slopes; 20 percent Abston gravelly sandy loam, 1 to 8 percent slopes; and 15 percent Gelkie fine sandy loam, 2 to 8 percent slopes. The Lymanson soil is on back slopes and foot slopes, the Abston soil is on hillslopes, and the Gelkie soil is on the lee side slopes of hills.

Included in this unit are small areas of slick spots; Irigul channery loam, 3 to 30 percent slopes; and Pishkun Variant very gravelly loam, 6 to 25 percent slopes, on terrace escarpments. Also included are small areas of Hoodle very gravelly loam, 2 to 15 percent slopes, on terraces. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Lymanson soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, 20 percent of the surface is covered with gravel and channery fragments. The surface layer is yellowish brown gravelly loam 3 inches thick. The upper 4 inches of the subsoil is dark yellowish brown gravelly sandy clay loam. The next 6 inches is brown and yellowish brown sandy clay loam. The lower 23 inches is very pale brown very fine sandy loam. Soft sandstone bedrock is at a depth of about 36 inches.

Permeability is moderate in the Lymanson soil. Available water capacity also is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Abston soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sodic shale interbedded with sandstone. Typically, the surface layer is pale brown gravelly sandy loam 3 inches thick. The upper 6 inches of the subsoil is brown, sodium-affected sandy clay. The lower 5 inches is light olive brown, sodium-affected sandy clay. The substratum is pale yellow sandy clay loam 14 inches thick. Sodic shale bedrock is at a depth of about 28 inches.

Permeability is slow in the Abston soil. Available water capacity is low. The 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 slight.

The Gelkie soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone. Typically, the surface layer is brown fine sandy loam 4 inches thick. The upper 15 inches of the subsoil is brown sandy clay loam. The lower 11 inches is light brownish gray sandy clay loam. The substratum to a depth of 60 inches or more is very pale brown gravelly sandy clay loam.

Permeability is moderate in the Gelkie soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Lymanson soil is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 potential plant community on the Abston soil is mainly 10 to 25 percent western wheatgrass, 10 to 25 percent Indian ricegrass, 10 to 25 percent bottlebrush squirreltail, and 40 to 50 percent gardner saltbush. As the range condition deteriorates, birdfoot sagebrush, bottlebrush squirreltail, and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 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 Gelkie soil is mainly 25 to 35 percent rhizomatous wheatgrasses, 10 to 20 percent slender wheatgrass, 10 to 20 percent needlegrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and bluegrasses increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season, by droughtiness in the Lymanson soil, and by droughtiness and alkalinity in the Abston soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steepest areas. As a result, the less sloping areas tend to be overgrazed.

The Lymanson and Gelkie soils are in capability subclass VIe, nonirrigated. The Lymanson soil is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Gelkie soil is in the Loamy Overflow, 10- to 14-inch precipitation, High Plains Southeast range site. The Abston soil is in capability subclass VIs, nonirrigated. It is in the Saline Upland, 10- to 14-inch precipitation, High Plains Southeast range site.

172—Lymanson-Conpeak association, rolling. This map unit is on ridges, hills, and pediments. Slopes are 4 to 25 percent. Areas are irregular in shape and are 75 to 400 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 55 percent Lymanson very fine sandy loam, 4 to 15 percent slopes, and 25 percent Conpeak fine sandy loam, 5 to 25 percent slopes. The Lymanson soil is on the side slopes of ridges and hills, and the Conpeak soil is on pediments and on the summit of ridges and hills.

Included in this unit are small areas of Hoodle very gravelly sandy loam, 2 to 10 percent slopes, on terraces; Cryluha gravelly fine sandy loam, 2 to 15 percent slopes; and a soil that is similar to the Lymanson soil but has slopes of 2 to 15 percent and is less than 20 inches deep over bedrock. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Lymanson soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from calcareous sandstone. Typically, 25 percent of the surface is covered with gravel. The surface layer is brown very fine sandy loam 2 inches thick. The upper part of the subsoil is brown sandy clay loam 21 inches thick. The lower part is light gray loam 7 inches thick. Soft sandstone bedrock is at a depth of about 30 inches.

Permeability is moderate in the Lymanson soil. Available water capacity also is moderate. The 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 severe.

The Conpeak soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from semiconsolidated sandstone. Typically, 30 percent of the surface is covered with semiconsolidated sandstone and siltstone gravel. The surface layer is light brownish gray fine sandy loam 2 inches thick. The subsoil is brown and light gray fine sandy loam 13 inches thick. Soft sandstone bedrock is at a depth of about 15 inches.

Permeability is moderate in the Conpeak soil. Available water capacity is low. The effective rooting depth is 8 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Lymanson soil is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, rabbitbrush and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 potential plant community on the Conpeak soil is mainly 15 to 25 percent bluebunch wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent Indian ricegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, Sandberg bluegrass, threadleaf sedge, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season and by the restricted rooting depth and droughtiness in the Conpeak soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Lymanson soil is in capability subclass VIe, nonirrigated. It is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Conpeak soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

173—Midelight Variant-Winada Variant-Starman gravelly loams, steep. This map unit is on mountains, ridges, and hills. Slopes are 10 to 50 percent. Areas are irregular in shape and are 40 to 640 acres in size. The native vegetation is mainly grasses and shrubs and scattered trees. Elevation is 7,400 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 40 percent Midelight Variant gravelly loam, 10 to 50 percent slopes; 30 percent Winada Variant gravelly loam, 10 to 50 percent slopes; and 15 percent Starman gravelly loam, 10 to 50 percent slopes. The Midelight Variant and Winada Variant soils are on mountainsides and ridges, and the Starman soil is on ridges and hills. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Cloud Peak gravelly loam, 10 to 30 percent slopes; Farlow gravelly clay loam, 10 to 30 percent slopes; Roxal sandy clay loam, 10 to 30 percent slopes; and Woosley loam, 10 to 30 percent slopes. Also included are small areas of Rock outcrop and small areas of a soil that is similar to the Winada Variant soil but is very deep and has slopes of 10 to 30 percent. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Midelight Variant soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone or limestone. Typically, 30 percent of the surface is covered with gravel and channery fragments. The surface layer is brown gravelly loam 6 inches thick. The upper 7 inches of the subsoil is pale brown very gravelly loam. The lower 9 inches is very pale brown very gravelly sandy clay loam. Soft sandstone bedrock is at a depth of about 22 inches.

Permeability is moderate in the Midelight Variant soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Winada Variant soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone or limestone. Typically, 35 percent of the surface is covered with gravel and channery fragments. The surface layer is dark brown gravelly loam 2 inches thick. The upper 6 inches of the subsoil is dark brown very gravelly sandy clay loam. The next 5 inches is light yellowish brown very gravelly sandy clay loam. The lower 13 inches is very pale brown very gravelly sandy clay loam. Soft sandstone bedrock is at a depth of about 26 inches.

Permeability is moderate in the Winada Variant soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Starman soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from sandstone or limestone. Typically, 35 percent of the surface is covered with angular gravel and channery fragments. The surface layer is brown gravelly loam 3 inches thick. The subsoil is light yellowish brown and pale yellow very gravelly loam 9 inches thick. Hard sandstone bedrock is at a depth of about 12 inches.

Permeability is moderate in the Starman soil. Available water capacity is low. The effective rooting depth is 8 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Midelight Variant and Winada Variant soils is mainly 25 to 40 percent bluebunch wheatgrass, 10 to 20 percent Idaho fescue, 5 to 10 percent Kingspike fescue, 5 to 10 percent rhizomatous wheatgrasses, 5 to 10 percent mountain muhly, and 5 to 10 percent big sagebrush. As the range condition deteriorates, threadleaf sedge and mat-forming forbs increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 650 pounds in favorable years to 400 pounds in unfavorable years.

The potential plant community on the Starman soil is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Idaho fescue, 10 to 25 percent Kingspike fescue, and 0 to 10 percent mountainmahogany. As the range condition deteriorates, big sagebrush and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 850 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.

The production of vegetation suitable for grazing is limited by droughtiness, the content of rock fragments, and a short growing season and by the restricted rooting depth in the Starman soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

This unit is in capability subclass VIIs, nonirrigated. The Midelight Variant and Winada Variant soils are in the Gravelly, 15- to 19-inch precipitation, Foothills and Mountains East range site. The Starman soil is in the Shallow Loamy, 15- to 19-inch precipitation, Foothills and Mountains East range site.

174—Milren-Bosler-Rock River sandy loams, 1 to 12 percent slopes. This map unit is on terraces and fan aprons. Areas are irregular in shape and are 100 to 1,200 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,500 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Milren sandy loam, 1 to 8 percent slopes; 20 percent Bosler sandy loam, 1 to 8 percent slopes; and 15 percent Rock River sandy loam, 1 to 12 percent slopes. The Milren and Bosler soils are on terraces, and the Rock River soil is on fan aprons. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blackhall fine sandy loam, 5 to 30 percent slopes, on hills; Cragosen gravelly loam, 5 to 45 percent slopes, on hills and escarpments; and Diamondville sandy clay loam, 1 to 15 percent slopes, on hillslopes and fan aprons. Also included are small areas of Milvar stony loam, 1 to 6 percent slopes, adjacent to the Milren soil. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Milren soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown sandy loam 2 inches thick. The subsurface layer is pale brown sandy loam 1 inch thick. The upper 8 inches of the subsoil is brown sandy clay. The next 5 inches is pale brown sandy clay loam. The lower 7 inches is very pale brown loam. The upper 33 inches of the substratum is very pale brown and pale brown fine sandy loam. The lower part to a depth of 60 inches or more is very pale brown loamy fine sand. In some areas the surface layer is loam or sandy clay loam.

Permeability is slow in the Milren soil. Available water capacity is high. The 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 Bosler soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, 15 percent of the surface is covered with gravel. The surface layer is yellowish brown sandy loam 2 inches thick. The upper 18 inches of the subsoil is dark yellowish brown sandy clay loam. The lower part to a depth of 60 inches or more is light gray very gravelly loamy sand. In some areas the surface layer is loam or sandy clay loam.

Permeability is moderate in the Bosler soil. Available water capacity is low. The 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 Rock River soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown sandy loam 3 inches thick. The upper 12 inches of the subsoil is dark yellowish brown sandy clay loam. The lower 19 inches is pale brown sandy clay loam. The substratum to a depth of 60 inches or more also is pale brown sandy clay loam.

Permeability is moderate in the Rock River soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Milren soil is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 potential plant community on the Bosler and Rock River soils is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. The Milren soil is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Bosler and Rock River soils are in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

175—Milvar-Milren complex, 1 to 6 percent slopes. This map unit is on outwash plains, mountain toe slopes, terraces, and fan aprons. Areas are long and narrow and are 50 to 300 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,700 to 7,800 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Milvar stony loam, 1 to 6 percent slopes, and 40 percent Milren fine sandy loam, 1 to 6 percent slopes. The Milvar soil is on outwash plains and mountain toe slopes, and the Milren soil is on fan aprons and terraces. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit, in small areas adjacent to the Milren soil, are Bosler sandy loam, 1 to 6 percent slopes; Brownsto loam, 1 to 6 percent slopes; and Rock River sandy loam, 1 to 6 percent slopes. Also included are small areas of Dahlquist very cobbly loam, 2 to 10 percent slopes, adjacent to the Milvar soil and small areas of Cragosen gravelly loam, 2 to 30 percent slopes, on terrace escarpments. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Milvar soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, 40 percent of the surface is covered with gravel, cobbles, and stones. The surface layer is brown stony loam 3 inches thick. The upper 13 inches of the subsoil is brown gravelly clay loam. The next 10 inches is very pale brown very gravelly loam. The lower part to a depth of 60 inches or more is pale brown very gravelly loamy sand.

Permeability is slow in the Milvar soil. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

The Milren soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown fine sandy loam 2 inches thick. The upper 14 inches of the subsoil is brown sandy clay. The lower 11 inches is very pale brown loam. The substratum to a depth of 60 inches or more is light yellowish brown fine sandy loam. In some areas the surface layer is gravelly loam.

Permeability is slow in the Milren soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Because of the rock fragments on the surface of the Milvar soil, broadcasting is the best seeding method and aerial spraying and prescribed burning are the best methods of brush control. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Milvar soil is in capability subclass VIs, nonirrigated. The Milren soil is in capability subclass IVe, nonirrigated. Both soils are in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site.

176—Mosroc-Lymanson association, hilly. This map unit is on mountain ridges, hillslopes, and foot slopes. Slopes are 1 to 30 percent. Areas are irregular in shape and are 40 to 600 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 50 percent Mosroc very gravelly fine sandy loam, 1 to 12 percent slopes, and 30 percent Lymanson gravelly loam, 4 to 30 percent slopes. The

Mosroc soil is on mountain ridges and hillslopes, and the Lymanson soil is on hillslopes and foot slopes.

Included in this unit are small areas of Irigul channery loam, 3 to 30 percent slopes, and Gelkie fine sandy loam, 2 to 30 percent slopes. Also included are small areas of Hoodle very gravelly loam, 1 to 15 percent slopes, on terraces and small areas of Midelight fine sandy loam, 1 to 15 percent slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Mosroc soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from granite. Typically, 40 percent of the surface is covered with gravel, channery fragments, and stones. The surface layer is brown very gravelly fine sandy loam 2 inches thick. The subsoil is dark yellowish brown and dark brown very gravelly sandy clay loam 10 inches thick. The substratum is yellowish brown very gravelly sandy loam 6 inches thick. Granite bedrock is at a depth of about 18 inches.

Permeability is moderate in the Mosroc soil. Available water capacity is low. The effective rooting depth is 9 to 20 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

The Lymanson soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, 15 percent of the surface is covered with gravel. The surface layer is brown gravelly loam 4 inches thick. The upper 10 inches of the subsoil is brown sandy clay loam. The lower 10 inches is very pale brown sandy clay loam. Soft sandstone bedrock is at a depth of about 24 inches.

Permeability is moderate in the Lymanson soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Mosroc soil is mainly 20 to 40 percent bluebunch wheatgrass, 5 to 15 percent Indian ricegrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 15 percent rhizomatous wheatgrasses. As the range condition deteriorates, big sagebrush, low rabbitbrush, and unpalatable forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,000 pounds in favorable years to 600 pounds in unfavorable years.

The potential plant community on the Lymanson soil is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season and by droughtiness, the restricted rooting depth, and the content of rock fragments in the Mosroc soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. The content of rock fragments in the Mosroc soil limits seeding to aerial broadcasting. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Mosroc soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Igneous, 10- to 14-inch precipitation, Foothills and Basins West range site. The Lymanson soil is in capability subclass VIe, nonirrigated. It is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site.

177—Oceanet-Rock outcrop-Persayo complex, hilly. This map unit is on hills and ridges. Slopes are 6 to 45 percent. Areas are irregular in shape and are 40 to 600 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,500 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 115 to 130 days.

This unit is about 45 percent Oceanet sandy loam, 6 to 45 percent slopes; 20 percent Rock outcrop; and 20 percent Persayo loam, 6 to 45 percent slopes. The Oceanet and Persayo soils are on hills and ridges adjacent to exposures of sandstone and shale, and the Rock outcrop is on ridges, summits, and escarpments. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Birdsley sandy clay loam, 1 to 15 percent slopes; Worland sandy loam, 2 to 35 percent slopes; and Saddle sandy loam, 1 to 12 percent slopes. Also included are small areas of Apron sandy loam, 1 to 10 percent slopes, and Lostwells sandy clay loam, 1 to 10 percent slopes, on fan aprons; Birdsley sandy clay loam, 1 to 15 percent slopes; and a soil that is similar to the Oceanet soil but is less than 10 inches deep over bedrock. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Oceanet soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is light olive brown sandy loam 4 inches thick. The underlying material is yellowish brown sandy loam 14 inches thick. Soft sandstone bedrock is at a depth of about 18 inches.

Permeability is moderately rapid in the Oceanet soil. Available water capacity is low. The effective rooting depth is 10 to 20 inches. Runoff is rapid, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

The Rock outcrop occurs as exposures of sandstone and shale.

The Persayo soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from soft shale. Typically, the surface layer is light gray loam 2 inches thick. The underlying material is light brownish gray silt loam 11 inches thick. Soft shale bedrock is at a depth of about 13 inches.

Permeability is moderately slow in the Persayo soil. Available water capacity is low. The 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.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Oceanet soil is mainly 25 to 35 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 5 to 15 percent bluebunch wheatgrass, and 10 to 20 percent Indian ricegrass. As the range condition deteriorates, threadleaf sedge, blue grama, forbs, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 125 pounds in unfavorable years.

The potential plant community on the Persayo soil is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent bottlebrush squirreltail, 5 to 15 percent Indian ricegrass, and 0 to 5 percent gardner saltbush. As the range condition deteriorates, big sagebrush and birdfoot sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 125 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, droughtiness, and the restricted rooting depth. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Oceanet and Persayo soils are in capability subclass VIIe, nonirrigated. The Oceanet soil is in the Shallow Sandy, 5- to 9-inch precipitation, Wind River Basin range site. The Persayo soil is in the Shallow Clayey, 5- to 9-inch precipitation, Wind River Basin range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

178—Orpha-Vonalee complex, hilly. This map unit is on sand dunes and hillslopes. Slopes are 1 to 40 percent. Areas are irregular in shape and are 200 to 600 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 6,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is about 45 percent Orpha sand, 5 to 40 percent slopes, and 40 percent Vonalee loamy fine sand, 1 to 12 percent slopes. The Orpha soil is on sand dunes, and the Vonalee soil is on hillslopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Bowbac sandy loam, 1 to 15 percent slopes; Hiland sandy loam, 1 to 15 percent slopes; Taluce sandy loam, 5 to 20 percent slopes; and blowouts. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Orpha soil is very deep and excessively drained. It formed in sandy eolian material derived from various sources. Typically, the surface layer is pale brown sand 1 inch thick. The subsurface layer is yellowish brown sand 4 inches thick. The underlying material to a depth of 60 inches or more is yellowish brown sand.

Permeability is very rapid in the Orpha soil. Available water capacity is low. The 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 severe.

The Vonalee soil is very deep and somewhat excessively drained. It formed in eolian deposits derived from various sources. Typically, the surface layer is brown loamy fine sand 4 inches thick. The upper 9 inches of the subsoil is yellowish brown fine sandy loam. The lower 7 inches is light yellowish brown loamy fine sand. The substratum to a depth of 60 inches or more is yellowish brown and very pale brown loamy fine sand.

Permeability is moderately rapid in the Vonalee soil. Available water capacity is moderate. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Orpha soil is mainly 35 to 50 percent needleandthread, 15 to 25 percent Indian ricegrass, 10 to 20 percent thickspike wheatgrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,400 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,700 pounds in favorable years to 900 pounds in unfavorable years.

The potential plant community on the Vonalee soil is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush and threadleaf sedge. As the range condition deteriorates, fringed sagewort and cudweed sagewort increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, droughtiness, and wind erosion. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Orpha soil is in capability subclass VIe, nonirrigated. It is in the Sands, 10- to 14-inch precipitation, High Plains Southeast range site. The Vonalee soil is in capability subclass IVe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

179—Owen Creek very stony clay loam, 2 to 15 percent slopes. This moderately deep, well drained soil is on hillslopes and fan aprons. It formed in residuum and slope alluvium derived dominantly from shale interbedded with argillaceous sandstone. Areas are irregular in shape and are 40 to 1,500 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,500 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Included in this unit are small areas of Burnette loam, 3 to 10 percent slopes, and Rockinchair loam, 2 to 15 percent slopes, on hillslopes; Woosley loam, 2 to 15 percent slopes; and a shallow soil that has very gravelly underlying material and has slopes of 10 to 15 percent. Also included is a soil that is similar to the Owen Creek soil but has bedrock at a depth of more than 40 inches. Included areas make up about 10 percent of the total acreage. The percentage varies from one area to another.

Typically, 40 percent of the surface of the Owen Creek soil is covered with stones and channery fragments. The surface layer is grayish brown very stony clay loam 2 inches thick. The upper 9 inches of the subsoil is brown clay loam. The next 5 inches is grayish brown clay loam. The lower 13 inches is olive gray clay loam. The substratum also is olive gray clay loam. It is 10 inches thick. Soft shale bedrock is at a depth of about 39 inches.

Permeability is slow. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

This unit is used as rangeland and wildlife habitat.

The potential plant community on this unit is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Idaho fescue, 5 to 10 percent Kingspike fescue, and 5 to 10 percent antelope bitterbrush. As the range condition deteriorates, Sandberg bluegrass and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 950 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,100 pounds in favorable years to 600 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by a short growing season and the content of rock fragments in the surface layer. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Conventional drilling methods are not practical because of the stones on the surface. Broadcasting is a suitable seeding method. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIs, nonirrigated. It is in the Coarse Upland, 15- to 19-inch precipitation, Foothills and Mountains East range site.

180—Pensore-Rock outcrop complex, hilly. This map unit is on hills and ridges. Slopes are 5 to 45 percent. Areas are irregular in shape and are 50 to 640 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 55 percent Pensore very channery loam, 5 to 45 percent slopes, and 35 percent Rock outcrop. The Pensore soil is on the side slopes of hills and ridges, and the Rock outcrop is on the summit of ridges and on escarpments. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blackhall fine sandy loam, 5 to 45 percent slopes; Cragosen gravelly loam, 5 to 45 percent slopes; and Crago cobbly loam, 1 to 15 percent slopes. Also included are small areas of Diamondville loam, 1 to 15 percent slopes, and Forelle loam, 1 to 15 percent slopes, on the side slopes of ridges and hills. Included areas make up about 10 percent of the total acreage. The percentage varies from one area to another.

The Pensore soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from limestone. Typically, 40 percent of the surface is covered with gravel and channery fragments. The surface layer is brown very channery loam 3 inches thick. The subsoil also is brown very channery loam. It is 8 inches thick. Hard limestone bedrock is at a depth of about 11 inches.

Permeability is moderate in the Pensore soil. Available water capacity is low. The effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Rock outcrop occurs as exposures of limestone and fine grained, calcareous sandstone.

This unit is used as rangeland and wildlife habitat.

The potential plant community on the Pensore soil is mainly 20 to 35 percent bluebunch wheatgrass, 10 to 20 percent rhizomatous wheatgrasses, 5 to 15 percent needlegrasses, and 5 to 10 percent black sagebrush. As the range condition deteriorates, bluegrasses, sedges, and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, droughtiness, the content of rock fragments, a short growing season, and the restricted rooting depth. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Pensore soil is in capability subclass VIIs, nonirrigated. It is in the Shallow Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

181—Persayo-Rock outcrop complex, hilly. This map unit is on hills, ridges, and escarpments. Slopes are 3 to 45 percent. Areas are irregular in shape and are 40 to 640 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 4,800 to 6,500 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 65 percent Persayo clay loam, 3 to 45 percent slopes, and 15 percent Rock outcrop. The Persayo soil is on the shoulder slopes and back slopes of hills and on the side slopes of ridges, and the Rock outcrop is on the summit of ridges and hills and on escarpments. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Birdsley sandy clay loam, 3 to 20 percent slopes; Oceanet sandy loam, 5 to 45 percent slopes; a reddish, shallow, loamy soil that has slopes of 3 to 20 percent; and Saddle sandy loam, 3 to 12 percent slopes. Also included are small areas of Lostwells sandy clay loam, 1 to 8 percent slopes, and Youngston clay loam, 1 to 6 percent slopes, on fan aprons. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Persayo soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from soft shale. Typically, the surface layer is light yellowish brown clay loam 3 inches thick. The underlying material is light olive brown clay loam 13 inches thick. Soft shale bedrock is at a depth of about 16 inches. In some areas 30 percent of the surface is covered with gravel.

Permeability is moderately slow in the Persayo soil. Available water capacity is low. The 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 Rock outcrop occurs as exposures of shale interbedded with sandstone.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Persayo soil is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent bottlebrush squirreltail, 5 to 15 percent Indian ricegrass, and 0 to 10 percent gardner saltbush. As the range condition deteriorates, big sagebrush and birdfoot sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 125 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, the restricted rooting depth, and droughtiness. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Persayo soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Clayey, 5- to 9-inch precipitation, Wind River Basin range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

182—Pesmore-Rock outcrop-Asholler complex, steep. This map unit is on ridges, hills, and mountains. Slopes are 8 to 60 percent. Areas are irregular in shape and are 40 to 600 acres in size. The native vegetation is mainly grasses and shrubs and a few scattered limber pine and juniper. Elevation is 6,300 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 50 percent Pesmore very channery sandy loam, 10 to 60 percent slopes; 15 percent Rock outcrop; and 15 percent Asholler channery loam, 8 to 30 percent slopes. The Pesmore soil is on the back slopes of hills and ridges and on mountainsides, the Rock outcrop is on escarpments, the summit of hills, and exhumed ridges, and the Asholler soil is on ridges and hills. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Chittum loam, 8 to 25 percent slopes, adjacent to the Asholler soil; Dahlquist very cobbly loam, 8 to 25 percent slopes; and Gelkie loam, 8 to 25 percent slopes. The Gelkie soil is in areas of valley fill at the base of hillslopes, adjacent to the Pesmore soil. Also included, in the area south of Beaver Rim, adjacent to the Pesmore soil, are small areas of Bosler fine sandy loam on fan aprons; Blackhall fine sandy loam, 5 to 45 percent slopes; Cragosen sandy clay loam, 5 to 40 percent slopes; and, in the Owl Hill area, a very cobbly soil that has a dark surface layer and has slopes of 8 to 25 percent. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Pesmore soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from schist and gneiss. Typically, the surface layer is dark grayish brown very channery sandy loam 3 inches thick. The upper 7 inches of the subsoil is brown very channery loam. The lower 14 inches is light brownish gray and olive very channery loam. Hard schist bedrock is at a depth of about 24 inches. In some areas the surface layer is gravelly loam, very gravelly loam, or stony loam.

Permeability is moderate in the Pesmore soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Rock outcrop occurs as exposures of schist, gneiss, and granite.

The Asholler soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from schist and gneiss. Typically, the surface layer is brown channery loam 3 inches thick. The upper 8 inches of the underlying material is yellowish brown very channery loam. The lower 6 inches is yellowish brown very channery sandy clay loam. Hard schist bedrock is at a depth of about 17 inches.

Permeability is moderate in the Asholler soil. Available water capacity is low. The effective rooting depth is 6 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Pesmore soil is mainly 40 to 50 percent bluebunch wheatgrass, 5 to 10 percent Indian ricegrass, 5 to 10 percent needleandthread, and 5 to 10 percent perennial forbs. As the range condition deteriorates, sedges and woody plants increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Asholler soil is mainly 20 to 40 percent bluebunch wheatgrass, 5 to 15 percent Indian ricegrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 15 percent rhizomatous wheatgrasses. As the range condition deteriorates, big sagebrush, low rabbitbrush, and unpalatable forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,000 pounds in favorable years to 600 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by a short growing season, low precipitation, the content of rock fragments, and droughtiness and by the restricted rooting depth in the Asholler soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Pesmore and Asholler soils are in capability subclass VIIs, nonirrigated. The Pesmore soil is in the Gravelly, 10- to 14-inch precipitation, High Plains Southeast range site. The Asholler soil is in the Shallow Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

183—Peyton sandy loam, 1 to 10 percent slopes. This very deep, well drained soil is on fan aprons and valley side slopes. It formed in noncalcareous alluvium derived from various sources. Areas are long and narrow and are 10 to 100 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,000 feet. The annual precipitation is 13 to 16 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days. The soil receives additional moisture from melting snowdrifts.

Included in this unit are small areas of Havre loam, 0 to 3 percent slopes; a moderately well drained, loamy soil that has a thick, dark surface layer, has slopes of 1 to 6 percent, and is adjacent to drainageways; and a clayey soil that has a thick, dark surface layer and has slopes of 3 to 10 percent. Included areas make up about 10 percent of the total acreage. The percentage varies from one area to another.

Typically, the surface layer of the Peyton soil is brown sandy loam 2 inches thick. The upper part of the subsoil is brown sandy clay loam 13 inches thick. The lower part is light yellowish brown sandy clay loam 7 inches thick. The upper 8 inches of the substratum is light yellowish brown coarse sandy loam. The lower part to a depth of 60 inches or more is light yellowish brown loamy sand.

Permeability is moderate. Available water capacity also is moderate. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 25 to 35 percent rhizomatous wheatgrasses, 10 to 20 percent slender wheatgrass, 10 to 20 percent needlegrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and bluegrasses increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. It is in the Loamy Overflow, 10- to 14-inch precipitation, High Plains Southeast range site.

184—Pishkun Variant-Hoodle complex, hilly. This map unit is on terraces and terrace escarpments. Slopes are 3 to 25 percent. Areas are irregular in shape and are 40 to 1,000 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 55 percent Pishkun Variant very gravelly loam, 3 to 25 percent slopes, and 25 percent Hoodle very gravelly sandy loam, 3 to 15 percent slopes. The Pishkun Variant soil is on terrace escarpments, and the Hoodle soil is on terraces. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit, on hillslopes, are small areas of Irigul channery loam, 3 to 25 percent slopes; Lymanson gravelly sandy loam, 4 to 25 percent slopes; and Midelight channery loam, 3 to 15 percent slopes. Also included are small areas of Gelkie fine sandy loam, 3 to 25 percent slopes, on terraces and a moderately deep, clayey, alkaline soil that has slopes of 3 to 12 percent and is on hillslopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Pishkun Variant soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, 45 percent of the surface is covered with gravel and stones. The surface layer is brown very gravelly loam 3 inches thick. The upper 6 inches of the subsoil is very pale brown very gravelly loam. The next 6 inches is very pale brown very gravelly sandy loam. The lower part to a depth of 60 inches or more is white and light gray very gravelly sandy loam.

Permeability is moderately rapid in the Pishkun Variant soil. Available water capacity is low. The 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 Hoodle soil is very deep and well drained. It formed in alluvium derived dominantly from schist and granite. Typically, 35 percent of the surface is covered with gravel and channery fragments. The surface layer is brown very gravelly sandy loam 3 inches thick. The upper 11 inches of the subsoil is dark yellowish brown very gravelly sandy clay loam. The lower 13 inches is light brownish gray very gravelly sandy loam. The substratum to a depth of 60 inches or more is pale brown very gravelly loamy sand.

Permeability is moderate in the Hoodle soil. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 40 to 50 percent bluebunch wheatgrass, 5 to 10 percent Indian ricegrass, 5 to 10 percent needleandthread, and 5 to 10 percent perennial forbs. As the range condition deteriorates, sedges and shrubs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, a short growing season, the content of rock fragments, and droughtiness. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIIs, nonirrigated. It is in the Gravelly, 10- to 14-inch precipitation, High Plains Southeast range site.

185—Poposhia loam, 1 to 6 percent slopes. This very deep, well drained soil is on fan aprons and toe slopes. It formed in alluvium derived from various sources. Areas are irregular in shape and are 5 to 160 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,800 to 7,300 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Included in this unit are small areas of Almy loam, 1 to 6 percent slopes; Forelle loam, 1 to 6 percent slopes; Rock River loam, 1 to 6 percent slopes; Sinkson loam, 1 to 6 percent slopes; and Brownsto loam, 1 to 6 percent slopes. Also included, in the Eastfork area, are small areas of Brownsto loam, 6 to 10 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

Typically, the surface layer of the Poposhia soil is pale brown loam 7 inches thick. The subsoil also is pale brown loam. It is 11 inches thick. The substratum to a depth of 60 inches or more is very pale brown loam. In some areas the surface layer is sandy clay loam.

Permeability is moderate. Available water capacity is high. The 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 hay and pasture. A few areas are used as rangeland and wildlife habitat.

This unit is well suited to irrigated hay and pasture. The main limitations are the slope and a short growing season. Applications of nitrogen and phosphate fertilizer improve the growth of forage plants. Proper grazing practices, rotation grazing, weed control, and applications of fertilizer are needed to ensure the maximum quality of forage. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

Irrigation water can be applied by the contour ditch, furrow, or sprinkler method. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soil. Leveling helps to ensure a uniform application of water.

The potential plant community on this unit is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, sedges and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,100 pounds in favorable years to 500 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclasses IIIe, irrigated, and IVe, nonirrigated. It is in the Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site. It is prime farmland in areas where it is irrigated and an adequate water supply is available.

186—Poposhia-Blazon-Carmody complex, hilly. This map unit is on hills, ridges, and fan aprons. Slopes are 3 to 40 percent. Areas are irregular in shape and are 20 to 500 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 35 percent Poposhia loam, 3 to 20 percent slopes; 30 percent Blazon clay loam, 6 to 40 percent slopes; and 15 percent Carmody fine sandy loam, 3 to 25 percent slopes. The Poposhia soil is on fan aprons, and the Blazon and Carmody soils are on hills and ridges. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blackhall sandy loam, 5 to 40 percent slopes; Diamondville loam, 3 to 15 percent slopes; Forelle loam, 3 to 20 percent slopes; and Cushool sandy loam, 3 to 20 percent slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Poposhia soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is yellowish brown loam 3 inches thick. The subsoil is light olive brown loam 7 inches thick. The substratum to a depth of 60 inches or more is light yellowish brown clay loam.

Permeability is moderate in the Poposhia soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Blazon soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from soft shale. Typically, the surface layer is dark yellowish brown clay loam 4 inches thick. The underlying material is yellowish brown and light olive brown clay loam 13 inches thick. Soft shale bedrock is at a depth of about 17 inches.

Permeability is moderately slow in the Blazon soil. Available water capacity is low. The 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 Carmody soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is brown fine sandy loam 5 inches thick. The underlying material is light yellowish brown fine sandy loam 23 inches thick. Soft sandstone bedrock is at a depth of about 28 inches.

Permeability is moderate in the Carmody soil. Available water capacity is low. The 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 severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Poposhia soil is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, rabbitbrush and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 potential plant community on the Blazon soil is mainly 20 to 40 percent rhizomatous wheatgrasses, 5 to 15 percent bluebunch wheatgrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 10 percent winterfat. As the range condition deteriorates, bluegrasses and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 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.

The potential plant community on the Carmody soil is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, threadleaf sedge and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation and by the restricted rooting depth and droughtiness in the Blazon and Carmody soils. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, prescribed burning, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Poposhia and Carmody soils are in capability subclass VIe, nonirrigated. The Poposhia soil is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Carmody soil is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site. The Blazon soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Clayey, 10- to 14-inch precipitation, High Plains Southeast range site.

187—Poposhia, sodic-Blazon complex, rolling. This map unit is on fan aprons, hills, and ridges. Slopes are 2 to 15 percent. Areas are irregular in shape and are 40 to 100 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,500 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 55 percent Poposhia loam, sodic, 2 to 10 percent slopes, and 30 percent Blazon clay loam, 3 to 15 percent slopes. The Poposhia soil is on fan aprons, and the Blazon soil is on hillslopes and ridges. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Absher loam, 1 to 8 percent slopes, and small areas of Rock outcrop on escarpments, ridges, and knobs adjacent to the Blazon soil. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Poposhia soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is yellowish brown loam 2 inches thick. The upper 25 inches of the underlying material is light olive brown, sodium-affected clay loam. The lower part to a depth of 60 inches or more is light olive brown loam.

Permeability is moderately slow in the Poposhia soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate.

The Blazon soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from soft shale. Typically, the surface layer is light brownish gray clay loam 1 inch thick. The underlying material is light olive brown clay loam 18 inches thick. Soft shale bedrock is at a depth of about 19 inches.

Permeability is moderately slow in the Blazon soil. Available water capacity is low. The effective rooting depth is 4 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Poposhia soil is mainly 40 to 50 percent gardner saltbush, 10 to 20 percent western wheatgrass, 10 to 20 percent bottlebrush squirreltail, and 10 to 20 percent Indian ricegrass. As the range condition deteriorates, bottlebrush squirreltail, Sandberg bluegrass, and birdfoot sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 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 Blazon soil is mainly 20 to 40 percent rhizomatous wheatgrasses, 5 to 15 percent bluebunch wheatgrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 10 percent winterfat. As the range condition deteriorates, bluegrass and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 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.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season, by the content of sodium in the Poposhia soil, and by droughtiness and the restricted rooting depth in the Blazon soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Poposhia soil is in capability subclass VIs, nonirrigated. It is in the Saline Upland, 10- to 14-inch precipitation, High Plains Southeast range site. The Blazon soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Clayey, 10- to 14-inch precipitation, High Plains Southeast range site.

188—Quander-Youga-Onason complex, steep. This map unit is on mountains, foot slopes, and ridges. Slopes are 10 to 45 percent. Areas are irregular in shape and are 40 to 600 acres in size. The native vegetation is mainly grasses, shrubs, and scattered limber pine. Elevation is 7,000 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 45 percent Quander cobbly loam, 25 to 45 percent slopes; 25 percent Youga loam, 10 to 25 percent slopes; and 15 percent Onason sandy loam, 10 to 45 percent slopes. The Quander soil is on mountain back slopes, the Youga soil is on foot slopes, and the droughty Onason soil is on the summit of ridges and on shoulder slopes at the lower, warmer elevations. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Ansel sandy loam, 10 to 45 percent slopes, and Granile gravelly sandy loam, 5 to 30 percent slopes. Also included are small areas of Peyton sandy loam, 1 to 10 percent slopes, on fan aprons and small areas of a soil that is similar to the Youga soil but is moderately deep. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Quander soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, 35 percent of the surface is covered with gravel, cobbles, and stones. The surface layer is grayish brown cobbly loam 3 inches thick. The upper 7 inches of the subsoil is brown very cobbly sandy clay loam. The lower 6 inches is yellowish brown very cobbly sandy clay loam. The substratum to a depth of 60 inches or more is yellowish brown and brownish yellow very cobbly sandy clay loam. In some areas the surface layer is stony loam.

Permeability is moderate in the Quander soil. Available water capacity also is moderate. The 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 Youga soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is dark gray loam 3 inches thick. The upper 4 inches of the subsoil is grayish brown loam. The lower 21 inches is brown and yellowish brown sandy clay loam. The substratum to a depth of 60 inches or more is yellowish brown sandy clay loam.

Permeability is moderate in the Youga soil. Available water capacity is high. The 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 Onason soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, 15 percent of the surface is covered with gravel. The surface layer is pale brown sandy loam 3 inches thick. The underlying material is brown sandy loam 8 inches thick. Soft sandstone bedrock is at a depth of about 11 inches.

Permeability is moderately rapid in the Onason soil. Available water capacity is low. The effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Quander soil is mainly 20 to 30 percent bluebunch wheatgrass, 10 to 20 percent Idaho fescue, 5 to 10 percent western wheatgrass, and 5 percent big sagebrush. As the range condition deteriorates, threadleaf sedge and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 1,300 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,700 pounds in favorable years to 800 pounds in unfavorable years.

The potential plant community on the Youga soil is mainly 10 to 20 percent bluebunch wheatgrass, 5 to 10 percent Griffith wheatgrass, 10 to 20 percent Idaho fescue, 5 to 10 percent prairie junegrass, and 5 percent big sagebrush. As the range condition deteriorates, threadleaf sedge, big sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years.

The potential plant community on the Onason soil is mainly 15 to 25 percent bluebunch wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent Indian ricegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, threadleaf sedge, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by a short growing season, by the content of rock fragments in the Quander soil, and by droughtiness, the restricted rooting depth, and wind erosion in areas of the Onason soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Quander and Youga soils are in capability subclass VIe, nonirrigated. The Quander soil is in the Coarse Upland, 15- to 19-inch precipitation, Foothills and Mountains Southeast range site. The Youga soil is in the Loamy, 15- to 19-inch precipitation, Foothills and Mountains Southeast range site. The Onason soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

189—Rallod-Rock outcrop-Seaverson complex, hilly. This map unit is on hills, ridges, and escarpments. Slopes are 3 to 40 percent. Areas are irregular in shape and are 40 to 1,000 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 6,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Rallod loam, 3 to 25 percent slopes; 20 percent Rock outcrop; and 20 percent Seaverson loam, 6 to 40 percent slopes. The Rallod and Seaverson soils are on hills and ridges, and the Rock outcrop is on the summit of hills and ridges and on escarpments. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of slick spots and Blazon clay loam, 3 to 40 percent slopes. Also included are small areas of Almy loam, 1 to 10 percent slopes, and Monbutte fine sandy loam, 1 to 10 percent slopes, on fan aprons. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Rallod soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from variegated shale. Typically, the surface layer is brown loam 2 inches thick. The upper 11 inches of the subsoil is dark reddish brown and reddish brown, sodium-affected clay loam. The lower 5 inches is pinkish gray clay loam. Soft, variegated shale bedrock is at a depth of about 18 inches.

Permeability is slow in the Rallod soil. Available water capacity is low. The effective rooting depth is 9 to 20 inches. Runoff is rapid, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Rock outcrop occurs as exposures of soft, variegated, sodic shale.

The Seaverson soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from variegated, sodic shale. Typically, the surface layer is pinkish gray loam 2 inches thick. The subsoil is reddish brown, sodium-affected clay loam 5 inches thick. The substratum is light gray, sodium-affected loam 4 inches thick. Soft, variegated, sodic shale bedrock is at a depth of about 11 inches.

Permeability is very slow in the Seaverson soil. Available water capacity is low. The 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.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 40 percent rhizomatous wheatgrasses, 5 to 15 percent bluebunch wheatgrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 10 percent winterfat. As the range condition deteriorates, Sandberg bluegrass and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 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.

The production of vegetation suitable for grazing is limited by low precipitation, the restricted rooting depth, droughtiness, alkalinity, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Rallod and Seaverson soils are in capability subclass VIIe, nonirrigated. They are in the Shallow Clayey, 10- to 14-inch precipitation, High Plains Southeast range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

190—Relsob-Bluerim sandy loams, 1 to 10 percent slopes. This map unit is on fan aprons and hills. Areas are long and narrow and are 20 to 150 acres in size.

The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 55 percent Relsob sandy loam, 1 to 6 percent slopes, and 30 percent Bluerim sandy loam, 3 to 10 percent slopes. The Relsob soil is on fan aprons and toe slopes, and the Bluerim soil is on hillslopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Bosler fine sandy loam, 1 to 8 percent slopes, and Ryark sandy loam, 1 to 10 percent slopes, adjacent to the Relsob soil. Also included are small areas of Onason gravelly sandy loam, 5 to 15 percent slopes, and Cragosen gravelly loam, 3 to 15 percent slopes, adjacent to the Bluerim soil. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Relsob soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone. Typically, the surface layer is brown sandy loam 3 inches thick. The upper 9 inches of the subsoil is yellowish brown sandy clay loam. The lower 3 inches is light yellowish brown gravelly sandy clay loam. The substratum to a depth of 60 inches or more is light yellowish brown very gravelly loamy sand.

Permeability is moderate in the Relsob soil. Available water capacity is low. The 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 Bluerim soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is brown sandy loam 2 inches thick. The subsoil is yellowish brown sandy clay loam 14 inches thick. The substratum is light yellowish brown sandy loam 19 inches thick. Soft sandstone bedrock is at a depth of about 35 inches.

Permeability is moderate in the Bluerim soil. Available water capacity is low. The 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 severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by droughtiness, low precipitation, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

191—Rentsac-Carmody complex, hilly. This map unit is on ridges and hills. Slopes are 2 to 40 percent. Areas are irregular in shape and are 30 to 200 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 50 percent Rentsac very gravelly loam, 6 to 40 percent slopes, and 30 percent Carmody fine sandy loam, 2 to 40 percent slopes. The Rentsac soil is on ridges, and the Carmody soil is on ridges, hillslopes, and knobs. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blackhall fine sandy loam, 5 to 45 percent slopes, and Pensore very channery loam, 5 to 45 percent slopes, adjacent to the Rentsac soil. Also included are small areas of Rock outcrop; small areas of Diamondville loam, 2 to 15 percent slopes, on fan aprons; Forelle loam, 1 to 15 percent slopes; Luhon fine sandy loam, 1 to 10 percent slopes; Rock River loam, 1 to 8 percent slopes; and Cushool loam, 2 to 25 percent slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Rentsac soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, 30 percent of the surface is covered with gravel and cobbles. The surface layer is pale brown very gravelly loam 5 inches thick. The underlying material is light gray very gravelly loam 9 inches thick. Hard sandstone bedrock is at a depth of about 14 inches.

Permeability is moderate in the Rentsac soil. Available water capacity is low. The effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Carmody soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, 10 percent of the surface is covered with gravel and cobbles. The surface layer is brown fine sandy loam 4 inches thick. The upper 28 inches of the underlying material also is brown fine sandy loam. The lower 7 inches is very pale brown fine sandy loam. Soft sandstone bedrock is at a depth of about 39 inches.

Permeability is moderate in the Carmody soil. Available water capacity also is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Rentsac soil is mainly 15 to 25 percent bluebunch wheatgrass, 15 to 25 percent western wheatgrass, 5 to 10 percent mutton bluegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, threadleaf sedge and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Carmody soil is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, a short growing season, and droughtiness and by the content of rock fragments in the Rentsac soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Broadcasting is a suitable method of seeding. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Rentsac soil is in capability subclass VIIs, nonirrigated. It is in the Shallow Loamy, 10- to 14-inch precipitation, High Plains Southeast range site. The Carmody soil is in capability subclass VIe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

192—Riverwash-Aquic Ustifluvents complex, nearly level. This map unit is on braided stream channels and flood plains. Slopes are 0 to 3 percent. Areas are long and narrow and are 10 to 300 acres in size. The native vegetation is mainly willows, cottonwood trees, and grasses. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 115 days.

This unit is about 60 percent Riverwash and 30 percent Aquic Ustifluvents, 0 to 3 percent slopes. The Riverwash is in stream channels, and the Aquic Ustifluvents are on flood plains. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Countryman loam, 0 to 3 percent slopes; Haplaquolls, 0 to 3 percent slopes; Lander loam, 0 to 3 percent slopes; and Lander Variant loam, 0 to 3 percent slopes, adjacent to the Aquic Ustifluvents. Included areas make up about 10 percent of the total acreage. The percentage varies from one area to another.

The Riverwash occurs as areas of sandy, silty, or gravelly sediment. These areas are flooded, washed, and reworked by rivers so frequently that they support little or no vegetation. They are annually flooded for very long periods. The flooding can occur at any time throughout the year. The water table is at the same level as the streams.

The Aquic Ustifluvents are very deep and somewhat poorly drained. They formed in recent alluvium derived from various sources. They vary considerably within short distances. Typically, the surface layer is brown or pale brown loamy sand, sandy loam, or loam 4 inches thick. The underlying material to a depth of 60 inches or more is pale brown or very pale brown very gravelly loamy sand, gravelly sandy loam, loamy sand, sandy loam, or loam.

Permeability is moderate to rapid in the Aquic Ustifluvents. Available water capacity is very low to high. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion also is slight. These soils are frequently flooded for brief periods from May through August. The water table is at a depth of 1.5 to 3.5 feet throughout the year.

This unit is used mainly for wildlife habitat. It also is used as rangeland.

The Riverwash does not have a permanent plant cover because of the annual flooding.

The potential plant community on the Aquic Ustifluvents is mainly 15 to 30 percent basin wildrye, 5 to 15 percent slender wheatgrass, 5 to 15 percent rhizomatous wheatgrasses, and 5 to 15 percent cottonwood trees. As the range condition deteriorates, cottonwood, silver buffaloberry, big sagebrush, and other shrubs increase in abundance. As the range condition further deteriorates, Kentucky bluegrass and annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by the flooding and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, fencing, and critical area planting. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur.

The Riverwash is in capability subclass VIw, nonirrigated. It is not assigned to a range site. The Aquic Ustifluvents are in capability subclass IVw, nonirrigated. They are in the Lowlands, 10- to 14-inch precipitation, Foothills and Basins East range site.

193—Rockinchair-Rock outcrop-Sinkson complex, hilly. This map unit is on hills, ridges, and fan aprons. Slopes are 2 to 40 percent. Areas are irregular in shape and are 100 to 1,200 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,500 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 40 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 55 percent Rockinchair fine sandy loam, 2 to 40 percent slopes; 15 percent Rock outcrop; and 15 percent Sinkson loam, 2 to 10 percent slopes. The Rockinchair soil is on the summit, shoulder slopes, and back slopes of hills and ridges, the Rock outcrop is on escarpments and on the summit of hills and ridges, and the Sinkson soil is on fan aprons. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Almy loam, 0 to 10 percent slopes; Forelle loam, 1 to 15 percent slopes; Luhon loam, 1 to 10 percent slopes; and Brownsto sandy loam, 1 to 20 percent slopes, adjacent to the Sinkson soil. Also included are small areas of a reddish, very gravelly, shallow soil that has slopes of 3 to 40 percent and is adjacent to the Rockinchair soil. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Rockinchair soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from variegated shale interbedded with sandstone. Typically, the surface layer is yellowish brown fine sandy loam 4 inches thick. The upper part of the subsoil is pale brown sandy clay loam 14 inches thick. The lower part is light yellowish brown sandy clay loam 14 inches thick. Variegated, soft shale bedrock is at a depth of about 32 inches.

Permeability is moderate in the Rockinchair soil. Available water capacity also is moderate. The effective rooting depth is 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

The Rock outcrop occurs as exposures of variegated shale interbedded with sandstone.

The Sinkson soil is very deep and well drained. It formed in mixed alluvium derived dominantly from sandstone and siltstone. Typically, the surface layer is yellowish red loam 6 inches thick. The underlying material to a depth of 60 inches or more is reddish brown loam.

Permeability is moderate in the Sinkson soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Rockinchair soil is mainly 20 to 35 percent bluebunch wheatgrass, 10 to 20 percent rhizomatous wheatgrasses, 5 to 15 percent needlegrasses, and 5 to 10 percent black sagebrush. As the range condition deteriorates, bluegrasses, sedges, and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years.

The potential plant community on the Sinkson soil is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, sedges and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,100 pounds in favorable years to 500 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Rockinchair soil is in capability subclass VIe, nonirrigated. It is in the Shallow Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site. The Sinkson soil is in capability subclass IVe, nonirrigated. It is in the Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

194—Rockinchair-Sinkson loams, 1 to 15 percent slopes. This map unit is on hills, ridges, and fan aprons. Areas are irregular in shape and are 100 to 1,000 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,500 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 40 percent Rockinchair loam, 1 to 15 percent slopes, and 40 percent Sinkson loam, 1 to 8 percent slopes. The Rockinchair soil is on ridges and hillslopes, and the Sinkson soil is on fan aprons. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Absher loam, 1 to 8 percent slopes; Forelle loam, 1 to 15 percent slopes; Luhon loam, 1 to 10 percent slopes; and Almy very fine sandy loam, 1 to 10 percent slopes, adjacent to the Sinkson soil. Also included are small areas of Brownsto sandy loam, 1 to 15 percent slopes, and Thermopolis loam, 2 to 15 percent slopes, adjacent to the Rockinchair soil. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Rockinchair soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from variegated shale interbedded with sandstone. Typically, the surface layer is reddish brown loam 3 inches thick. The upper 5 inches of the subsoil is brown loam. The next 11 inches is reddish brown loam. The lower 15 inches is light brownish gray clay loam. Variegated, soft shale bedrock is at a depth of about 34 inches.

Permeability is moderate in the Rockinchair soil. Available water capacity also is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Sinkson soil is very deep and well drained. It formed in mixed alluvium derived dominantly from sandstone and siltstone. Typically, the surface layer is brown loam 5 inches thick. The upper 30 inches of the underlying material is light brown clay loam. The lower part to a depth of 60 inches or more is light reddish brown clay loam.

Permeability is moderate in the Sinkson soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Rockinchair soil is mainly 20 to 35 percent bluebunch wheatgrass, 10 to 20 percent rhizomatous wheatgrasses, 5 to 15 percent needlegrasses, and 5 to 10 percent black sagebrush. As the range condition deteriorates, bluegrasses, sedges, and black sagebrush increase in abundance.

As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years.

The potential plant community on the Sinkson soil is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, sedges and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,100 pounds in favorable years to 500 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. The Rockinchair soil is in the Shallow Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site. The Sinkson soil is in the Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site.

195—Rock outcrop-Asholler complex, steep. This map unit is on exhumed knobs and on ridges, hills, and mountains. Slopes are 10 to 60 percent. Areas are irregular in shape and are 40 to 1,000 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,300 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Rock outcrop and 40 percent Asholler very channery loam, 10 to 60 percent slopes. The Rock outcrop is on knobs, ridges, hills, and mountains, and the Asholler soil is on hills, ridges, and mountains. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Cushool sandy loam, 5 to 20 percent slopes; Pesmore very channery sandy loam, 10 to 40 percent slopes; and a soil that is similar to the Asholler soil but has a dark surface layer and a subsoil of very gravelly sandy clay loam. Also included are small areas of a loamy soil that is shallow over soft bedrock and has slopes of 5 to 45 percent and small areas of Zeomont loamy sand, 5 to 35 percent slopes, south of Beaver Rim. Included areas make up about 15 percent of the total acreage.

The Rock outcrop occurs as exposures of granite and schist.

The Asholler soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from schist. Typically, the surface layer is grayish brown very channery loam 3 inches thick. The underlying material is brown very channery loam 11 inches thick. Hard schist bedrock is at a depth of about 14 inches.

Permeability is moderate in the Asholler soil. Available water capacity is low. The effective rooting depth is 6 to 20 inches. Runoff is rapid, the hazard of water erosion is high. The hazard of wind erosion is slight.

This unit is used for wildlife habitat.

The potential plant community on the Asholler soil is mainly 20 to 40 percent bluebunch wheatgrass, 5 to 15 percent Indian ricegrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 15 percent rhizomatous wheatgrasses. As the range condition deteriorates, big sagebrush, low rabbitbrush, and unpalatable forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,000 pounds in favorable years to 600 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by a short growing season, the restricted rooting depth, droughtiness, low precipitation, and the content of rock fragments. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Broadcasting is a suitable method of seeding. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site. The Asholler soil is in capability subclass VIIs, nonirrigated. It in the Shallow Loamy, 10- to 14-inch precipitation, High Plains Southeast range site.

196—Rock outcrop-Blackhall complex, hilly. This map unit is on hills, ridges, knobs, and escarpments. Slopes are 5 to 45 percent. Areas are irregular in shape and are 40 to 320 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,500 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 40 percent Rock outcrop and 40 percent Blackhall sandy loam, 5 to 45 percent slopes. The Rock outcrop is on the summit of hills and ridges and on escarpments, and the Blackhall soil is on hillslopes, on the sides of ridges, and on knobs. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blazon clay loam, 6 to 30 percent slopes; Carmody fine sandy loam, 5 to 40 percent slopes; Cragosen gravelly loam, 5 to 45 percent slopes; and Rentsac very gravelly loam, 6 to 40 percent slopes. Also included are small areas of the very shallow Blazon clay loam, 5 to 40 percent slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Rock outcrop occurs as exposures of soft sandstone.

The Blackhall soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is pale brown sandy loam 2 inches thick. The subsoil is yellowish brown and very pale brown sandy loam 16 inches thick. Soft sandstone bedrock is at a depth of about 18 inches.

Permeability is moderate in the Blackhall soil. Available water capacity is low. The effective rooting depth is 6 to 20 inches. Runoff is rapid, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

This unit is used mainly for wildlife habitat.

The potential plant community on the Blackhall soil is mainly 15 to 25 percent bluebunch wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent Indian ricegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, Sandberg bluegrass, threadleaf sedge, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, the restricted rooting depth, droughtiness, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Aerial broadcasting is a suitable method of seeding. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site. The Blackhall soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

197—Rock outcrop-Blazon complex, hilly. This map unit is on hills, ridges, and knobs. Slopes are 6 to 40 percent. Areas are irregular in shape and are 40 to 320 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 50 percent Rock outcrop and 30 percent Blazon clay loam, 6 to 40 percent slopes. The Rock outcrop is on the summit of hills, ridges, and knobs, and the Blazon soil is on the side slopes of the hills, ridges, and knobs. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Blackhall fine sandy loam, 6 to 40 percent slopes, and Rallod very fine sandy loam, 3 to 25 percent slopes. Also included are small areas of Poposhia loam, 2 to 20 percent slopes, on fan aprons and toe slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Rock outcrop occurs as exposures of soft shale.

The Blazon soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from soft shale. Typically, the surface layer is grayish brown clay loam 2 inches thick.

The underlying material is light olive brown clay loam 15 inches thick. Soft shale bedrock is at a depth of about 17 inches.

Permeability is moderately slow in the Blazon soil. Available water capacity is low. The 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.

This unit is used mainly for wildlife habitat.

The potential plant community on the Blazon soil is mainly 20 to 40 percent rhizomatous wheatgrasses, 5 to 15 percent bluebunch wheatgrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 10 percent winterfat. As the range condition deteriorates, bluegrass and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 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.

The production of vegetation suitable for grazing is limited by low precipitation, the restricted rooting depth, droughtiness, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Aerial broadcasting is a suitable method of seeding. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site. The Blazon soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Clayey, 10- to 14-inch precipitation, High Plains Southeast range site.

198—Rock outcrop-Mosroc complex, hilly. This map unit is on knobs, mountain ridges, and hillslopes. Slopes are 1 to 15 percent. Areas are irregular in shape and are 30 to 200 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 45 percent Rock outcrop and 35 percent Mosroc gravelly loam, 1 to 15 percent slopes. The Rock outcrop is on exhumed knobs, ridges, and the summit of hills, and the Mosroc soil is on mountain ridges and hillslopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Pesmore gravelly sandy loam, 10 to 20 percent slopes; Uhl loam, 1 to 8 percent slopes, on valley sides; Hoodle very gravelly loam, 1 to 15 percent slopes, on terraces; and Lymanson gravelly loam, 4 to 15 percent slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Rock outcrop occurs as exposures of schist, gneiss, and granite.

The Mosroc soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from granite. Typically, 40 percent of the surface is covered with gravel and cobbles. The surface layer is brown gravelly loam 3 inches thick. The subsoil is dark yellowish brown very gravelly sandy clay loam 7 inches thick. Granite bedrock is at a depth of about 10 inches.

Permeability is moderate in the Mosroc soil. Available water capacity is low. The effective rooting depth is 9 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used as rangeland and wildlife habitat.

The potential plant community on the Mosroc soil is mainly 20 to 40 percent bluebunch wheatgrass, 5 to 15 percent Indian ricegrass, 5 to 10 percent bottlebrush squirreltail, and 5 to 15 percent rhizomatous wheatgrasses. As the range condition deteriorates, big sagebrush, low rabbitbrush, and unpalatable forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,000 pounds in favorable years to 600 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, droughtiness, the content of rock fragments, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Aerial broadcasting is a suitable method of seeding. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site. The Mosroc soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Igneous, 10- to 14-inch precipitation, Foothills and Basins West range site.

199—Rock outcrop-Oceanet complex, hilly. This map unit is on hills, ridges, and escarpments. Slopes are 5 to 45 percent. Areas are irregular in shape and are 20 to 300 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,500 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 115 to 130 days.

This unit is about 45 percent Rock outcrop and 40 percent Oceanet sandy loam, 5 to 45 percent slopes. The Rock outcrop is on the summit of hills and ridges and on escarpments, and the Oceanet soil is on the shoulder slopes and back slopes of hills and ridges. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Persayo clay loam, 3 to 45 percent slopes, and Worland sandy loam, 2 to 35 percent slopes. Also included are small areas of Apron sandy loam, 1 to 10 percent slopes, on fan aprons; Lostwells sandy clay loam, 1 to 8 percent slopes, on fan aprons and flood plains; and a soil that is similar to the Oceanet soil but is less than 10 inches deep over bedrock. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Rock outcrop occurs as exposures of soft sandstone interbedded with shale.

The Oceanet soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is yellowish brown sandy loam 5 inches thick. The underlying material is light olive brown sandy loam 11 inches thick. Soft sandstone bedrock is at a depth of about 16 inches.

Permeability is moderately rapid in the Oceanet soil. Available water capacity is low. The effective rooting depth is 10 to 20 inches. Runoff is rapid, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

This unit is used as rangeland and wildlife habitat.

The potential plant community on the Oceanet soil is mainly 25 to 35 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 5 to 15 percent bluebunch wheatgrass, and 10 to 20 percent Indian ricegrass. As the range condition deteriorates, threadleaf sedge, forbs, blue grama, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 125 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, droughtiness, and the restricted rooting depth. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Aerial broadcasting is a suitable method of seeding. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site. The Oceanet soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Sandy, 5- to 9-inch precipitation, Wind River Basin range site.

200—Roxal-Rock outcrop complex, steep. This map unit is on hills and ridges. Slopes are 20 to 65 percent. Areas are irregular in shape and are 40 to 320 acres in size. The native vegetation is mainly grasses and a few shrubs. Elevation is 7,500 to 8,500 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is less than 60 days.

This unit is about 55 percent Roxal loam, 20 to 65 percent slopes, and 30 percent Rock outcrop. The Roxal soil is on the summit, shoulder slopes, and back slopes of hills and on the side slopes of ridges, and the Rock outcrop is on the summit of ridges and on escarpments. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Inchau loam, 10 to 30 percent slopes; Tongue River fine sandy loam, 20 to 30 percent slopes; and Burnette loam, 3 to 10 percent slopes. Also included are small areas of Decross loam, 2 to 15 percent slopes; Owen Creek very stony clay loam, 2 to 15 percent slopes; a soil that is similar to the Roxal soil but has underlying material of sandy loam; and Cragosen gravelly loam, 10 to 60 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Roxal soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. The surface layer is grayish brown loam 3 inches thick. The upper 11 inches of the underlying material is grayish brown sandy clay loam. The lower 3 inches is light olive brown clay loam. Soft shale bedrock is at a depth of about 17 inches. In some areas the surface layer is sandy clay loam.

Permeability is moderate in the Roxal soil. Available water capacity is low. The 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 Rock outcrop occurs as exposures of soft sandstone interbedded with shale.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Roxal soil is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Idaho fescue, 10 to 25 percent Kingspike fescue, and 0 to 10 percent mountainmahogany. As the range condition deteriorates, big sagebrush and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 850 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.

The production of vegetation suitable for grazing is limited by a short growing season, the restricted rooting depth, and droughtiness. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Roxal soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Loamy, 15- to 19-inch precipitation, Foothills and Mountains East range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site.

201—Roxal-Tongue River complex, hilly. This map unit is on mountainsides and ridges. Slopes are 10 to 40 percent. Areas are irregular in shape and are 40 to 1,500 acres in size. The native vegetation on the Roxal soil is mainly grasses and shrubs. That on the Tongue River soil is mainly trees. Elevation is 7,500 to 9,000 feet. The annual precipitation is 18 to 22 inches, the annual temperature is 33 to 38 degrees F, and the frost-free period is less than 60 days.

This unit is about 55 percent Roxal sandy clay loam, 20 to 40 percent slopes, and 35 percent Tongue River fine sandy loam, 10 to 30 percent slopes. The Roxal soil is on mountainsides and ridges, and the Tongue River soil is on mountainsides. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Inchau loam, 10 to 30 percent slopes; Youga loam, 10 to 30 percent slopes; Owen Creek very stony clay loam, 10 to 15 percent slopes; and Gelkie fine sandy loam, 10 to 30 percent slopes. Also included are small areas of Roxal sandy clay loam, 40 to 65 percent slopes; a soil that is similar to the Roxal soil but has underlying material of sandy loam; and Cragosen gravelly loam, 10 to 40 percent slopes. Included areas make up about 10 percent of the total acreage. The percentage varies from one area to another.

The Roxal soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. Typically, the surface layer is light yellowish brown sandy clay loam 4 inches thick. The upper 4 inches of the underlying material is pale yellow sandy clay loam. The lower 5 inches is pale yellow loam. Soft sandstone bedrock is at a depth of about 13 inches.

Permeability is moderate in the Roxal soil. Available water capacity is low. The 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 Tongue River soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. The surface layer is brown fine sandy loam 1 inch thick. The subsoil is yellowish brown sandy clay loam 13 inches thick. The substratum is yellowish brown sandy clay loam 19 inches thick. Soft sandstone bedrock is at a depth of about 33 inches.

Permeability is moderate in the Tongue River soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is slight.

The Roxal soil is used mainly as rangeland, and the Tongue River soil is used mainly as woodland. Both soils are used for wildlife habitat.

The potential plant community on the Roxal soil is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Idaho fescue, 10 to 25 percent spike fescue, and 0 to 10 percent mountainmahogany. As the range condition deteriorates, big sagebrush and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 850 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.

The production of vegetation suitable for grazing on the Roxal soil is limited by a short growing season, the restricted rooting depth, and droughtiness. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Tongue River soil is well suited to timber production. The site index for lodgepole pine ranges from 60 to 65. The site index for Douglas fir is 65 to 70. The main limitations affecting timber production and harvesting are the slope and erosion. Minimizing the risk of erosion is essential when timber is harvested. After the timber is harvested, carefully managed reforestation helps to control competition from undesirable understory plants. Plant competition delays natural regeneration but does not prevent the eventual development of a fully stocked, normal stand of trees.

Properly designed road drainage systems that include carefully located culverts help to control erosion. Spoil from excavations is subject to rill and gully erosion and to sloughing. Roads and landings can be protected from erosion by constructing water bars and by seeding road cuts and fills.

Conventional methods of harvesting timber can be used. Planting the trees on the contour helps to control erosion. Because the soil is sticky when wet, most planting and harvesting equipment can be used only during dry periods.

The Roxal soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Loamy, 15- to 19-inch precipitation, Foothills and Mountains East range site. The Tongue River soil is in capability subclass VIe, nonirrigated. It is not assigned to a range site.

202—Ryan Park loamy fine sand, undulating. This very deep, well drained soil is on fan aprons. It formed in alluvium and eolian deposits derived from various sources. Slopes are 1 to 8 percent. Areas are irregular in shape and are 30 to 800 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Included in this unit are small areas of Bosler fine sandy loam, 1 to 8 percent slopes; Rock River fine sandy loam, 1 to 8 percent slopes; Cushool sandy loam, 2 to 25 percent slopes; and Zeomont loamy sand, 2 to 15 percent slopes, on low dunes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

Typically, the surface layer of the Ryan Park soil is grayish brown loamy fine sand 3 inches thick. The upper part of the subsoil is brown and light olive brown fine sandy loam 14 inches thick. The lower part is light olive brown fine sandy loam 17 inches thick. The substratum to a depth of 60 inches or more is light olive brown sandy loam.

Permeability is moderately rapid. Available water capacity is moderate. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, a short growing season, and wind erosion. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

203—Ryan Park-Carmody association, 1 to 15 percent slopes. This map unit is on hills, ridges, and fan aprons. Areas are irregular in shape and are 40 to 320 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,800 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 50 percent Ryan Park sandy loam, 1 to 8 percent slopes, and 35 percent Carmody sandy loam, 3 to 15 percent slopes. The Ryan Park soil is on fan aprons, and the Carmody soil is on the side slopes of hills and ridges.

Included in this unit are small areas of Bosler fine sandy loam, 1 to 8 percent slopes; Rock River fine sandy loam, 1 to 8 percent slopes; Cushool sandy loam, 2 to 25 percent slopes; and Carmody sandy loam, 15 to 25 percent slopes. Also included are small areas of Blackhall fine sandy loam, 5 to 30 percent slopes; Cragosen gravelly loam, 3 to 30 percent slopes; and Rentsac very gravelly loam, 15 to 40 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Ryan Park soil is very deep and well drained. It formed in alluvium and eolian deposits derived from various sources. Typically, the surface layer is brown sandy loam 5 inches thick. The upper 10 inches of the subsoil is yellowish brown sandy loam. The lower 19 inches is pale brown fine sandy loam. The substratum to a depth of 60 inches or more is very pale brown sandy loam.

Permeability is moderately rapid in the Ryan Park soil. Available water capacity is moderate. The 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 Carmody soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is brown sandy loam 5 inches thick. The underlying material is pale brown and light yellowish brown fine sandy loam 33 inches thick. Soft sandstone bedrock is at a depth of about 38 inches.

Permeability is moderate in the Carmody soil. Available water capacity also is moderate. The 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 severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, a short growing season, and wind erosion and by droughtiness in the Carmody soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

204—Ryark sandy loam, 1 to 6 percent slopes. This very deep, well drained soil is on fan aprons. It formed in alluvium derived dominantly from sandstone. Areas are irregular in shape and are 20 to 400 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 7,300 feet. The annual precipitation is 9 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

Included in this unit are small areas of Bluerim sandy loam, 3 to 10 percent slopes; Onason sandy loam, 5 to 10 percent slopes; and Forelle loam, 1 to 6 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

Typically, the surface layer of the Ryark soil is grayish brown sandy loam 5 inches thick. The subsoil is dark yellowish brown sandy loam 22 inches thick. The substratum to a depth of 60 inches or more is yellowish brown gravelly loamy sand.

Permeability is moderately rapid. Available water capacity is low. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, a short growing season, droughtiness, and wind erosion. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass IVe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

205—Ryark-Zeomont loamy sands, rolling. This map unit is on dunes and fan aprons. Slopes are 1 to 30 percent. Areas are irregular in shape and are 500 to 1,000 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,700 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 55 percent Ryark loamy sand, 1 to 10 percent slopes, and 30 percent Zeomont loamy sand, 2 to 30 percent slopes. The Ryark soil is on fan aprons, and the Zeomont soil is on dunes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Bluerim sandy loam, 3 to 15 percent slopes; Onason sandy loam, 5 to 30 percent slopes, on hillslopes; and a coarse textured soil that has a dark surface layer and has slopes of 1 to 10 percent. Also included are small areas of blowouts. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Ryark soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone. Typically, the surface layer is pale brown loamy sand 6 inches thick. The subsoil is light yellowish brown sandy loam 7 inches thick. The substratum to a depth of 60 inches or more is light yellowish brown loamy sand.

Permeability is moderately rapid in the Ryark soil. Available water capacity is low. The 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 Zeomont soil is very deep and excessively drained. It formed in sandy eolian material derived from various sources. Typically, the surface layer is pale brown loamy sand 3 inches thick. The underlying material to a depth of 60 inches or more is light yellowish brown loamy sand.

Permeability is rapid in the Zeomont soil. Available water capacity is low. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Ryark soil is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 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 Zeomont soil is mainly 35 to 50 percent needleandthread, 15 to 25 percent Indian ricegrass, 10 to 20 percent thickspike wheatgrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,400 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,700 pounds in favorable years to 900 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by droughtiness, low precipitation, a short growing season, and wind erosion. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIe, nonirrigated. The Ryark soil is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site. The Zeomont soil is in the Sands, 10- to 14-inch precipitation, High Plains Southeast range site.

206—Sandbranch-Ryan Park Variant-Poposhia complex, 1 to 8 percent slopes. This map unit is on fan aprons, flood plains, dunes, and terraces. Areas are irregular in shape and are 50 to 500 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,800 to 7,500 feet. The annual precipitation is 7 to 9 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 50 percent Sandbranch loam, 1 to 3 percent slopes; 15 percent Ryan Park Variant loamy fine sand, 1 to 8 percent slopes; and 15 percent Poposhia loam, 1 to 8 percent slopes. The Sandbranch soil is on fan aprons and terraces, the Ryan Park Variant soil is on dunes, fan aprons, and low terraces, and the Poposhia soil is on fan aprons. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of slick spots; a soil that is adjacent to the Poposhia soil and is similar to that soil but is wet; Cushool sandy loam, 2 to 8 percent slopes, adjacent to the Ryan Park Variant soil; and Tisworth sandy loam, 0 to 8 percent slopes, adjacent to the Sandbranch soil. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Sandbranch soil is very deep and well drained. It formed in alluvium derived dominantly from sodic sandstone interbedded with shale. Typically, the surface layer is light brownish gray loam 2 inches thick. The upper 15 inches of the subsoil is light brownish gray, sodium-affected clay loam. The next 3 inches is brown, sodium-affected sandy clay loam. The lower 14 inches is olive, sodium-affected loam. The substratum to a depth of 60 inches or more is grayish brown, sodium-affected fine sandy loam stratified with thin lenses of loam, sandy loam, and clay loam.

Permeability is moderately slow in the Sandbranch soil. Available water capacity is high. The 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 Ryan Park Variant soil is deep and well drained. It formed in alluvium and eolian deposits derived from various sources. Typically, the surface layer is brown loamy fine sand 6 inches thick. The upper 42 inches of the subsoil is brown fine sandy loam. The lower 7 inches is brown, sodium-affected fine sandy loam. Soft shale bedrock is at a depth of about 55 inches.

Permeability is moderately rapid in the Ryan Park Variant soil. Available water capacity is moderate. The effective rooting depth is 40 to 60 inches. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Poposhia soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is light brownish gray loam 10 inches thick. The underlying material to a depth of 60 inches or more is brown clay loam. In some areas the surface layer is clay loam.

Permeability is moderate in the Poposhia soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Sandbranch soil is mainly 10 to 20 percent alkali sacaton, 10 to 20 percent western wheatgrass, 5 to 15 percent basin wildrye, and 10 to 25 percent greasewood. As the range condition deteriorates, greasewood and inland saltgrass increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years.

The potential plant community on the Ryan Park Variant soil is mainly 10 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Poposhia soil is mainly 10 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent needleandthread, 5 to 10 percent Indian ricegrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, bluegrass, upland sedges, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season, by alkalinity in the Sandbranch soil, and by wind erosion on the Ryan Park Variant soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control water erosion and wind erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings.

The Sandbranch soil is in capability subclass VIs, nonirrigated. It is in the Saline Lowland, 7- to 9-inch precipitation, Green River and Great Divide Basin range site. The Ryan Park Variant and Poposhia soils are in capability subclass VIe, nonirrigated. The Ryan Park Variant soil is in the Sandy, 7- to 9-inch precipitation, Green River and Great Divide Basin range site. The Poposhia soil is in the Loamy, 7- to 9-inch precipitation, Green River and Great Divide Basin range site.

207—Sinkson-Almy sandy clay loams, 0 to 6 percent slopes. This map unit is on fan aprons. Areas are irregular in shape and are 5 to 300 acres in size. The vegetation in areas that are not cultivated is mainly grasses and shrubs. Elevation is 6,500 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 50 percent Sinkson sandy clay loam, 0 to 6 percent slopes, and 30 percent Almy sandy clay loam, 0 to 6 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Lupinto loam, 1 to 6 percent slopes, on terraces; Poposhia loam, 1 to 6 percent slopes; Rockinchair loam, 1 to 6 percent slopes; and a soil that is similar to the Almy soil but is very gravelly in the lower part of the subsoil and in the substratum and has slopes of 1 to 6 percent. Also included are small areas of a soil that is similar to the Sinkson soil but has slopes of 1 to 8 percent and is finer textured in the underlying material. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Sinkson soil is very deep and well drained. It formed in alluvium derived from sandstone and siltstone. Typically, the surface layer is brown sandy clay loam 5 inches thick. The subsoil is reddish brown sandy clay loam 5 inches thick. The upper 30 inches of the substratum is reddish yellow sandy clay loam. The lower part to a depth of 60 inches or more is reddish brown loam.

Permeability is moderate in the Sinkson soil. Available water capacity is high. The 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 Almy soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone interbedded with shale. Typically, the surface layer is brown sandy clay loam 3 inches thick. The upper 5 inches of the subsoil is reddish brown clay loam. The next 9 inches is reddish brown sandy clay loam. The lower 23 inches is light reddish brown sandy clay loam and loam. The substratum to a depth of 60 inches or more is light reddish brown gravelly sandy loam.

Permeability is moderate in the Almy soil. Available water capacity is high. The 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.

Most areas of this unit are used for irrigated hay and

Figure 8.—Contour ditch irrigation in an area of Sinkson-Almy sandy clay loams, 0 to 6 percent slopes.

pasture. A few areas are used as rangeland and wildlife habitat.

This unit is well suited to irrigated hay and pasture. The main limitations are the slope and a short growing season. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition and control erosion. Annual applications of nitrogen and phosphorus fertilizer are needed to maintain the production of high-quality forage. Irrigation water can be applied by the contour ditch or sprinkler method (fig. 8). The border or furrow method also can be used, especially in nearly level areas. Leveling helps to ensure a uniform application of water. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and the rate of water intake in the soils.

The potential plant community on this unit is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, sedges and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,100 pounds in favorable years to 500 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclasses IIIe, irrigated, and IVe, nonirrigated. It is in the Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site. It is prime farmland in areas where it is irrigated and an adequate water supply is available.

208—Sinkson-Almy-Thermopolis association, rolling. This map unit is on hills, ridges, and fan aprons. Slopes are 2 to 30 percent. Areas are irregular in shape and are 5 to 640 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,500 to 7,800 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 45 percent Sinkson loam, 2 to 15 percent slopes; 20 percent Almy loam, 2 to 10 percent slopes; and 20 percent Thermopolis loam, 10 to 30 percent slopes. The Sinkson and Almy soils are on fan aprons, and the Thermopolis soil is on hills and ridges.

Included in this unit are small areas of Blackhall fine sandy loam, 5 to 30 percent slopes; Carmody fine sandy loam, 2 to 30 percent slopes; and Rock outcrop on hills and ridges adjacent to the Thermopolis soil. Also included are small areas of Diamondville loam, 2 to 15 percent slopes; Forelle loam, 2 to 15 percent slopes; Poposhia loam, 1 to 15 percent slopes; and Tisworth loam, 2 to 8 percent slopes, adjacent to the Sinkson and Almy soils. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Sinkson soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone and siltstone. Typically, the surface layer is reddish brown loam 4 inches thick. The underlying material to a depth of 60 inches or more is reddish brown and yellowish red silt loam.

Permeability is moderate in the Sinkson soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Almy soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone interbedded with shale. Typically, the surface layer is yellowish brown loam 2 inches thick. The upper 8 inches of the subsoil is reddish brown loam. The next 10 inches is reddish brown clay loam. The lower 10 inches is light reddish brown loam. The substratum to a depth of 60 inches or more is yellowish red loam.

Permeability is moderate in the Almy soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Thermopolis soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from sandstone and siltstone. Typically, the surface layer is red loam 3 inches thick. The underlying material also is red loam. It is 13 inches thick. Soft siltstone bedrock is at a depth of about 16 inches.

Permeability is moderate in the Thermopolis soil. Available water capacity is low. The effective rooting depth is 6 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Sinkson and Almy soil is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, sedges and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,100 pounds in favorable years to 500 pounds in unfavorable years.

The potential plant community on the Thermopolis soil is mainly 20 to 35 percent bluebunch wheatgrass, 10 to 20 percent rhizomatous wheatgrasses, 5 to 15 percent needlegrasses, and 5 to 10 percent black sagebrush. As the range condition deteriorates, bluegrasses, sedges, and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season and by droughtiness and the restricted rooting depth in the Thermopolis soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed on the Sinkson and Almy soils if the amount of desirable vegetation is not sufficient for natural seeding to occur. Because of the slope, the restricted depth to bedrock, and droughtiness, the Thermopolis soil is poorly suited to range seeding that involves tillage. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Sinkson and Almy soils are in capability subclass IVe, nonirrigated. They are in the Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site. The Thermopolis soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Loamy, 10- to 14-inch precipitation, Foothills and Basins East range site.

209—Starman-Rock outcrop-Woosley complex, steep. This map unit is on ridges, hills, and mountains. Slopes are 10 to 40 percent. Areas are irregular in shape and are 40 to 2,000 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,800 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 50 percent Starman very gravelly loam, 10 to 40 percent slopes; 20 percent Rock outcrop; and 15 percent Woosley loam, 10 to 25 percent slopes. The Starman soil is on the summit of ridges, hills, and mountains, the Rock outcrop is on the summit of ridges and hills and on escarpments, and the Woosley soil is on the side slopes of mountains. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Bachus loam, 10 to 20 percent slopes; Decross loam, 10 to 25 percent slopes, adjacent to the Woosley soil; and Mosroc gravelly loam, 10 to 15 percent slopes, adjacent to the Starman soil. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Starman soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived from limestone. Typically, 40 percent of the surface is covered with limestone gravel and cobbles. The surface layer is brown very gravelly loam 2 inches thick. The subsoil is brown and light gray very gravelly loam 10 inches thick. Limestone bedrock is at a depth of about 12 inches.

Permeability is moderate in the Starman soil. Available water capacity is low. The effective rooting depth is 8 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

The Rock outcrop occurs as exposures of limestone and fine grained, calcareous sandstone.

The Woosley soil is moderately deep and well drained. It formed in residuum and slope alluvium derived from limestone. Typically, the surface layer is very dark grayish brown loam 5 inches thick. The upper 10 inches of the subsoil is brown clay loam. The next 13 inches is pale brown clay loam. The lower 5 inches is light gray clay loam. Limestone bedrock is at a depth of about 33 inches.

Permeability is moderate in the Woosley soil. Available water capacity also is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Starman soil is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Idaho fescue, 10 to 25 percent Kingspike fescue, and 0 to 10 percent mountainmahogany. As the range condition deteriorates, big sagebrush and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 850 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.

The potential plant community on the Woosley soil is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Kingspike fescue, 10 to 25 percent Idaho fescue, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 1,350 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,600 pounds in favorable years to 1,100 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by a short growing season and by the restricted rooting depth, content of rock fragments, and droughtiness in the Starman soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Because of the Rock outcrop, the best method of brush control is aerial spraying or prescribed burning. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Starman soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Loamy, 15- to 19-inch precipitation, Foothills and Mountains East range site. The Rock outcrop is in capability class VIII, nonirrigated. It is not assigned to a range site. The Woosley soil is in capability subclass VIe, nonirrigated. It is in the Loamy, 15- to 19-inch precipitation, Foothills and Mountains East range site.

210—Taluce-Bowbac sandy loams, hilly. This map unit is on the side slopes of ridges and hills. Slopes are 3 to 45 percent. Areas are irregular in shape and are 10 to 200 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 6,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 115 to 130 days.

This unit is about 40 percent Taluce sandy loam, 5 to 45 percent slopes, and 40 percent Bowbac sandy loam, 3 to 12 percent slopes. The Taluce soil is on the shoulder slopes of ridges and hills, and the Bowbac soil is on hillslopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Vonalee loamy sand, 3 to 12 percent slopes; Hiland sandy loam, 3 to 15 percent slopes, on fan aprons; a soil that is adjacent to the Bowbac soil and is similar to that soil but is sandy loam in the upper part of the subsoil and has slopes of 3 to 12 percent; and Rock outcrop on ridges and hills. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Taluce soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is brown sandy loam 4 inches thick. The underlying material is dark yellowish brown sandy loam 8 inches thick. Soft sandstone bedrock is at a depth of about 12 inches.

Permeability is moderately rapid in the Taluce soil. Available water capacity is low. The effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion also is severe.

The Bowbac soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. Typically, the surface layer is yellowish brown sandy loam 5 inches thick. The upper 10 inches of the subsoil is yellowish brown sandy clay loam. The next 18 inches is yellowish brown sandy loam. The lower 4 inches is brownish yellow sandy loam. Soft sandstone bedrock is at a depth of about 37 inches.

Permeability is moderate in the Bowbac soil. Available water capacity also is moderate. The 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 severe.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Taluce soil is mainly 15 to 25 percent bluebunch wheatgrass, 5 to 10 percent Indian ricegrass, 5 to 15 percent needleandthread, and 5 to 10 percent big sagebrush. As the range condition deteriorates, Sandberg bluegrass, threadleaf sedge, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Bowbac soil is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation and wind erosion and by droughtiness and the restricted rooting depth in the Taluce soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Brush control may be needed on the Bowbac soil. Because of droughtiness in the Taluce soil, brush control may not be suitable. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed.

The Taluce soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Sandy, 10- to 14-inch precipitation, High Plains Southeast range site. The Bowbac soil is in capability subclass IVe, nonirrigated. It is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

211—Thermopolis-Sinkson association, hilly. This map unit is on hills, ridges, and fan aprons. Slopes are 3 to 30 percent. Areas are irregular in shape and are 160 to 640 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,500 to 7,800 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 60 percent Thermopolis loam, 10 to 30 percent slopes, and 20 percent Sinkson loam, 3 to 20 percent slopes. The Thermopolis soil is on hills and ridges, and the Sinkson soil is on fan aprons.

Included in this unit are Blackhall fine sandy loam, 5 to 30 percent slopes, and Carmody fine sandy loam, 3 to 30 percent slopes, both of which are adjacent to the Thermopolis soil, and small areas of Rock outcrop on the summit of hills and ridges. Also included are small areas of Almy loam, 3 to 10 percent slopes; Diamondville loam, 3 to 15 percent slopes; Forelle loam, 3 to 20 percent slopes; and Poposhia loam, 3 to 30 percent slopes, all of which are adjacent to the Sinkson soil. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Thermopolis soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from sandstone and siltstone. Typically, the surface layer is yellowish red loam 2 inches thick. The underlying material also is yellowish red loam. It is 8 inches thick. Soft sandstone bedrock is at a depth of about 10 inches.

Permeability is moderate in the Thermopolis soil. Available water capacity is low. The effective rooting depth is 6 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Sinkson soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone and siltstone. Typically, the surface layer is yellowish red loam 3 inches thick. The subsoil also is yellowish red loam. It is 11 inches thick. The underlying material to a depth of 60 inches or more is yellowish red silt loam.

Permeability is moderate in the Sinkson soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used as rangeland. It also is used for wildlife habitat.

The potential plant community on the Thermopolis soil is mainly 20 to 35 percent bluebunch wheatgrass, 10 to 20 percent rhizomatous wheatgrasses, 5 to 15 percent needleandthread, and 5 to 10 percent black sagebrush. As the range condition deteriorates, bluegrasses, sedges, and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 pounds of air-dry vegetation per acre in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years.

The potential plant community on the Sinkson soil is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, sedges and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 800 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,100 pounds in favorable years to 500 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season and by the restricted rooting depth and droughtiness in the Thermopolis soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Also, brush control may be needed on the Sinkson soil. It may not be suitable on the Thermopolis soil because of droughtiness. Range seeding may be needed on the Sinkson soil if the amount of desirable vegetation is not sufficient for natural seeding to occur.

The Thermopolis soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Loamy, 10- to 14-inch precipitation, Basins and Foothills East range site. The Sinkson soil is in capability subclass VIe, nonirrigated. It is in the Loamy, 10- to 14-inch precipitation, Basins and Foothills East range site.

212—Tisworth-Absher-Forelle complex, 0 to 6 percent slopes. This map unit is on fan aprons and terraces. Areas are long and narrow and are 100 to 800 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,500 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air

temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 35 percent Tisworth sandy loam, 0 to 3 percent slopes; 30 percent Absher loam, 0 to 3 percent slopes; and 20 percent Forelle loam, 1 to 6 percent slopes. The Tisworth and Forelle soils are on fan aprons, and the Absher soil is on fan aprons and terraces. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Abston sandy loam, 1 to 6 percent slopes, and Diamondville loam, 1 to 6 percent slopes, both of which are on hillslopes. Also included are small areas of Havre loam, 0 to 3 percent slopes, and Ryan Park fine sandy loam, 1 to 8 percent slopes, both of which are on fan aprons. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Tisworth soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown sandy loam 3 inches thick. The upper part of the subsoil is light yellowish brown, sodium-affected sandy clay loam 17 inches thick. The lower part to a depth of 60 inches or more is light yellowish brown sandy clay loam.

Permeability is slow in the Tisworth soil. Available water capacity is moderate. The 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 Absher soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown loam 3 inches thick. The upper 8 inches of the subsoil is brown, sodium-affected silty clay. The lower part to a depth of 60 inches or more is light yellowish brown, sodium-affected clay.

Permeability is very slow in the Absher soil. Available water capacity is moderate. The 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 Forelle soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown loam 4 inches thick. The upper 20 inches of the subsoil is brown and yellowish brown clay loam. The lower 21 inches is pale brown loam. The substratum to a depth of 60 inches or more is light olive brown sandy clay loam.

Permeability is moderately slow in the Forelle soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Tisworth and Absher soils is mainly 25 to 45 percent western wheatgrass, 10 to 20 percent bottlebrush squirreltail, 10 to 20 percent Indian ricegrass, and 25 to 40 percent birdfoot sagebrush. As the range condition deteriorates, birdfoot sagebrush increases in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 350 pounds of air-dry vegetation per acre in normal years. Production ranges from 500 pounds in favorable years to 250 pounds in unfavorable years.

The potential plant community on the Forelle soil is mainly 30 to 40 percent western wheatgrass, 5 to 15 percent needleandthread, 5 to 15 percent bluebunch wheatgrass, and 5 to 15 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,100 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season. It also is limited by the available water capacity, salinity, and alkalinity of the Tisworth and Absher soils. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Tisworth and Absher soils are in capability subclass VIs, nonirrigated. They are in the Impervious Clay, 10- to 14-inch precipitation, High Plains Southeast range site. The Forelle soil is in capability subclass IVe, nonirrigated. It is in the Loamy, 10- to 14-inch precipitation, High Plains Southeast range site.

213—Tisworth-Poposhia complex, undulating. This map unit is on fan aprons and toe slopes. Slopes are 1 to 8 percent. Areas are irregular in shape and are 40 to

200 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days. The Tisworth soil receives additional moisture in the form of runoff from the higher adjacent areas.

This unit is about 50 percent Tisworth fine sandy loam, 1 to 8 percent slopes, and 30 percent Poposhia clay loam, 1 to 8 percent slopes. Both soils are on fan aprons and toe slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of slick spots; Absher loam, 1 to 8 percent slopes; Bosler sandy loam, 1 to 8 percent slopes, adjacent to the Tisworth soil; Countryman loam, 0 to 3 percent slopes, on flood plains; and a soil that is on low mounds adjacent to the Tisworth soil and is similar to that soil but is sandy loam in the upper part of the subsoil. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Tisworth soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is light brownish gray fine sandy loam 2 inches thick. The upper part of the subsoil is yellowish brown, sodium-affected sandy clay loam 14 inches thick. The lower part to a depth of 60 inches or more is pale brown sandy loam.

Permeability is slow in the Tisworth soil. Available water capacity is moderate. The 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 Poposhia soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is light brownish gray clay loam 4 inches thick. The underlying material to a depth of 60 inches or more is light yellowish brown clay loam.

Permeability is moderate in the Poposhia soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Tisworth soil is mainly 15 to 30 percent alkali sacaton, 10 to 20 percent basin wildrye, 5 to 10 percent rhizomatous wheatgrasses, and 10 to 25 percent greasewood. As the range condition deteriorates, greasewood and inland saltgrass increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,800 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,500 pounds in favorable years to 1,200 pounds in unfavorable years.

The potential plant community on the Poposhia soil is mainly 40 to 50 percent thickspike wheatgrass, 15 to 25 percent green needlegrass, 5 to 10 percent bluebunch wheatgrass, 15 to 25 percent bottlebrush squirreltail, and 5 to 10 percent big sagebrush. As the range condition deteriorates, rhizomatous wheatgrasses, Canby bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,000 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,300 pounds in favorable years to 500 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season and by alkalinity in the Tisworth soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Tisworth soil is in capability subclass VIs, nonirrigated. It is in the Saline Lowland, 10- to 14-inch precipitation, High Plains Southeast range site. The Poposhia soil is in capability subclass IVe, nonirrigated. It is in the Clayey, 10- to 14-inch precipitation, High Plains Southeast range site.

214—Tisworth-Ryan Park-Countryman complex, gently undulating. This map unit is on flood plains and fan aprons. Slopes are 0 to 6 percent. Areas are irregular in shape and are 10 to 500 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,500 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

This unit is about 40 percent Tisworth loamy sand, 1 to 6 percent slopes; 25 percent Ryan Park sandy loam, 1 to 6 percent slopes; and 15 percent Countryman fine sandy loam, 0 to 3 percent slopes. The Tisworth and Ryan Park soils are on fan aprons, and the Countryman soil is on flood plains. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of slick spots; Bosler sandy loam, 1 to 6 percent slopes; and Poposhia clay loam, 1 to 6 percent slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Tisworth soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown loamy sand 3 inches thick. The upper 17 inches of the subsoil is brown, sodium-affected sandy clay loam. The next 7 inches is light brown, sodium-affected sandy clay loam. The lower part to a depth of 60 inches or more is pale brown sandy loam stratified with thin, discontinuous lenses of gravelly loamy sand, fine sandy loam, and sandy clay loam. In some areas the surface layer is sandy loam.

Permeability is slow in the Tisworth soil. Available water capacity is moderate. The 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 Ryan Park soil is very deep and well drained. It formed in alluvium and eolian deposits derived from various sources. Typically, the surface layer is pale brown sandy loam 4 inches thick. The upper 11 inches of the subsoil is brown sandy loam. The lower 15 inches is pale brown sandy loam. The substratum to a depth of 60 inches or more also is pale brown sandy loam.

Permeability is moderately rapid in the Ryan Park soil. Available water capacity is moderate. The 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 Countryman soil is very deep and somewhat poorly drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown fine sandy loam 2 inches thick. The underlying material to a depth of 60 inches or more is brown very fine sandy loam stratified with thin lenses of loamy fine sand, loam, and clay loam.

Permeability is moderate in the Countryman soil. Available water capacity is high. The 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 seasonal high water table fluctuates between depths of 1.5 and 3.5 feet during the period May through September. This soil is frequently flooded for brief periods from March through July.

This unit is used mainly as rangeland and wildlife habitat. It also is used for irrigated hay and pasture.

The potential plant community on the Tisworth and Ryan Park soils is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedges and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 Countryman soil is mainly 50 to 60 percent alkali sacaton, 15 to 25 percent basin wildrye, 5 to 10 percent inland saltgrass, and 5 to 10 percent rubber rabbitbrush. As the range condition deteriorates, greasewood and inland saltgrass increase in abundance. As the range condition further deteriorates, annual grasses and forbs invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, wind erosion, and a short growing season. It also is limited by salinity and alkalinity in the Tisworth soil and salinity in the Countryman soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

If this unit is used for irrigated hay and pasture, the main management concerns are the hazard of flooding, the fluctuating high water table, and salinity in the Countryman soil and salinity and alkalinity in the Tisworth soil. The salinity in the subsoil of the Tisworth soil and in the surface layer and underlying material of the Countryman soil limits forage production. Leaching the salts in the Countryman soil is difficult because of the high water table. A drainage system helps to overcome this limitation. Salt-tolerant species should be selected for planting. Grazing during wet periods results in compaction of the surface layer, poor tilth, and excessive runoff. Proper grazing practices, weed control, and rotation grazing are needed to ensure the maximum quality of forage. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing. Annual applications of nitrogen fertilizer are needed to maintain the production of high-quality forage.

The contour ditch, sprinkler, or border irrigation method is suitable on this unit. The border method is suitable in nearly level areas. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soils. For the efficient application and removal of irrigation water, leveling is needed in uneven areas. Intensive management is required to reduce salinity and maintain productivity.

The Tisworth soil is in capability subclasses IVs, irrigated, and VIs, nonirrigated. The Ryan Park soil is in capability subclasses IVe, nonirrigated, and IIIe, irrigated. The Tisworth and Ryan Park soils are in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site. The Countryman soil is in capability subclasses VIw, nonirrigated, and IVw, irrigated. It is in the Saline Subirrigated, 10- to 14-inch precipitation, High Plains Southeast range site.

215—Tongue River-Inchau-Farlow Variant complex, 10 to 30 percent slopes. This map unit is on mountain slopes. Areas are irregular in shape and are 160 to 2,000 acres in size. The native vegetation is mainly trees and an understory of scattered grasses, shrubs, and forbs. Elevation is 7,000 to 9,000 feet. The annual precipitation is 18 to 22 inches, the average annual air temperature is 33 to 38 degrees F, and the frost-free period is less than 60 days.

This unit is about 40 percent Tongue River loam, 10 to 30 percent slopes; 30 percent Inchau sandy clay loam, 10 to 30 percent slopes; and 15 percent Farlow Variant loam, 10 to 30 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Cloud Peak gravelly loam, 10 to 30 percent slopes, and Youga loam, 10 to 30 percent slopes. Also included are small areas of Burnette loam, 3 to 10 percent slopes; Roxal sandy clay loam, 30 to 65 percent slopes; and a soil that is similar to the Inchau soil but is redder. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Tongue River soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. Typically, the surface is covered with a mat of undecomposed forest litter 2 inches thick. The surface layer is brown loam 1 inch thick. The subsoil is dark yellowish brown sandy clay loam 18 inches thick. The substratum is very pale brown very channery sandy clay loam 15 inches thick. Soft sandstone bedrock is at a depth of about 34 inches. In some areas the surface layer is sandy clay loam.

Permeability is moderate in the Tongue River soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Inchau soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. Typically, the surface is covered with a mat of undecomposed forest litter 1 inch thick. The surface layer is brown sandy clay loam 1 inch thick. The subsoil also is brown sandy clay loam. It is 18 inches thick. The substratum is very pale brown very gravelly sandy clay loam 19 inches thick. Soft sandstone bedrock is at a depth of about 38 inches. In some areas the surface layer is loam.

Permeability is moderate in the Inchau soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Farlow Variant soil is moderately deep and well drained. It formed in residuum and local alluvium derived dominantly from sandstone. Typically, the surface is covered with a mat of undecomposed forest litter 1 inch thick. The surface layer is dark grayish brown loam 1 inch thick. The subsoil is brown channery loam 10 inches thick. The substratum is very pale brown very channery sandy clay loam 24 inches thick. Soft sandstone bedrock is at a depth of about 35 inches. In some areas the surface layer and subsoil are very channery.

Permeability is moderate in the Farlow Variant soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly as woodland. It also is used for wildlife habitat.

This unit is well suited to timber production. The site index for lodgepole pine ranges from 60 to 65. The site index for Douglas fir ranges from 65 to 70. The main limitations affecting timber production and harvesting are the slope and erosion. Minimizing the risk of erosion is essential when timber is harvested. Properly designed road drainage systems that include carefully located culverts help to control erosion. Spoil from excavations is subject to rill and gully erosion and to sloughing. Roads and landings can be protected from erosion by constructing water bars and by seeding areas that have been cut and filled.

Conventional methods of harvesting timber can be used. The high-lead logging method is more efficient than most other methods and is less damaging to the soils. After the timber is harvested, carefully managed reforestation helps to control competition from undesirable understory plants. Planting the trees on the contour helps to control erosion. Because the soil is sticky when wet, most planting and harvesting equipment should be used only during dry periods.

This unit is in capability subclass VIe, nonirrigated. It is not assigned to a range site.

216—Uffens-Muff-Frisite loams, 1 to 12 percent slopes. This map unit is on hills, terraces, and fan aprons. Areas are irregular in shape and are 40 to 600 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 4,800 to 6,200 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 35 percent Uffens loam, 1 to 8 percent slopes; 30 percent Muff loam, 1 to 12 percent slopes; and 15 percent Frisite loam, 1 to 5 percent slopes. The Uffens and Frisite soils are on terraces and fan aprons, and the Muff soil is on hillslopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of slick spots; Birdsley sandy clay loam, 1 to 12 percent slopes; Oceanet sandy loam, 5 to 12 percent slopes; Persayo clay loam, 3 to 12 percent slopes; Saddle sandy loam, 1 to 12 percent slopes; and Worland sandy loam, 1 to 12 percent slopes, adjacent to the Muff soil. Also included are small areas of Griffy sandy loam, 1 to 10 percent slopes, and Effington loam, 1 to 8 percent slopes, both of which are adjacent to the Uffens and Frisite soils. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Uffens soil is very deep and well drained. It formed in alluvium derived dominantly from shale interbedded with sandstone. Typically, the surface layer is light yellowish brown loam 4 inches thick. The upper 16 inches of the subsoil is light olive brown and light yellowish brown, sodium-affected clay loam. The next 20 inches is light yellowish brown clay loam. The lower part to a depth of 60 inches or more is pale brown loamy sand.

Permeability is moderately slow in the Uffens soil. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Muff soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from shale interbedded with sandstone. Typically, the surface layer is light olive brown loam 2 inches thick. The upper 18 inches of the subsoil is brown and light olive brown, sodium-affected clay loam. The lower 9 inches is light yellowish brown sandy clay loam. Soft shale bedrock is at a depth of about 29 inches.

Permeability is slow in the Muff soil. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Frisite soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown loam 6 inches thick. The upper 19 inches of the subsoil is pale brown clay loam. The lower 17 inches is very pale brown clay loam. The substratum to a depth of 60 inches or more is pale brown silty clay loam.

Permeability is moderate in the Frisite soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Uffens and Muff soils is mainly 20 to 40 percent gardner saltbush, 15 to 25 percent Indian ricegrass, 10 to 25 percent bottlebrush squirreltail, and 10 to 15 percent rhizomatous wheatgrasses. As the range condition deteriorates, birdfoot sagebrush and annuals increase in abundance. As the range condition further deteriorates, halogeton and other annuals and weeds invade. The potential plant community produces about 300 pounds of air-dry vegetation per acre in normal years. Production ranges from 400 pounds in favorable years to 200 pounds in unfavorable years.

The potential plant community on the Frisite soil is mainly 10 to 20 percent Indian ricegrass, 20 to 40 percent rhizomatous wheatgrasses, 10 to 20 percent needleandthread, and 5 to 15 percent big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation. It also is limited by droughtiness, salinity, and alkalinity in the Uffens and Muff soils. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Because of salinity and alkalinity in the Uffens and Muff soils, reseeding generally is not successful.

The Uffens soil is in capability subclass VIs, nonirrigated. The Muff soil is in capability subclass VIe, nonirrigated. The Uffens and Muff soils are in the Saline Upland, 5- to 9-inch precipitation, Wind River Basin range site. The Frisite soil is in capability subclass VIe, nonirrigated. It is in the Loamy, 5- to 9-inch precipitation, Wind River Basin range site.

217—Uhl-Gelkie loams, 1 to 8 percent slopes. This map unit is on alluvial fans and terraces. Areas are long and narrow and are 40 to 320 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days. The soils receive additional moisture in the form of runoff from melting snowdrifts.

This unit is about 45 percent Uhl loam, 1 to 6 percent slopes, and 35 percent Gelkie loam, 3 to 8 percent slopes. The Uhl soil is on alluvial fans, and the Gelkie soil is on terraces. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Abston fine sandy loam, 1 to 8 percent slopes, on hillslopes and Venapass loam, 1 to 3 percent slopes, along narrow drainageways. Also included are small areas of Hoodle gravelly loam, 8 to 15 percent slopes, on undulating plains and terraces and Irigul channery loam, 8 to 30 percent slopes, on ridges and hillslopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Uhl soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone, schist, and granite. Typically, the surface layer is dark grayish brown loam 4 inches thick. The subsoil is grayish brown loam 11 inches thick. The substratum to a depth of 60 inches or more also is grayish brown loam.

Permeability is moderate in the Uhl soil. Available water capacity is high. The 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 Gelkie soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone, schist, and granite. Typically, the surface layer is dark grayish brown loam 5 inches thick. The upper 10 inches of the subsoil is dark grayish brown sandy clay loam. The lower 15 inches is very pale brown loam. The substratum to a depth of 60 inches or more is pale brown loam.

Permeability is moderate in the Gelkie soil. Available water capacity is high. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit mainly is 25 to 35 percent rhizomatous wheatgrasses, 10 to 20 percent slender wheatgrass, 10 to 20 percent needlegrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and bluegrasses increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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.

The production of vegetation suitable for grazing is limited by low precipitation and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIe, nonirrigated. It is in the Loamy Overflow, 10- to 14-inch precipitation, High Plains Southeast range site.

218—Venapass-Uhl-Absher loams, 1 to 6 percent slopes. This map unit is on flood plains, terraces, and alluvial fans. Areas are long and narrow and are 5 to 600 acres in size. The native vegetation is mainly grasses, shrubs, sedges, and willows. Elevation is 7,000 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days. The soils receive additional moisture in the form of runoff from the higher adjacent areas and from melting snowdrifts.

This unit is about 40 percent Venapass loam, 1 to 3 percent slopes; 20 percent Uhl loam, 1 to 6 percent slopes; and 20 percent Absher loam, 1 to 6 percent slopes. The Venapass soil is on flood plains, the Absher soil is on terraces, and the Uhl soil is on alluvial fans. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Silas loam, 1 to 6 percent slopes, and Gelkie fine sandy loam, 1 to 6 percent slopes. Also included are small areas of Abston gravelly sandy loam, 1 to 8 percent slopes, on hillslopes and Lymanson gravelly sandy loam, 4 to 25 percent slopes, on ridges and hillslopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Venapass soil is very deep and poorly drained. It formed in alluvium derived from various sources. Typically, the surface layer is dark grayish brown loam 16 inches thick. The subsurface layer is grayish brown sandy loam 4 inches thick. The substratum to a depth of 60 inches or more is gray gravelly coarse sandy loam.

Permeability is moderate in the Venapass soil. Available water capacity also is moderate. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion also is slight. The seasonal high water table fluctuates between the surface and a depth 18 inches from April through August. This soil is occasionally flooded for brief periods from April through June.

The Uhl soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 4 inches thick. The subsoil also is brown loam. It is 9 inches thick. The substratum to a depth of 60 inches or more is light olive brown loam.

Permeability is moderate in the Uhl soil. Available water capacity is high. The 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 Absher soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown loam 2 inches thick. The upper 5 inches of the subsoil is brown, sodium-affected clay. The next 6 inches is pale brown, sodium-affected clay. The lower part to a depth of 60 inches or more is pale brown clay loam.

Permeability is very slow in the Absher soil. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used mainly as rangeland and wildlife habitat. It also is used for irrigated hay and pasture.

The potential plant community on the Venapass soil is mainly 35 to 50 percent Nebraska sedge, 10 to 20 percent northern sedge, 5 to 15 percent tufted hairgrass, and 5 to 15 percent willows. As the range condition deteriorates, willows and roses increase in abundance. As the range condition further deteriorates, unpalatable rushes or sedges and annual forbs invade. The potential plant community produces about 5,000 pounds of air-dry vegetation per acre in normal years. Production ranges from 6,000 pounds in favorable years to 3,500 pounds in unfavorable years.

The potential plant community on the Uhl soil is mainly 25 to 35 percent rhizomatous wheatgrasses, 10 to 20 percent slender wheatgrass, 10 to 20 percent needlegrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and bluegrasses increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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.

The potential plant community on the Absher soil is mainly 10 to 25 percent western wheatgrass, 10 to 25 percent Indian ricegrass, 10 to 25 percent bottlebrush squirreltail, and 40 to 50 percent gardner saltbush. As the range condition deteriorates, birdfoot sagebrush, bottlebrush squirreltail, and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 500 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 production of vegetation suitable for grazing is limited by low precipitation and a short growing season. It also is limited by alkalinity in the Absher soil and the wetness of the Venapass soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

If this unit is used for irrigated hay and pasture, the main limitations are a short growing season, the salinity and alkalinity in the Absher soil, and wetness and flooding in areas of the Venapass soil. The salinity and alkalinity of the Absher soil limit forage production. Leaching the salts in this soil is difficult because of the restricted permeability. The wetness of the Venapass soil limits the choice of plants and the period of cutting or grazing and increases the risk of winterkill. Applications of nitrogen and phosphate fertilizer improve the growth of forage plants. Grazing during wet periods results in compaction of the surface layer, poor tilth, and excessive runoff. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition and control erosion. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing.

The Venapass soil is in capability subclasses Vw, nonirrigated, and IVw, irrigated. It is in the Wetland, 10- to 14-inch precipitation, High Plains Southeast range site. The Uhl soil is in capability subclasses VIe, nonirrigated, and IVc, irrigated. It is in the Loamy Overflow, 10- to 14-inch precipitation, High Plains Southeast range site. The Absher soil is in capability subclass VIs, irrigated and nonirrigated. It is in the Saline Upland, 10- to 14-inch precipitation, High Plains Southeast range site.

219—Venapass-Silas loams, 0 to 6 percent slopes. This map unit is on flood plains and terraces. Areas are long and narrow and are 5 to 300 acres in size. The native vegetation is mainly grasses, sedges, willows, and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 55 percent Venapass loam, 0 to 3 percent slopes, and 30 percent Silas loam, 1 to 6 percent slopes. The Venapass soil is on flood plains, and the Silas soil is on low terraces. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Absher sandy loam, 0 to 6 percent slopes; Uhl loam, 1 to 6 percent slopes; and Gelkie fine sandy loam, 2 to 8 percent slopes. Also included are small areas of Hoodle gravelly loam, 1 to 6 percent slopes, on terraces. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Venapass soil is very deep and poorly drained. It formed in alluvium derived from various sources. Typically, the surface is covered with a mat of decomposing organic material 2 inches thick. The surface layer is grayish brown loam 3 inches thick. The subsurface layer is gray loam 13 inches thick. The upper 14 inches of the underlying material also is gray loam. The lower part to a depth of 60 inches or more is gray gravelly coarse sandy loam.

Permeability is moderate in the Venapass soil. Available water capacity also is moderate. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion also is slight. The water table fluctuates between the surface and a depth of 18 inches from April through August. This soil is occasionally flooded for brief periods from April through June.

The Silas soil is very deep and moderately well drained. It formed in alluvium derived from various sources. Typically, the surface layer is very dark gray loam 3 inches thick. The subsurface layer is very dark grayish brown loam 13 inches thick. The upper 32 inches of the substratum is pale brown clay loam. The lower part to a depth of 60 inches or more is gray clay loam.

Permeability is moderate in the Silas soil. Available water capacity is high. The 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 seasonal high water table is at a depth of 36 to 60 inches from April through June.

This unit is used mainly as rangeland and wildlife habitat. It also is used for irrigated hay and pasture.

The potential plant community on the Venapass soil is mainly 35 to 50 percent Nebraska sedge, 10 to 20 percent northern sedge, 5 to 15 percent tufted hairgrass, and 5 to 15 percent willows. As the range condition deteriorates, willows and roses increase in abundance. As the range condition further deteriorates, unpalatable rushes or sedges and annual forbs invade. The potential plant community produces about 5,000 pounds of air-dry vegetation per acre in normal years. Production ranges from 6,000 pounds in favorable years to 3,500 pounds in unfavorable years.

The potential plant community on the Silas soil is mainly 25 to 35 percent rhizomatous wheatgrasses, 10 to 20 percent slender wheatgrass, 10 to 20 percent needlegrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and bluegrasses increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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.

The production of vegetation suitable for grazing is limited by a short growing season and by the wetness of the Venapass soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. The plants seeded on the Venapass soil should be those that can withstand wetness. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

If this unit is used for irrigated hay or pasture, the main limitations are a short growing season and wetness and flooding in areas of the Venapass soil. The wetness limits the choice of plants and the period of cutting or grazing and increases the risk of winterkill. Grazing during wet periods results in compaction of the surface layer, poor tilth, and excessive runoff. Applications of nitrogen and phosphate fertilizer improve the growth of forage plants. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition and control erosion. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing.

The Venapass soil is in capability subclasses IVw, irrigated, and Vw, nonirrigated. It is in the Wetland, 10- to 14-inch precipitation, High Plains Southeast range site. The Silas soil is in capability subclasses IVc, irrigated, and VIe, nonirrigated. It is in the Loamy Overflow, 10- to 14-inch precipitation, High Plains Southeast range site.

220—Vonalee-Hiland complex, undulating. This map unit is on fan aprons, hillslopes, and sand dunes. Slopes are 1 to 12 percent. Areas are irregular in shape and are 100 to 300 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 6,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is about 45 percent Vonalee loamy sand, 1 to 12 percent slopes, and 35 percent Hiland sandy loam, 1 to 8 percent slopes. The Vonalee soil is on hillslopes, and the Hiland soil is on sand dunes and fan aprons. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of blowouts; Clarkelen sandy loam, 1 to 3 percent slopes, on flood plains; and Orpha sand, 5 to 20 percent slopes, on dunes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Vonalee soil is very deep and somewhat excessively drained. It formed in eolian deposits derived dominantly from sandstone. Typically, the surface layer is brown loamy sand 4 inches thick. The upper part of the subsoil is brown sandy loam 7 inches thick. The lower part is brown loamy sand 8 inches thick. The substratum to a depth of 60 inches or more is pale brown loamy sand.

Permeability is moderately rapid in the Vonalee soil. Available water capacity is moderate. The 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 Hiland soil is very deep and well drained. It formed in eolian deposits and alluvium derived from various sources. Typically, the surface layer is brown sandy loam 4 inches thick. The upper 11 inches of the subsoil is brown sandy clay loam. The next 5 inches is light yellowish brown sandy loam. The lower 2 inches is very pale brown loamy sand. The substratum to a depth of 60 inches or more is very pale brown sand.

Permeability is moderate in the Hiland soil. Available water capacity also is moderate. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Vonalee soil is mainly 35 to 50 percent needleandthread, 15 to 25 percent Indian ricegrass, 10 to 20 percent thickspike wheatgrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,400 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,700 pounds in favorable years to 900 pounds in unfavorable years.

The potential plant community on the Hiland soil is mainly 20 to 30 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 10 to 20 percent Indian ricegrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and silver sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 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 production of vegetation suitable for grazing is limited by low precipitation, wind erosion, and droughtiness. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control water erosion and wind erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. If the plant cover is removed during seeding, a cover crop is needed to keep windblown sand from damaging seedlings.

This unit is in capability subclass IVe, nonirrigated. The Vonalee soil is in the Sands, 10- to 14-inch precipitation, High Plains Southeast range site. The Hiland soil is in the Sandy, 10- to 14-inch precipitation, High Plains Southeast range site.

221—Woosley-Decross-Starman association, rolling. This map unit is on hills, mountains, fan aprons, and toe slopes. Slopes are 2 to 20 percent. Areas are irregular in shape and are 40 to 600 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 6,800 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 40 percent Woosley loam, 2 to 20 percent slopes; 30 percent Decross loam, 2 to 15 percent slopes; and 15 percent Starman gravelly loam, 5 to 20 percent slopes. The Woosley soil is on mountainsides, the Decross soil is on fan aprons and toe slopes, and the Starman soil is on hills and mountains.

Included in this unit are small areas of Bachus loam, 2 to 20 percent slopes, adjacent to the Decross soil; Chittum gravelly loam, 5 to 20 percent slopes; Crago cobbly loam, 2 to 15 percent slopes; and Pensore very channery loam, 5 to 20 percent slopes, adjacent to the Woosley and Starman soils. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Woosley soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from limestone. Typically, the surface layer is dark grayish brown loam 5 inches thick. The upper 10 inches of the subsoil is dark brown clay loam. The next 4 inches is brown clay loam. The lower 12 inches is very pale brown gravelly loam. Limestone bedrock is at a depth of about 31 inches.

Permeability is moderate in the Woosley soil. Available water capacity also is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Decross soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is dark grayish brown loam 3 inches thick. The upper 7 inches of the subsoil is very dark grayish brown loam. The next 11 inches is very dark grayish brown clay loam. The next 17 inches is brown clay loam. The lower part to a depth of 60 inches or more is very pale brown loam.

Permeability is moderate in the Decross soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Starman soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from limestone. Typically, the surface layer is dark brown gravelly loam 3 inches thick. The upper 4 inches of the underlying material is pale brown very gravelly loam. The lower 8 inches is pale yellow very gravelly loam. Limestone bedrock is at a depth of about 15 inches.

Permeability is moderate in the Starman soil. Available water capacity is low. The 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 slight.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Woosley and Decross soils is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Kingspike fescue, 10 to 25 percent Idaho fescue, and 5 to 10 percent big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 1,350 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,600 pounds in favorable years to 1,100 pounds in unfavorable years.

The potential plant community on the Starman soil is mainly 10 to 25 percent Columbia needlegrass, 10 to 25 percent Idaho fescue, 10 to 25 percent Kingspike fescue, and 0 to 10 percent mountainmahogany. As the range condition deteriorates, big sagebrush and black sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 850 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.

The production of vegetation suitable for grazing is limited by a short growing season. It also is limited by the restricted rooting depth, droughtiness, and content of rock fragments in the Starman soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Range seeding by aerial broadcasting may not be suitable on the Starman soil because of the content of rock fragments and the restricted depth to bedrock. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Woosley and Decross soils are in capability subclass VIe, nonirrigated. They are in the Loamy, 15- to 19-inch precipitation, Foothills and Mountains East range site. The Starman soil is in capability subclass VIIe, nonirrigated. It is in the Shallow Loamy, 15- to 19-inch precipitation, Foothills and Mountains East range site.

222—Worland-Oceanet-Persayo association, rolling. This map unit is on hills and ridges. Slopes are 1 to 15 percent. Areas are irregular in shape and are 40 to 800 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 40 percent Worland sandy loam, 1 to 10 percent slopes; 20 percent Oceanet sandy loam, 5 to 15 percent slopes; and 15 percent Persayo silty clay loam, 3 to 15 percent slopes. The Worland soil is on the side slopes of hills and ridges, the Oceanet soil is on the summit of hills and ridges and on shoulder slopes adjacent to exposures of sandstone, and the Persayo soil is on the summit of hills and ridges and on shoulder slopes adjacent to exposures of shale.

Included in this unit are small areas of Frisite fine sandy loam, 1 to 10 percent slopes; Griffy sandy loam, 1 to 10 percent slopes; Youngston clay loam, 1 to 6 percent slopes; and Wallson sandy loam, 1 to 10 percent slopes. These areas are on fan aprons. Also included are small areas of a soil that is similar to the Persayo soil but has slopes of 3 to 20 percent and is less than 10 inches deep over bedrock; a soil that is similar to the Oceanet soil but has slopes of 5 to 20 percent and is less than 10 inches deep over bedrock; and Rock outcrop on the summit of hills and ridges. Included areas make up about 25 percent of the total acreage. The percentage varies from one area to another.

The Worland soil is moderately deep and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is pale brown sandy loam 4 inches thick. The upper 17 inches of the underlying material also is pale brown sandy loam. The lower 13 inches is very pale brown fine sandy loam. Soft sandstone bedrock is at a depth of about 34 inches. In some areas the surface layer is loamy sand.

Permeability is moderately rapid in the Worland soil. Available water capacity is low. The 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 Oceanet soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from sandstone. Typically, the surface layer is light yellowish brown sandy loam 1 inch thick. The upper 7 inches of the underlying material is pale brown sandy loam. The lower 11 inches is pale brown fine sandy loam. Soft sandstone bedrock is at a depth of about 19 inches.

Permeability is moderately rapid in the Oceanet soil. Available water capacity is low. The 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 Persayo soil is shallow and well drained. It formed in residuum and slope alluvium derived dominantly from shale. Typically, the surface layer is light gray silty clay loam 1 inch thick. The upper 5 inches of the underlying material is light brownish gray silty clay loam. The lower 12 inches is light brownish gray silt loam. Soft shale bedrock is at a depth of about 18 inches.

Permeability is moderately slow in the Persayo soil. Available water capacity is low. The effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Worland soil is mainly 30 to 50 percent needleandthread, 15 to 25 percent Indian ricegrass, 5 to 10 percent rhizomatous wheatgrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years.

The potential plant community on the Oceanet soil is mainly 25 to 35 percent needleandthread, 15 to 25 percent rhizomatous wheatgrasses, 5 to 15 percent bluebunch wheatgrass, and 10 to 20 percent Indian ricegrass. As the range condition deteriorates, threadleaf sedge, blue grama, forbs, and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 125 pounds in unfavorable years.

The potential plant community on the Persayo soil is mainly 20 to 30 percent rhizomatous wheatgrasses, 5 to 15 percent bottlebrush squirreltail, 5 to 15 percent Indian ricegrass, and 0 to 10 percent gardner saltbush. As the range condition deteriorates, big sagebrush and birdfoot sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 125 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and droughtiness and by the restricted rooting depth in the Oceanet and Persayo soils. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control water erosion and wind erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include critical area planting, fencing, watering facilities, and wildlife habitat management. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Worland soil is in capability subclass VIe, nonirrigated. It is in the Sandy, 5- to 9-inch precipitation, Wind River Basin range site. The Oceanet and Persayo soils are in capability subclass VIIe, nonirrigated. The Oceanet soil is in the Shallow Sandy, 5- to 9-inch precipitation, Wind River Basin range site. The Persayo soil is in the Shallow Clayey, 5- to 9-inch precipitation, Wind River Basin range site.

223—Youga-Quander complex, 2 to 25 percent slopes. This map unit is on mountains. Areas are irregular in shape and are 20 to 640 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,500 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

This unit is about 55 percent Youga loam, 2 to 25 percent slopes, and 30 percent Quander cobbly loam, 5 to 25 percent slopes. The Youga soil is on the foot slopes of mountains, and the Quander soil is on the back slopes and foot slopes of mountains. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Ansel sandy loam, 5 to 25 percent slopes; Onason sandy loam, 5 to 25 percent slopes, on the summit of ridges; and a soil that is similar to the Youga soil but is moderately deep, is light colored in the surface layer and in the upper part of the subsoil, has slopes of 3 to 15 percent, and is on hillslopes. Also included are small areas of a soil that is similar to the Quander soil but is moderately deep. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Youga soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is dark grayish brown loam 3 inches thick. The upper 11 inches of the subsoil is brown loam. The lower 7 inches is yellowish brown sandy clay loam. The substratum to a depth of 60 inches or more is very pale brown sandy clay loam that has a few thin strata of sandy loam.

Permeability is moderate in the Youga soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Quander soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, 30 percent of the surface is covered with gravel, cobbles, and stones. The surface layer is dark gray cobbly loam 3 inches thick. The upper 11 inches of the subsoil is grayish brown very cobbly sandy clay loam. The lower 29 inches is brownish yellow very cobbly sandy clay loam. The substratum to a depth of 60 inches or more is brownish yellow very cobbly loam.

Permeability is moderate in the Quander soil. Available water capacity also is moderate. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on the Youga soil is mainly 10 to 20 percent bluebunch wheatgrass, 5 to 10 percent Griffith wheatgrass, 10 to 20 percent Idaho fescue, 5 to 10 percent prairie junegrass, and 5 percent big sagebrush. As the range condition deteriorates, threadleaf sedge, big sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation per acre in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years.

The potential plant community on the Quander soil is mainly 20 to 30 percent bluebunch wheatgrass, 10 to 20 percent Idaho fescue, 5 to 10 percent western wheatgrass, and 5 percent big sagebrush. As the range condition deteriorates, threadleaf sedge and big sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and undesirable forbs invade. The potential plant community produces about 1,300 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,700 pounds in favorable years to 800 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by a short growing season and by the content of rock fragments in the Quander soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control water erosion and wind erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Areas where brush is removed should have enough ground cover remaining to prevent excessive erosion. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Because of the rock fragments on the surface of the Quander soil, broadcasting is the best seeding method. Access by livestock is limited in the steeper areas. As a result, the less sloping areas tend to be overgrazed. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIe, nonirrigated. The Youga soil is in the Loamy, 15- to 19-inch precipitation, Foothills and Mountains Southeast range site. The Quander soil is in the Coarse Upland, 15- to 19-inch precipitation, Foothills and Mountains Southeast range site.

224—Youngston-Effington loams, 0 to 6 percent slopes. This map unit is in drainageways. Areas are irregular in shape and are 40 to 800 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 40 percent Youngston loam, 0 to 6 percent slopes, and 40 percent Effington loam, 0 to 3 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Apron sandy loam, 1 to 10 percent slopes; Birdsley sandy clay loam, 0 to 10 percent slopes, on hillslopes; Frisite loam, 2 to 8 percent slopes; and Lostwells sandy clay loam, 1 to 5 percent slopes. Also included are small areas of Fluvaquents, 0 to 3 percent slopes. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Youngston soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is light yellowish brown loam 3 inches thick. The underlying material to a depth of 60 inches or more is light olive brown clay loam stratified with thin lenses of fine sandy loam, sandy clay loam, and loam.

Permeability is moderately slow in the Youngston soil. Available water capacity is high. The 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 Effington soil is very deep and well drained. It formed in alluvium derived dominantly from sodic shale. Typically, the surface layer is pale brown loam 4 inches thick. The upper 5 inches of the subsoil is dark yellowish brown, sodium-affected clay loam. The next 7 inches is yellowish brown, sodium-affected clay. The next 34 inches is yellowish brown and light yellowish brown clay loam. The lower part to a depth of 60 inches or more is light yellowish brown sandy loam.

Permeability is very slow in the Effington soil. Available water capacity is moderate. The 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 soil is subject to rare flooding.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Youngston soil is mainly 25 to 45 percent rhizomatous wheatgrasses, 15 to 25 percent bottlebrush squirreltail, 5 to 10 percent Indian ricegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, blue grama, birdfoot sagebrush, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 300 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 Effington soil is mainly 15 to 25 percent alkali sacaton, 10 to 25 percent basin wildrye, 5 to 15 percent western wheatgrass, and 5 to 15 percent greasewood. As the range condition deteriorates, greasewood and inland saltgrass increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,600 pounds in favorable years to 700 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and by alkalinity in the Effington soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

The Youngston soil is in capability subclass VIe, nonirrigated. It is in the Clayey, 5- to 9-inch precipitation, Wind River Basin range site. The Effington soil is in capability subclass VIs, nonirrigated. It is in the Saline Lowland, 5- to 9-inch precipitation, Wind River Basin range site.

225—Youngston-Lostwells-Apron complex, 0 to 3 percent slopes. This map unit is on flood plains, terraces, and fan aprons. Areas are long and narrow and are 5 to 800 acres in size. The native vegetation is mainly grasses and shrubs and scattered trees. Elevation is 4,800 to 6,200 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is about 35 percent Youngston loam, occasionally flooded, 0 to 3 percent slopes; 30 percent Lostwells loam, 0 to 3 percent slopes; and 20 percent Apron sandy loam, 0 to 3 percent slopes. The Youngston soil is on flood plains, the Lostwells soil is on terraces, and the Apron soil is on fan aprons. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Binton clay loam, 0 to 3 percent slopes; Effington loam, 0 to 3 percent slopes; Fluvaquents, 0 to 3 percent slopes; and Riverwash adjacent to the Youngston and Lostwells soils. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Youngston soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 6 inches thick. The underlying material to a depth of 60 inches or more is brown and yellowish brown loam stratified with lenses of fine sandy loam, loam, and clay loam. In some areas the surface layer is clay loam.

Permeability is moderately slow in the Youngston soil. Available water capacity is high. The 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 soil is occasionally flooded for brief periods from February through August.

The Lostwells soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is brown loam 2 inches thick. The subsurface layer is grayish brown loam 3 inches thick. The underlying material to a depth of 60 inches or more is yellowish brown sandy clay loam stratified with lenses of clay loam and sandy loam.

Permeability is moderate in the Lostwells soil. Available water capacity is high. The 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 Apron soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown sandy loam 4 inches thick. The underlying material to a depth of 60 inches or more also is pale brown sandy loam. In some areas the surface layer is loam or fine sandy loam.

Permeability is moderately rapid in the Apron soil. Available water capacity is high. The 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 as rangeland and wildlife habitat. It also is used for irrigated hay and pasture.

The potential plant community on the Youngston soil is mainly 15 to 25 percent alkali sacaton, 10 to 25 percent basin wildrye, 5 to 15 percent western wheatgrass, and 10 to 20 percent greasewood. As the range condition deteriorates, greasewood and inland saltgrass increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,200 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,600 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Lostwells soil is mainly 10 to 20 percent Indian ricegrass, 20 to 40 percent rhizomatous wheatgrasses, 10 to 20 percent needleandthread, and 5 to 15 percent big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years.

The potential plant community on the Apron soil is mainly 30 to 50 percent needleandthread, 15 to 25 percent Indian ricegrass, 5 to 10 percent rhizomatous wheatgrasses, and 5 to 10 percent big sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, yucca, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, by the content of salts in the Youngston soil, and by wind erosion on the Apron soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Because of the low precipitation, the seeds should be planted when the soils contain more than the normal amount of moisture.

This unit is well suited to hay and pasture. The main limitations are the slope and a short growing season. Applications of nitrogen and phosphate fertilizer improve the growth of forage plants. Proper grazing practices, rotation grazing, weed control, and applications of fertilizer are needed to ensure the maximum quality of forage. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing.

Irrigation water can be applied by the contour ditch, furrow, or sprinkler method. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soils. Land leveling helps to ensure a uniform application of water.

This unit is in capability subclasses IIIe, irrigated, and VIe, nonirrigated. The Youngston soil is in the Saline Lowland, 5- to 9-inch precipitation, Wind River Basin range site. The Lostwells soil is in the Loamy, 5- to 9-inch precipitation, Wind River Basin range site. The Apron soil is in the Sandy, 5- to 9-inch precipitation, Wind River Basin range site.

226—Youngston-Lostwells complex, 1 to 3 percent slopes. This map unit is on terraces and fan aprons. Areas are irregular in shape and are 5 to 640 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,200 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is about 50 percent Youngston clay loam, 1 to 3 percent slopes, and 35 percent Lostwells loam, 1 to 3 percent slopes. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Apron sandy loam, 1 to 5 percent slopes; Binton clay loam, 1 to 3 percent slopes; and Muff fine sandy loam, 1 to 8 percent slopes. Also included are small areas of Frisite loam, 1 to 3 percent slopes, and Uffens loam, 1 to 8 percent slopes. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Youngston soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is pale brown clay loam 4 inches thick. The underlying material to a depth of 60 inches or more is pale brown clay loam stratified with thin lenses of fine sandy loam and sandy clay loam.

Permeability is moderately slow in the Youngston soil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

The Lostwells soil is very deep and well drained. It formed in alluvium derived from various sources.

Typically, the surface layer is pale olive loam 11 inches thick. The underlying material to a depth of 60 inches or more is pale olive sandy clay loam stratified with a few thin lenses of sandy loam, loam, and clay loam.

Permeability is moderate in the Lostwells soil. Available water capacity is high. The 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 as rangeland and wildlife habitat. It also is used for irrigated hay and pasture.

The potential plant community on the Youngston soil is mainly 25 to 45 percent rhizomatous wheatgrasses, 15 to 25 percent bottlebrush squirreltail, 5 to 10 percent Indian ricegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, blue grama, birdfoot sagebrush, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 300 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 Lostwells soil is mainly 30 to 50 percent Indian ricegrass, 20 to 40 percent rhizomatous wheatgrasses, 10 to 20 percent needleandthread, and 5 to 15 percent big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear and annual grasses and weeds invade. The potential plant community produces about 400 pounds of air-dry vegetation per acre in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Because of the low precipitation, the seeds should be planted when the soils contain more than the normal amount of moisture.

This unit is well suited to irrigated hay and pasture. The main limitation is the slope. Applications of nitrogen and phosphate fertilizer improve the growth of forage plants. Proper grazing practices, rotation grazing, weed control, and applications of fertilizer are needed to ensure the maximum quality of forage. Periodic mowing and clipping help to maintain a uniform plant cover and discourage selective grazing. Proper stocking rates and restricted grazing during wet periods help to keep the pasture in good condition and control erosion.

Irrigation water can be applied by the border, contour ditch, or sprinkler method. To prevent overirrigation and the leaching of plant nutrients and to control water erosion, applications of irrigation water should be adjusted to the available water capacity and rate of water intake in the soils. Land leveling helps to ensure a uniform application of water.

This unit is in capability subclasses IIIe, irrigated, and VIe, nonirrigated. The Youngston soil is in the Clayey, 5- to 9-inch precipitation, Wind River Basin range site. The Lostwells soil is in the Loamy, 5- to 9-inch precipitation, Wind River Basin range site.

227—Youngston-Persayo loams, rolling. This map unit is in drainageways and on low terraces, hills, and ridges. Slopes are 1 to 15 percent. Areas are irregular in shape and are 80 to 320 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is about 60 percent Youngston loam, 1 to 5 percent slopes, and 25 percent Persayo loam, 8 to 15 percent slopes. The Youngston soil is in drainageways and on low terraces, and the Persayo soil is on hills and ridges. The components of this unit occur as areas so intricately intermingled that mapping them separately was not practical at the scale used.

Included in this unit are small areas of Apron sandy loam, 1 to 10 percent slopes; Frisite fine sandy loam, 1 to 8 percent slopes; and Lostwells sandy clay loam, 1 to 5 percent slopes, all of which are adjacent to the Youngston soil. Also included are small areas of Birdsley sandy clay loam, 1 to 15 percent slopes; Oceanet sandy loam, 5 to 15 percent slopes; and Worland sandy loam, 1 to 15 percent slopes, all of which are adjacent to the Persayo soil. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Youngston soil is very deep and well drained. It formed in alluvium derived from various sources. Typically, the surface layer is grayish brown loam 4 inches thick. The underlying material to a depth of 60 inches or more is very pale brown loam stratified with thin lenses of fine sandy loam, sandy clay loam, and clay loam.

Permeability is moderately slow in the Youngston soil. Available water capacity is high. The 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 Persayo soil is very shallow or shallow and is well drained. It formed in residuum and slope alluvium derived dominantly from shale. Typically, the surface layer is light brownish gray loam 2 inches thick. The underlying material is light brownish gray and olive gray clay loam 8 inches thick. Soft shale bedrock is at a depth of about 10 inches.

Permeability is moderately slow in the Persayo soil. Available water capacity is low. The effective rooting depth is 4 to 20 inches. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly as rangeland. It also is used for wildlife habitat.

The potential plant community on the Youngston soil is mainly 25 to 45 percent rhizomatous wheatgrasses, 15 to 25 percent bottlebrush squirreltail, 5 to 10 percent Indian ricegrass, and 5 to 10 percent big sagebrush. As the range condition deteriorates, blue grama, birdfoot sagebrush, and big sagebrush increase in abundance. As the range condition further deteriorates, pricklypear, annual grasses, and weeds invade. The potential plant community produces about 300 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 Persayo soil is mainly 20 to 30 percent rhizomatous wheatgrass, 5 to 15 percent bottlebrush squirreltail, 5 to 15 percent Indian ricegrass, and 0 to 10 percent gardner saltbush. As the range condition deteriorates, big sagebrush and birdfoot sagebrush increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 250 pounds of air-dry vegetation per acre in normal years. Production ranges from 350 pounds in favorable years to 125 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation and by the restricted rooting depth and droughtiness in the Persayo soil. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIe, nonirrigated. The Youngston soil is in the Clayey, 5- to 9-inch precipitation, Wind River Basin range site. The Persayo soil is in the Shallow Clayey, 5- to 9-inch precipitation, Wind River Basin range site.

228—Zeomont loamy sand, hilly. This very deep, excessively drained soil is on dunes. It formed in sandy eolian material derived from various sources. Slopes are 2 to 35 percent. Areas are irregular in shape and are 10 to 1,000 acres in size. The native vegetation is mainly grasses and shrubs. Elevation is 7,300 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Included in this unit are small blowouts; Bosler sandy loam, 2 to 8 percent slopes, on fan aprons; Ryan Park sandy loam, 1 to 8 percent slopes, on fan aprons; Ryark sandy loam, 1 to 10 percent slopes, on fan aprons; and Cushool sandy loam, 2 to 25 percent slopes, on hillslopes. Included areas make up about 15 percent of the total acreage.

Typically, the surface layer is grayish brown loamy sand 7 inches thick. The underlying material to a depth of 60 inches or more is very pale brown sand.

Permeability is rapid in the Zeomont soil. Available water capacity is low. The 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 as rangeland. It also is used for wildlife habitat.

The potential plant community on this unit is mainly 35 to 50 percent needleandthread, 15 to 25 percent Indian ricegrass, 10 to 20 percent thickspike wheatgrass, and 5 to 10 percent silver sagebrush. As the range condition deteriorates, threadleaf sedge and forbs increase in abundance. As the range condition further deteriorates, annual grasses and weeds invade. The potential plant community produces about 1,400 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,700 pounds in favorable years to 900 pounds in unfavorable years.

The production of vegetation suitable for grazing is limited by low precipitation, droughtiness, wind erosion, and a short growing season. Proper grazing use and deferred grazing are needed to maintain an adequate plant cover and to control wind erosion and water erosion. Additional management practices may be needed on rangeland that is in an undesirable condition. These practices include brush control, critical area planting, fencing, watering facilities, and wildlife habitat management. Range seeding may be needed if the amount of desirable vegetation is not sufficient for natural seeding to occur. Grazing should be delayed until the more desirable forage plants have achieved enough growth to withstand grazing pressure.

This unit is in capability subclass VIe, nonirrigated. It is in the Sands, 10- to 14-inch precipitation, High Plains Southeast range site.

229—Dumps, mine. This unit occurs as areas of waste rock derived mainly from uranium mines and quarries. It is used mainly for wildlife habitat.

This unit is in capability class VIII, nonirrigated. It is not assigned to a range site.

230—Pits, gravel. This unit consists mainly of open excavations from which gravel has been removed and in which rock or other material is exposed. Also included are areas of mine pits and quarry pits. The unit is used mainly for wildlife habitat.

This unit is capability class VIII, nonirrigated. It is not assigned to a range site.

Prime Farmland

In this section, prime farmland is defined and the soils in the survey area that are considered prime farmland are listed.

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, seed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. An adequate moisture supply and a sufficiently long growing season are required. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources, and farming these soils results in the least damage to the environment.

Prime farmland soils either are used for food or fiber or are available for these uses. Urban or built-up land and water areas cannot be considered prime farmland.

The prime farmland in this survey area receives an adequate and dependable supply of moisture from irrigation. The temperature and length of growing season are favorable, and the level of acidity or alkalinity is acceptable. The soils have few, if any, rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not frequently flooded during the growing season. The slope ranges mainly from 0 to 6 percent.

Soils that are droughty may qualify as prime farmland soils where this limitation is overcome by irrigation. Onsite evaluation is necessary to determine the effectiveness of irrigation systems. More information about the criteria for prime farmland can be obtained at the local office of the Soil Conservation Service.

A recent trend in land use has been the conversion of prime farmland to urban and industrial uses. The loss of prime farmland to other uses puts pressure on lands that are less productive than prime farmland.

About 8,155 acres, or 0.31 percent of the survey area, would meet the requirements for prime farmland if an adequate and dependable supply of irrigation water were available.

The following map units meet the soil requirements for prime farmland where irrigated. The location of each map unit is shown on the detailed soil maps at the back of this publication. Soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

104	Almy loam, 0 to 6 percent slopes
185	Poposhia loam, 1 to 6 percent slopes
207	Sinkson-Almy sandy clay loams, 0 to 6 percent slopes

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 avoid 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 hay 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.

Hay and Pasture

General management needed for hay and pasture is suggested in this section. The system of land capability classification used by the Soil Conservation Service is explained, and the estimated yields of hay and pasture are listed.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

Yields Per Acre

The average yields per acre that can be expected of pasture and hay crops under a high level of management are shown in table 3. 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 also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown and that good-quality irrigation water is uniformly applied as needed.

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 3 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 Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops *(10)*. 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 take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils generally are 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 some limitations that reduce the choice of plants or 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.

There are no class I or class II soils in the survey area.

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, IVe. 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, woodland, wildlife habitat, or recreation.

The capability classification depends on the probable interaction between the kind of soil and the alternative system of management. Management systems change because of changing economic conditions and increased knowledge of land uses. From time to time new criteria should be applied in the system of capability classification. Therefore, the capability classification of the soils in a survey area may differ somewhat from that of soils in an adjoining area surveyed at an earlier or later date.

The capability classification of each map unit is given in table 3 and in the section "Detailed Soil Map Units."

Rangeland

Donald G. Viktorin and Everet L. Bainter, range conservationists, Soil Conservation Service, helped prepare this section.

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.

In the detailed map unit descriptions, the descriptions of the soils that are used as rangeland or are suited to use as rangeland specify the range site; the total annual production of vegetation in favorable, normal, and unfavorable years; and the percentage of the major species in the potential plant community.

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 also are important.

The amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community is indicated in the detailed map unit descriptions. 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 temperature make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

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.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only. It does not have a specific meaning that pertains to the present plant community in a given use.

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.

Woodland Management and Productivity

The information in this survey can be used by woodland owners or forest managers in planning the use of soils for wood crops. Woodland site indexes for the soils that produce wood products are included in the detailed map unit descriptions.

Windbreaks and Environmental Plantings

Richard C. Rintamaki, biologist, Soil Conservation Service, helped prepare 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 soil. Field windbreaks protect cropland and crops from wind, hold 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 also can reduce wave action on ponds and collect snow that can provide water for livestock, wildlife, and irrigation.

Table 4 shows the height that selected woody plants can be expected to reach in 20 years on soils in various windbreak suitability groups and in various precipitation and planting zones. Table 5 shows the windbreak suitability groups and planting zones of the soils in the survey area. It can be used as a guide in planning the establishment of windbreaks and screens. Additional information on planning windbreaks and screens and on planting and caring for trees and shrubs can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service or from a nursery.

The windbreak suitability groups in this survey area are described in the following paragraphs.

Windbreak suitability group 1.—The soils in this group are loamy or clayey and have less than 35 percent clay. They are frequently flooded or have a seasonal high water table. The upper 12 inches is free of carbonates, has a pH of less than 7.8, and is nonsaline.

This group is suitable for farmstead, feedlot, and field windbreaks. Planting may be delayed for a short period in spring because of wetness. Competition from weeds and grasses is the main limitation affecting the establishment of trees and shrubs.

Windbreak suitability group 1K.—The soils in this group are loamy or clayey and have less than 35 percent clay. They are frequently flooded or have a seasonal high water table. In the upper 12 inches, they have free carbonates, have a pH of 7.8 to 9.0, or have an electrical conductivity of less than 4 millimhos per centimeter.

This group is suitable for farmstead, feedlot, and field windbreaks. Planting may be delayed for a short period in spring because of wetness. Competition from weeds and grasses is an important limitation affecting the establishment of trees and shrubs. The free carbonates, high reaction, and low electrical conductivity affect the selection and growth of plants.

Windbreak suitability group 3.—The soils in this group are loamy or clayey and have less than 35 percent clay throughout or are loamy in the upper 20 inches and clayey in the lower part. They are moderately well drained or well drained. Available water capacity to a depth of 60 inches or more is more than 7.5 inches. In the upper 12 inches, these soils do not have free carbonates, have a pH of less than 7.8, and are nonsaline.

This group is well suited to farmstead, feedlot, and field windbreaks. Competition from weeds and grasses is an important limitation affecting the establishment of trees and shrubs.

Windbreak suitability group 4.—The soils in this group are loamy or clayey and have less than 35 percent clay in the upper 8 to 20 inches and are clayey in the lower part. They are somewhat poorly drained, moderately well drained, or well drained.

This group is suitable for farmstead, feedlot, and field windbreaks. A high content of clay in the lower part of the soils affects the selection and growth of trees and shrubs. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs.

Windbreak suitability group 4C.—The soils in this group have more than 35 percent clay throughout when mixed to a depth of 8 inches and are somewhat poorly drained, moderately well drained, or well drained.

This group is suitable for farmstead, feedlot, and field windbreaks. The high content of clay affects the selection and growth of trees and shrubs. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs. Because of the high content of clay, extra care is needed to ensure that the soil is firmly packed around the roots after the trees and shrubs are planted.

Windbreak suitability group 5.—The soils in this group are loamy and have a moderate available water capacity. They are moderately well drained or well drained. In the upper 12 inches, they have no free carbonates, have a pH of less than 7.8, and are nonsaline.

This group is suitable for farmstead, feedlot, and field windbreaks. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs.

Windbreak suitability group 5K.—The soils in this group are loamy and have a moderate 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 electrical conductivity of less than 4 millimhos per centimeter.

This group is suitable for farmstead, feedlot, and field windbreaks. The free carbonates and high reaction in the upper 12 inches affect the selection of trees and shrubs. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs.

Windbreak suitability group 6G.—The soils in this group are loamy or sandy, have more than 35 percent rock fragments, and are moderately well drained to excessively drained. Available water capacity to a depth of 60 inches is less than 5 inches.

This group is suitable for farmstead, feedlot, and field windbreaks. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs. A very low or low available water capacity affects the selection and growth of trees and shrubs.

Windbreak suitability group 6R.—The soils in this group are moderately deep over bedrock. Available water capacity is less than 5 inches.

This group is suitable for farmstead, feedlot, and field windbreaks. A low or moderate available water capacity affects the selection and growth of trees and shrubs. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs.

Windbreak suitability group 7.—The soils in this group are very deep or deep, are sandy throughout, and have less than 35 percent rock fragments.

This group is poorly suited to farmstead, feedlot, and field windbreaks. A low or moderate available water capacity affects the selection and growth of trees and shrubs. Wind erosion at or near the planting site can adversely affect the health and vigor of developing windbreaks. Optimal growth and survival rates are not expected.

Windbreak suitability group 8.—The soils in this group are loamy or clayey and have less than 35 percent clay. Available water capacity to a depth of 60 inches or more is more than 7.5 inches. These soils 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 electrical conductivity of less than 4 millimhos per centimeter.

This group is suitable for farmstead, feedlot, and field windbreaks. The free carbonates and high reaction affect the selection and growth of trees and shrubs. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs.

Windbreak suitability group 9G.—The soils in this group are very deep or deep and have a water table within 5 feet of the surface. In some areas they are subject to flooding or ponding. In the upper 12 inches, they have a pH of more than 7.8 and an electrical conductivity of 4 to 16 millimhos per centimeter.

This group is suitable for farmstead, feedlot, and field windbreaks. The high reaction and low or moderate salinity in the upper 12 inches affect the selection and growth of trees and shrubs. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs. Planting may be delayed for a short period in spring because of wetness.

Windbreak suitability group 9N.—The soils in this group are very deep or 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 more than 7.8 and an electrical conductivity of 4 to 16 millimhos per centimeter.

This group is suitable for farmstead, feedlot, and field windbreaks. The high reaction, low or moderate salinity, and competition from weeds and grasses are important limitations affecting the establishment and management of trees and shrubs.

Windbreak suitability group 10.—The soils in this group have one or more characteristics that severely limit the planting, survival, or growth of trees and shrubs. Examples are shallow or very shallow soils, soils that have 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.

In most areas this group is not suitable for farmstead, feedlot, and field windbreaks. Onsite investigation may indicate that some trees and shrubs can be established if special management is applied. The selection of species should be based on the soil conditions on the site.

Recreation

Richard C. Rintamaki, biologist, Soil Conservation Service, helped prepare this section.

The soils in this survey area are rated in table 6 according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 6, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties generally are favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 6 can be supplemented by other information in this survey, for example, interpretations for dwellings without basements and for local roads and streets in table 7 and interpretations for septic tank absorption fields in table 8.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and other intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few if any stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking, horseback riding, and bicycling should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few if any stones or boulders on the surface.

Wildlife Habitat

Richard C. Rintamaki, biologist, Soil Conservation Service, helped prepare this section.

Soils influence wildlife populations primarily through the kinds of habitat they produce. Wildlife populations are directly related to the level of fertility in the soils. Abundant populations were encountered by early settlers in areas of the best soils in a given ecological zone. Although some species of wildlife can inhabit areas of all soils, wildlife productivity generally is a function of the biotic potential of the soil.

The quantity and quality of most vegetative elements of wildlife habitat do not exceed the capability of the soil unless their growth is encouraged by the application of intensive management practices. Most kinds of wildlife habitat can be created, improved, or maintained by planting suitable vegetation, by manipulating the existing vegetation, by promoting the natural establishment of desirable plants, or by applying combinations of these measures.

The response of soils to management can be predicted on the basis of knowledge of their properties. The growth patterns and characteristics of the plants that make up a habitat are affected by the properties of the soils. From an appraisal of these properties, the suitability of a site for various kinds of wildlife habitat can be estimated.

The description of each map unit in the section "General Soil Map Units" includes a list of representative wildlife species known to inhabit areas of that unit. Information about seasonal habitats for big game was taken from maps produced by the Game Division, Wyoming Game and Fish Department. This survey also provides information about the suitability of the soils for irrigated and nonirrigated crops, native range plants, windbreaks, and woodland. All of the information about the existing and potential plant communities can enable the user who has data on wildlife habitat requirements to select sites for the development of wildlife habitat and to determine the intensity of plant community management needed to produce satisfactory results.

Engineering

Roderick L. Wright, engineer, Soil Conservation Service, helped prepare this section.

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 important features are identified. The ratings are given in the following tables: Building Site Development, Sanitary Facilities, Construction Materials, and Water Management. The ratings are based on observed performance of the soils, on site features, and on the estimated data and test data in the section "Soil Properties." Site features are given in the section "Detailed Soil Map Units."

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. Applicable 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, and 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, stone content and size, soil texture, and slope. The time of the year that excavations can be made and the integrity of completed structures are affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table. The sides of excavations in areas of sandy soils can cave in.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, the shrink-swell potential, and low soil strength can cause the movement of footings. A high water table, depth to bedrock, 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 generally are 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, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 8 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 8 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock, and flooding affect absorption of the effluent. Large stones and bedrock 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, flooding, and large stones.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. Slope and bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in table 8 are based on soil properties, site features, and observed performance of the soils. Permeability, soil texture, depth to bedrock, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, layer thickness, ease of compaction, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 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. This information is in the soils descriptions. 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. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and depth to the water table is less than 1 foot. These soils 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 soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is 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 generally is 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; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage 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 in 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 more 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, or salts or sodium. A high water table (wetness) affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability in the aquifer, and quality of the water as inferred from the salinity of the soil. The depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, 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, water intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock. 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.

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 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 "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 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 system adopted by the American Association of State Highway and Transportation Officials *(1)* and the Unified soil classification system *(2)*.

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, clayey, and organic 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 3 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 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 content of clay in each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and 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 ⅓ 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 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, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

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. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on 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 change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, more than 9 percent, is sometimes used.

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, very fine sand, sand, and organic matter (as much as 4 percent) and on soil structure and permeability. The estimates are modified by the presence of rock fragments. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion.

Erosion factor T is an estimate of the maximum average 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 generally are 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, 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 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 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 used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent 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, nor is water in swamps and marshes.

Table 13 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *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, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months.

The information on flooding 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 absence of distinctive horizons that form in soils that are not subject to flooding.

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 depth to a seasonal high water table applies to undrained soils. 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 depth to the seasonal high water table, the kind of water table, and the months of the year that the water table usually is highest. 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.

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 creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(12)*. 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. 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 Entisol.

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 Orthent *(Orth*, meaning true, plus *ent*, from Entisol).

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; 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 Torriorthents *(Torri*, meaning hot and dry, plus *orthents*, the suborder of the Entisols that is hot and dry).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic 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 known kind of soil. 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 Torriorthents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, mixed (calcareous), mesic Typic Torriorthents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

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" *(9)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(12)*. Unless otherwise stated, matrix 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."

Absher Series

The Absher series consists of very deep, well drained soils on fan aprons, toe slopes, and terraces. These soils formed in alluvium derived from various sources. Slopes are 0 to 8 percent. Elevation is 5,300 to 8,000 feet. The annual precipitation is 9 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

Typical pedon of an Absher loam that has a slope of 2 percent, in an area of Havre-Absher-Forelle loams, 0 to 6 percent slopes; about 400 feet east and 2,600 feet south of the northwest corner of sec. 21, T. 33 N., R. 98 W.

E—0 to 3 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; moderate thin platy structure parting to moderate very fine angular blocky; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

Bt—3 to 6 inches; brown (10YR 4/3) silty clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate fine angular blocky; hard, firm, sticky and very plastic; continuous thick clay films on faces of peds; many very fine and fine and few medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

Btn—6 to 12 inches; brown (10YR 4/3) silty clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, very firm, very sticky and very plastic; continuous thick clay films on faces of peds; common very fine and fine and few medium roots; strongly effervescent; disseminated carbonates; exchangeable sodium percentage of more than 15; very strongly alkaline; clear wavy boundary.

Btnk—12 to 18 inches; brown (10YR 4/3) silty clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, very firm, very sticky and very plastic; continuous thin clay films on faces of peds; common very fine, fine, and medium roots; strongly effervescent; disseminated carbonates and common fine soft masses of carbonates; exchangeable sodium percentage of more than 15; very strongly alkaline; clear wavy boundary.

Bk1—18 to 24 inches; grayish brown (10YR 5/2) silty clay loam, brown (10YR 5/3) moist; weak medium prismatic structure parting to moderate fine subangular blocky; hard, firm, sticky and very plastic; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates; very strongly alkaline; gradual wavy boundary.

Bk2—24 to 60 inches; pale brown (10YR 6/3) silty clay loam stratified with lenses of loam, clay, and clay loam; grayish brown (2.5Y 5/2) moist; massive; slightly hard, friable, slightly sticky and plastic; few very fine, fine, and medium roots to a depth of 30 inches; strongly effervescent; disseminated carbonates and common fine soft masses of carbonates in some lenses; very strongly alkaline.

The E horizon is neutral to moderately alkaline. The Bt and Btn horizons have hue of 2.5Y to 7.5YR. The Bt horizon is clay, silty clay, silty clay loam, or clay loam. It is moderately alkaline to very strongly alkaline. The Btn and Bk horizons are strongly alkaline or very strongly alkaline. The Btn horizon is clay loam, silty clay loam, silty clay, or clay. The Bk horizon has hue of 2.5Y or 10YR. It is dominantly silty clay loam, clay loam, or clay, but in some pedons it has thin strata of loam.

Absher Variant

The Absher Variant consists of moderately deep, well drained soils on plateaus. These soils formed in residuum and slope alluvium derived dominantly from shale. Slopes are 0 to 6 percent. Elevation is 7,000 to 7,500 feet. The annual precipitation is 9 to 11 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of an Absher Variant silty clay loam that has a slope of 1 percent, in an area of Absher Variant-Absher complex, 0 to 6 percent slopes; about 2,000 feet north and 2,500 feet east of the southwest corner of sec. 32, T. 27 N., R. 99 W.

A—0 to 2 inches; light olive brown (2.5Y 5/4) silty clay loam, olive brown (2.5Y 4/4) moist; weak fine granular structure; hard, firm, sticky and plastic; common very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; strongly alkaline; abrupt smooth boundary.

Btn—2 to 9 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; weak medium prismatic structure parting to moderate medium and fine subangular blocky; very hard, very firm, very sticky and very plastic; few thin and thick clay films on faces of peds; common very fine, fine, and medium roots; strongly effervescent; disseminated carbonates; exchangeable sodium percentage of more than 15; strongly alkaline; clear wavy boundary.

Btk—9 to 21 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; weak medium prismatic structure parting to weak medium subangular blocky; hard, firm, very sticky and very plastic; few thin clay films on faces of peds; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates and common fine filaments and soft masses of carbonates; few fine soft masses of gypsum; strongly alkaline; abrupt wavy boundary.

C—21 to 24 inches; grayish brown (2.5Y 5/2) clay, grayish brown (2.5Y 5/2) moist; strong very thin platy structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots; strongly alkaline; abrupt irregular boundary.

Cr—24 inches; light gray (2.5Y 7/2) shale.

The depth to bedrock ranges from 20 to 40 inches. Cracks that are open to the surface form during dry periods. They are 0.5 inch to 2.0 inches wide, 10 to 20 inches deep, and 1 to 4 feet apart. The A and Bt horizons are strongly alkaline or very strongly alkaline. The exchangeable sodium percentage is 15 to 30 in the Bt horizon.

Abston Series

The Abston series consists of moderately deep, well drained soils on hillslopes. These soils formed in residuum and slope alluvium derived dominantly from sodic shale interbedded with sandstone. Slopes are 1 to 12 percent. Elevation is 6,500 to 7,500 feet. The annual precipitation is 9 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

Typical pedon of an Abston sandy loam that has a slope of 5 percent, in an area of Abston-Diamondville complex, 1 to 12 percent slopes; about 4,000 feet north and 40 feet east of the southwest corner of sec. 33, T. 27 N., R. 94 W.

A—0 to 3 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; moderate medium granular structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine vesicular pores in the surface crust; mildly alkaline; abrupt smooth boundary.

Btn—3 to 6 inches; dark yellowish brown (10YR 4/4) clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium columnar structure parting to moderate fine subangular blocky; very hard, firm, very sticky and very plastic; common moderately thick clay films on faces of peds and in pores; common very fine and fine and few medium roots; exchangeable sodium percentage of more than 15; strongly alkaline; clear wavy boundary.

Btnk1—6 to 13 inches; yellowish brown (10YR 5/4) sandy clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; extremely hard, very firm, very sticky and very plastic; many moderately thick clay films on faces of peds and in pores; few very fine, fine, and medium roots; strongly effervescent; common fine soft masses and seams of carbonates; exchangeable sodium percentage of more than 15; very strongly alkaline; clear wavy boundary.

Btnk2—13 to 22 inches; pale yellow (5Y 7/3) sandy clay loam, pale olive (5Y 6/3) moist; weak coarse prismatic structure; hard, firm, very sticky and very plastic; common moderately thick clay films on faces of peds; few very fine, fine, and medium roots; violently effervescent; disseminated carbonates and few fine soft masses and seams of carbonates; exchangeable sodium percentage of more than 15; very strongly alkaline; gradual wavy boundary.

Bk—22 to 34 inches; light gray (2.5Y 7/2) sandy clay loam, light gray (2.5Y 7/2) moist; massive; hard, firm, slightly sticky and slightly plastic; strongly effervescent; disseminated carbonates and common medium soft masses and seams of carbonates; moderately alkaline; abrupt wavy boundary.

Cr—34 inches; sodic shale.

The depth to bedrock ranges from 20 to 40 inches. The content of gravel is 0 to 15 percent throughout the solum.

The Btn horizon has hue of 10YR or 2.5Y. It is clay loam or sandy clay. The content of clay is 35 to 45 percent. The exchangeable sodium percentage is 15 to 30.

The Btnk horizon is strongly alkaline or very strongly alkaline. The Bk horizon has hue of 5Y to 10YR. It is clay loam or sandy clay loam. It is moderately alkaline or strongly alkaline.

The Abston soil in the Lymanson-Abston-Gelkie association, hilly, is a taxadjunct to the series because it has a cryic temperature regime. This difference, however, does not significantly affect the use and management of the soil.

Almy Series

The Almy series consists of very deep, well drained soils on fan aprons. These soils formed in alluvium derived dominantly from sandstone interbedded with shale. Slopes are 0 to 10 percent. Elevation is 5,400 to 7,800 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of an Almy loam that has a slope of 2 percent, in an area of Almy-Monbutte-Rallod complex, 1 to 10 percent slopes; about 1,800 feet north and 3,200 feet east of the southwest corner of sec. 6, T. 33 N., R. 96 W.

A—0 to 2 inches; pale brown (10YR 6/3) loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine and fine vesicular pores; mildly alkaline; clear smooth boundary.

Bt1—2 to 5 inches; reddish brown (5YR 4/4) clay loam, dark reddish brown (5YR 3/4) moist; moderate coarse prismatic structure parting to moderate coarse subangular blocky; hard, firm, sticky and plastic; continuous thick clay films on faces of peds; many very fine, fine, and medium roots; moderately alkaline; abrupt wavy boundary.

Bt2—5 to 18 inches; yellowish red (5YR 4/6) clay loam, reddish brown (5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; few thin clay films on faces of peds; common very fine, fine, and medium roots; moderately alkaline; clear wavy boundary.

Btk—18 to 23 inches; light reddish brown (5YR 6/3) sandy clay loam, reddish brown (5YR 4/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; hard, firm, sticky and plastic; few thin clay films on faces of peds; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates and common medium seams and soft masses of carbonates; moderately alkaline; clear wavy boundary.

Bk—23 to 28 inches; light reddish brown (5YR 6/3) sandy clay loam, reddish brown (5YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; violently effervescent; disseminated carbonates and common medium soft masses of carbonates; moderately alkaline; gradual wavy boundary.

C—28 to 60 inches; reddish brown (5YR 5/3) sandy clay loam, reddish brown (5YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; slightly effervescent; disseminated carbonates; moderately alkaline.

The A horizon has hue of 10YR to 5YR. It is 0 to 25 percent gravel. It is mildly alkaline or moderately alkaline. The Bt, Bk, and C horizons have hue of 5YR or 2.5YR. The Bt and Bk horizons are sandy clay loam, clay loam, or loam. The Bt horizon is 20 to 35 percent clay. It is mildly alkaline to strongly alkaline. The Bk horizon is moderately alkaline or strongly alkaline. The C horizon is dominantly sandy clay loam or loam. In some pedons, however, it is gravelly sandy loam below a depth of 40 inches. It is moderately alkaline to very strongly alkaline.

Ansel Series

The Ansel series consists of very deep, well drained soils on fan aprons, mountainsides, and hillslopes. These soils formed in alluvium derived dominantly from schist. Slopes are 3 to 45 percent. Elevation is 7,000 to 9,000 feet. The annual precipitation is 15 to 22 inches, the average annual air temperature is 33 to 38 degrees F, and the frost-free period is 40 to 70 days.

Typical pedon of an Ansel sandy loam, in an area of Ansel-Ansel Variant complex, steep; about 1,400 feet south and 1,500 feet west of the northeast corner of sec. 6, T. 29 N., R. 100 W.

Oi—2 inches to 1 inch; pine needles.

Oe—1 inch to 0; decomposed needles and leaves.

E—0 to 5 inches; very pale brown (10YR 7/3) sandy loam, dark brown (10YR 4/3) moist; moderate thin platy structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; common fine, medium, and coarse roots; about 5 percent channery fragments; neutral; clear smooth boundary.

BE—5 to 10 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; moderate medium platy structure parting to moderate very fine subangular blocky; slightly hard, very friable, nonsticky and slightly plastic; common fine, medium, and coarse roots; about 5 percent channery fragments; neutral; clear irregular boundary.

Bt1—10 to 26 inches; brown (7.5YR 5/4) clay loam, brown (7.5YR 4/4) moist; moderate coarse prismatic structure parting to moderate coarse angular blocky; hard, friable, sticky and plastic; continuous thick and few very thick clay films on faces of peds; few medium and coarse roots; about 5 percent gravel and channery fragments; neutral; gradual wavy boundary.

Bt2—26 to 33 inches; yellowish brown (10YR 5/6) gravelly sandy clay loam, yellowish brown (10YR 5/6) moist; weak coarse prismatic structure parting to moderate coarse subangular blocky; hard, friable, sticky and plastic; continuous moderately thick and few thick clay films on faces of peds; few medium and coarse roots; about 25 percent gravel; neutral; clear wavy boundary.

C—33 to 60 inches; light olive brown (2.5Y 5/4) gravelly sandy loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few coarse roots; about 20 percent gravel and 5 percent cobbles; neutral.

The Bt and C horizons are slightly acid or neutral. The Bt horizon is clay loam, sandy clay loam, gravelly sandy clay loam, or channery clay loam. It 20 to 35 percent clay. The C horizon has hue of 2.5Y or 10YR. It is sandy loam, gravelly sandy loam, sandy clay loam, or gravelly sandy clay loam. It is 0 to 35 percent rock fragments.

Ansel Variant

The Ansel Variant consists of moderately deep, well drained soils on hillslopes. These soils formed in residuum and alluvium derived dominantly from schist. Slopes range from 5 to 45 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 38 degrees F, and the frost-free period is 40 to 70 days.

Typical pedon of an Ansel Variant loam that has a slope of 6 percent, in an area of Ansel-Ansel Variant complex, steep; about 1,300 feet east and 600 feet south of the northwest corner of sec. 13, T. 29 N., R. 100 W.

Oi—2 inches to 1 inch; needles, twigs, and leaves.

Oe—1 inch to 0; decaying needles, twigs, and leaves.

A—0 to 2 inches; brown (10YR 4/3) loam, very dark brown (10YR 2/2) moist; moderate medium platy structure parting to moderate fine granular; slightly hard, very friable, nonsticky and nonplastic; few fine and medium roots; neutral; abrupt smooth boundary.

AB—2 to 8 inches; pale brown (10YR 6/3) channery sandy loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; few fine and coarse roots; about 20 percent channery fragments and 5 percent stones; neutral; gradual wavy boundary.

Bt—8 to 22 inches; yellowish brown (10YR 5/4) channery clay loam, brown (10YR 4/3) moist; moderate coarse angular blocky structure parting to strong medium subangular blocky; hard, firm, sticky and plastic; common thick clay films on faces of peds, in root channels, and on rock fragments; few fine and coarse roots to a depth of 15 inches; about 20 percent channery fragments and 5 percent stones; neutral; gradual irregular boundary.

C—22 to 30 inches; brown (10YR 5/3) very channery loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, sticky and slightly plastic; about 45 percent channery fragments; neutral; abrupt wavy boundary.

R—30 inches; hard schist.

The depth to bedrock ranges from 20 to 40 inches. The content of rock fragments is 15 to 35 percent in the Bt horizon and 35 to 60 percent in the C horizon.

Apron Series

The Apron series consists of very deep, well drained soils on fan aprons. These soils formed in alluvium derived from various sources. Slopes are 0 to 10 percent. Elevation is 4,800 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of an Apron sandy loam that has a slope of 3 percent, in an area of Apron-Lostwells complex, 0 to 10 percent slopes; about 900 feet south and 1,500 feet east of the northwest corner of sec. 20, T. 39 N., R. 92 W.

A—0 to 4 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; mildly alkaline; abrupt smooth boundary.

C—4 to 60 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots to a depth of 20 inches; about 5 percent gravel; slightly effervescent; disseminated carbonates; moderately alkaline.

The control section is 0 to 10 percent rock fragments. The A horizon is mildly alkaline or moderately alkaline. The C horizon has hue of 2.5Y or 10YR. It is commonly sandy loam or fine sandy loam. In some pedons, however, it has a few thin strata of loamy sand.

Asholler Series

The Asholler series consists of very shallow or shallow, well drained soils on hills, mountains, and ridges. These soils formed in residuum and slope alluvium derived dominantly from schist or granite. Slopes are 8 to 60 percent. Elevation is 6,300 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of an Asholler very channery loam that has a slope of 20 percent, in an area of Rock outcrop-Asholler complex, steep; about 950 feet north and 300 feet east of the southwest corner of sec. 20, T. 40 N., R. 92 W.

A—0 to 3 inches; grayish brown (10YR 5/2) very channery loam, brown (10YR 4/3) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; about 25 percent channery fragments, 10 percent cobbles, and 5 percent stones; neutral; abrupt smooth boundary.

C—3 to 14 inches; brown (10YR 5/3) very channery loam, brown (10YR 4/3) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; about 30 percent channery fragments, 15 percent cobbles, and 5 percent stones; neutral; abrupt wavy boundary.

R—14 inches; hard schist.

The depth to bedrock ranges from 6 to 20 inches. The C horizon is very channery loam or very channery sandy clay loam. It is 30 to 50 percent channery fragments, 5 to 20 percent cobbles, and 5 to 20 percent stones. The content of clay is 18 to 27 percent.

Bachus Series

The Bachus series consists of moderately deep, well drained soils on dip slopes on cuestas. These soils formed in residuum and slope alluvium derived dominantly from quartzitic sandstone. Slopes are 2 to 20 percent. Elevation is 6,800 to 8,500 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Bachus loam that has a slope of 10 percent, in an area of Chittum-Bachus-Rock outcrop association, hilly; about 4,500 feet north and 1,300 feet east of the southwest corner of sec. 12, T. 40 N., R. 94 W.

A—0 to 5 inches; very dark brown (10YR 2/2) loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; slightly acid; clear wavy boundary.

Bt1—5 to 13 inches; dark brown (10YR 3/3) loam, very dark brown (10YR 2/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; continuous thin clay films on faces of peds; slightly acid; clear wavy boundary.

Bt2—13 to 24 inches; reddish brown (5YR 5/3) clay loam, dark reddish brown (5YR 3/3) moist; strong medium prismatic structure parting to strong medium subangular blocky; hard, friable, sticky and plastic; common very fine, fine, and medium roots; continuous thin and few thick clay films on faces of peds; slightly acid; abrupt wavy boundary.

R—24 inches; hard, quartzitic sandstone.

The depth to bedrock ranges from 20 to 40 inches. The mollic epipedon is 16 to 30 inches thick. The control section is 0 to 14 percent gravel and channery fragments. The A and Bt horizons are slightly acid or moderately acid. The Bt horizon has hue of 10YR to 5YR.

Barrett Variant

The Barrett Variant consists of shallow, well drained soils on ridges and on dip slopes on cuestas. These soils formed in residuum and slope alluvium derived dominantly from soft shale. Slopes are 2 to 15 percent. Elevation is 7,000 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Barrett Variant very channery very fine sandy loam that has a slope of 5 percent, in an area of Gelkie Variant-Barrett Variant association, undulating; about 1,300 feet east and 2,700 feet north of the southwest corner of sec. 36, T. 27 N., R. 101 W.

A—0 to 4 inches; light brownish gray (2.5Y 6/2) very channery very fine sandy loam, dark grayish brown (2.5Y 4/2) moist; moderate very fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; about 40 percent channery fragments; gravel and channery fragments covering about 25 percent of the surface; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

C1—4 to 11 inches; light brownish gray (2.5Y 6/2) very channery loam, dark grayish brown (2.5Y 4/2) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; about 40 percent fine channery fragments; about 40 percent soft shale fragments that break down to loam when wetted and rubbed; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt wavy boundary.

C2—11 to 18 inches; light brownish gray (2.5Y 6/2) very channery silty clay loam, dark grayish brown (2.5Y 4/2) moist; moderate thick platy structure; slightly hard, friable, very sticky and very plastic; common fine and medium soft masses and moderately thick coatings of gypsum on rock fragments; about 40 percent fine channery fragments; about 40 percent soft shale fragments that break down to silty clay loam when wetted and rubbed; slightly effervescent; disseminated carbonates and few fine soft masses of carbonates; moderately alkaline; abrupt wavy boundary.

Cr—18 inches; light brownish gray, soft shale.

About 20 to 40 percent of the surface is covered with gravel and channery fragments. The depth to bedrock ranges from 10 to 20 inches. The A and C horizons are 35 to 50 percent rock fragments. The A horizon is mildly alkaline or moderately alkaline.

Binton Series

The Binton series consists of very deep, well drained soils on low terraces. These soils formed in alluvium derived from various sources. Slopes are 0 to 3 percent. Elevation is 5,000 to 5,500 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Binton clay loam that has a slope of 1 percent, in an area of Binton-Youngston clay loams, 0 to 3 percent slopes; about 2,500 feet west and 950 feet north of the southeast corner of sec. 19, T. 39 N., R. 92 W.

A—0 to 3 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; weak coarse granular structure; very hard, firm, very sticky and very plastic; few very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; very strongly alkaline; abrupt smooth boundary.

C—3 to 60 inches; light yellowish brown (2.5Y 6/4) clay loam stratified with thin lenses of very fine sandy loam, silty clay loam, silty clay, and sandy clay loam; light olive brown (2.5Y 5/4) moist; massive; hard, friable, sticky and plastic; few very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; very strongly alkaline.

The exchangeable sodium percentage is 15 to 30 throughout the profile. The A and C horizons have hue of 5Y to 10YR. The A horizon is strongly alkaline or very strongly alkaline. The control section is dominantly clay loam or silty clay loam but has thin strata of very fine sandy loam to silty clay. The average content of clay in the control section ranges from 18 to 35 percent. The content of rock fragments ranges from 0 to 15 percent.

Birdsley Series

The Birdsley series consists of shallow, well drained soils on hills and ridges. These soils formed in residuum and slope alluvium derived dominantly from sodic shale. Slopes are 0 to 20 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Birdsley sandy clay loam that has a slope of 3 percent, in an area of Badland-Birdsley complex, steep; about 1,500 feet east and 2,000 feet north of the southwest corner of sec. 9, T. 39 N., R. 92 W.

A—0 to 2 inches; pale olive (5Y 6/3) sandy clay loam, olive (5Y 5/3) moist; weak medium platy structure parting to weak fine granular; soft, firm, sticky and plastic; common very fine, fine, medium, and coarse roots; slightly effervescent; disseminated carbonates; strongly alkaline; abrupt smooth boundary.

C1—2 to 12 inches; pale olive (5Y 6/3) sandy clay loam, olive (5Y 5/3) moist; weak medium prismatic structure parting to weak medium and fine subangular blocky; hard, firm, very sticky and very plastic; common very fine, fine, medium, and coarse roots; slightly effervescent; disseminated carbonates; very strongly alkaline; clear wavy boundary.

C2—12 to 14 inches; pale olive (5Y 6/3) sandy clay loam, olive (5Y 5/3) moist; weak medium platy structure; slightly hard, firm, very sticky and very plastic; about 12 percent soft shale fragments; slightly effervescent; disseminated carbonates; very strongly alkaline; abrupt wavy boundary.

Cr—14 inches; soft shale.

The depth to bedrock ranges from 10 to 20 inches. The exchangeable sodium percentage is 15 to 30 in the A and C horizons. These horizons have hue of 5Y to 10YR. The A horizon is strongly alkaline or very strongly alkaline. The C horizon is sandy clay loam or clay loam. It is 20 to 35 percent clay.

Blackhall Series

The Blackhall series consists of very shallow or shallow, well drained soils on hills, ridges, and knobs. These soils formed in residuum and slope alluvium derived dominantly from sandstone. Slopes are 5 to 45 percent. Elevation is 5,500 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Blackhall fine sandy loam that has a slope of 6 percent, in an area of Blackhall-Carmody association, hilly; about 600 feet east and 700 feet south of the northwest corner of sec. 19, T. 39 N., R. 95 W.

A—0 to 2 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; slightly effervescent; disseminated carbonates; mildly alkaline; abrupt smooth boundary.

Bw—2 to 6 inches; yellowish brown (10YR 5/4) sandy loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to weak coarse subangular blocky; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; slightly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

Bk1—6 to 11 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; slightly effervescent; disseminated carbonates and a few fine threads of carbonates; moderately alkaline; clear wavy boundary.

Bk2—11 to 17 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; strongly effervescent; disseminated carbonates and a few fine threads and soft masses of carbonates; moderately alkaline; abrupt wavy boundary.

Cr—17 inches; soft, calcareous sandstone.

The depth to bedrock ranges from 6 to 20 inches. The A horizon has hue of 2.5Y or 10YR. It is loam, fine sandy loam, or sandy loam. It is mildly alkaline or moderately alkaline. The Bw horizon is very fine sandy loam or sandy loam. The Bk horizon has hue of 2.5Y or 10YR. It is fine sandy loam, very fine sandy loam, or sandy loam. It is moderately alkaline or strongly alkaline.

Blazon Series

The Blazon series consists of very shallow or shallow, well drained soils on hills, ridges, and knobs. These soils formed in residuum and slope alluvium derived dominantly from soft shale. Slopes are 3 to 40 percent. Elevation is 5,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Blazon clay loam that has a slope of 20 percent, in an area of Blazon-Rock outcrop-Carmody complex, hilly; about 200 feet north and 200 feet west of the southeast corner of sec. 17, T. 33 N., R. 98 W.

A—0 to 2 inches; light brownish gray (2.5Y 6/2) clay loam, light olive brown (2.5Y 5/4) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

C1—2 to 14 inches; light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4) moist; weak medium platy structure parting to weak fine subangular blocky; slightly hard, friable, sticky and plastic; common very fine and fine roots; about 10 percent fine soft shale fragments; slightly effervescent; disseminated carbonates; moderately alkaline; gradual wavy boundary.

C2—14 to 19 inches; light brownish gray (2.5Y 6/2) clay loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; slightly effervescent; disseminated carbonates; many fine crystals of gypsum; moderately alkaline; abrupt wavy boundary.

Cr—19 inches; soft, sandy shale.

The depth to bedrock ranges from 4 to 20 inches. The A horizon has hue of 2.5Y or 10YR. It is moderately alkaline or strongly alkaline. It is less than 5 percent rock fragments. The C horizon has hue of 5Y to 10YR. It is 27 to 35 percent clay.

Bluerim Series

The Bluerim series consists of moderately deep, well drained soils on hillslopes. These soils formed in residuum and slope alluvium derived dominantly from sandstone. Slopes are 3 to 15 percent. Elevation is 6,500 to 7,600 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost free period is 90 to 110 days.

Typical pedon of a Bluerim sandy loam that has a slope of 5 percent, in an area of Bluerim-Onason complex, hilly; about 2,000 feet north and 400 feet west of the southeast corner of sec. 34, T. 27 N., R. 92 W.

A—0 to 3 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; neutral; abrupt smooth boundary.

Bt—3 to 12 inches; light brown (7.5YR 6/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, friable, sticky and plastic; common moderately thick clay films on faces of peds; many very fine and fine and few medium roots; neutral; clear wavy boundary.

BC—12 to 17 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; weak coarse prismatic structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; neutral; clear wavy boundary.

C—17 to 36 inches; very pale brown (10YR 7/4) sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots to a depth of 20 inches; mildly alkaline; abrupt wavy boundary.

Cr—36 inches; soft, noncalcareous sandstone.

The depth to bedrock ranges from 20 to 40 inches. The content of rock fragments is 0 to 15 percent in the A, Bt, and C horizons. The A and Bt horizons are neutral or mildly alkaline. The A horizon has hue of 2.5Y or 10YR. The Bt horizon has hue of 10YR or 7.5YR. It is 20 to 27 percent clay. The C horizon has hue of 2.5Y or 10YR. It is sandy loam or sandy clay loam. It is mildly alkaline or moderately alkaline.

Bosler Series

The Bosler series consists of very deep, well drained soils on fan aprons and terraces. These soils formed in alluvium derived from various sources. Slopes are 1 to 8 percent. Elevation is 6,000 to 7,800 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Bosler fine sandy loam that has a slope of 1 percent, in an area of Bosler-Ryan Park fine sandy loams, 1 to 8 percent slopes; about 40 feet east and 10 feet south of the northwest corner of sec. 15, T. 29 N., R. 92 W.

A—0 to 6 inches; grayish brown (10YR 5/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; gravel covering about 10 percent of the surface; mildly alkaline; clear smooth boundary.

Bt—6 to 13 inches; brown (7.5YR 5/4) sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; continuous thin clay films on faces of peds and few thin clay films bridging sand grains; mildly alkaline; clear wavy boundary.

Btk—13 to 20 inches; brown (10YR 5/3) gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to weak medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; about 15 percent gravel; slightly effervescent; moderately alkaline; abrupt wavy boundary.

2Bk1—20 to 23 inches; very pale brown (10YR 7/3) very gravelly loamy sand, pale brown (10YR 6/3) moist; massive; hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; about 45 percent gravel and 5 percent cobbles; violently effervescent; disseminated carbonates and common fine threads and soft masses of carbonates; moderately alkaline; abrupt broken boundary.

2Bk2—23 to 60 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 5/3) moist; single grain; slightly hard, very friable, nonsticky and nonplastic; about 50 percent gravel and 5 percent cobbles; weakly cemented by carbonates; strongly effervescent; disseminated carbonates; strongly alkaline.

Depth to the 2Bk horizon ranges from 20 to 40 inches. The A and Bt horizons are mildly alkaline or moderately alkaline. The A horizon is 0 to 10 percent gravel. The Bt horizon has hue of 10YR or 7.5YR. It is 20 to 35 percent clay. The 2Bk horizon has hue of 2.5Y or 10YR. It is very gravelly sand or very gravelly loamy sand. It is 35 to 60 percent rock fragments. It is moderately alkaline or strongly alkaline.

Bowbac Series

The Bowbac series consists of moderately deep, well drained soils on hillslopes. These soils formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. Slopes are 1 to 15 percent. Elevation is 5,300 to 6,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 115 to 130 days.

Typical pedon of a Bowbac fine sandy loam that has a slope of 2 percent, in an area of Bowbac-Hiland complex, rolling; about 400 feet north and 1,900 feet east of the southwest corner of sec. 1, T. 35 N., R. 90 W.

A—0 to 3 inches; yellowish brown (10YR 5/4) fine 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; mildly alkaline; abrupt smooth boundary.

Bt—3 to 15 inches; brown (7.5YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to strong medium and coarse subangular blocky; hard, very friable, sticky and plastic; common very fine and fine and few medium roots; continuous thick clay films on faces of peds; moderately alkaline; clear wavy boundary.

Bk1—15 to 20 inches; olive yellow (2.5Y 6/6) fine sandy loam, light olive brown (2.5Y 5/4) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates and few fine threads and soft masses of carbonates; moderately alkaline; clear wavy boundary.

Bk2—20 to 26 inches; very pale brown (10YR 7/4) fine sandy loam, brownish yellow (10YR 6/6) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; violently effervescent; disseminated carbonates and many large soft masses and threads of carbonates; strongly alkaline; abrupt wavy boundary.

Cr—26 inches; olive yellow, soft sandstone.

The depth to bedrock ranges from 20 to 40 inches. The A and Bt horizons are mildly alkaline or moderately alkaline. The A horizon has hue of 10YR or 7.5YR. The Bt horizon has hue of 2.5Y to 7.5YR. The Bk horizon has hue of 2.5Y or 10YR. It is sandy loam, fine sandy loam, or sandy clay loam. It is moderately alkaline or strongly alkaline.

Brownsto Series

The Brownsto series consists of very deep, well drained soils on glacial moraines, terraces, and fan aprons. These soils formed in alluvial and glacial deposits derived from various sources. Slopes are 0 to 50 percent. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

Typical pedon of a Brownsto loam that has a slope of 1 percent, in an area of Brownsto loam, 0 to 6 percent slopes; about 1,450 feet east and 1,300 feet north of the southwest corner of sec. 28, T. 42 N., R. 105 W.

A—0 to 2 inches; light yellowish brown (10YR 6/4) loam, brown (7.5YR 4/4) moist; weak thin platy structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; about 5 percent gravel; mildly alkaline; abrupt smooth boundary.

Bw1—2 to 7 inches; brown (7.5YR 4/4) loam, brown (7.5YR 4/4) moist; weak coarse prismatic structure parting to weak medium subangular blocky; slightly hard, very friable, nonsticky and nonplastic; common fine and many very fine roots; about 5 percent gravel; slightly effervescent; disseminated carbonates; mildly alkaline; clear wavy boundary.

Bw2—7 to 9 inches; light brown (7.5YR 6/4) sandy clay loam, brown (7.5YR 5/4) moist; weak coarse prismatic structure parting to weak medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; few fine and very fine roots; about 5 percent gravel; violently effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

Bk1—9 to 27 inches; very pale brown (10YR 8/3) very gravelly sandy loam, very pale brown (10YR 7/3) moist; massive; hard, very friable, nonsticky and nonplastic; few fine and very fine roots; about 50 percent gravel and 10 percent cobbles; violently effervescent; disseminated carbonates, many large irregular soft masses and seams of carbonates, and many thick coatings of carbonates on the bottom of coarse fragments; moderately alkaline; gradual wavy boundary.

Bk2—27 to 60 inches; brown (7.5YR 5/4) very gravelly sandy loam that has discontinuous strata of gravelly sandy loam and very gravelly sand; brown (7.5YR 5/4) moist; massive; hard, firm, nonsticky and nonplastic; few medium and many very fine and fine roots to a depth of 34 inches; about 50 percent gravel and 10 percent cobbles; weakly cemented with calcium carbonate; strongly effervescent; large irregular soft masses and seams of carbonates; moderately alkaline.

The calcium carbonate equivalent is 15 to 40 percent in the calcic horizon.

The A and Bw horizons have hue of 10YR or 7.5YR. They are mildly alkaline or moderately alkaline. The A horizon is 5 to 40 percent rock fragments. The Bw horizon is fine sandy loam, loam, sandy clay loam, gravelly sandy clay loam, or gravelly loam. It is 5 to 25 percent rock fragments.

The Bk horizon has hue of 2.5Y to 7.5YR. It is very cobbly sandy clay loam, very gravelly sandy clay loam, very gravelly loam, very gravelly sandy loam, very cobbly sandy loam, or very gravelly fine sandy loam. Some pedons have thin lenses that are 15 to 35 percent rock fragments. The average content of rock fragments is 35 to 65 percent. Reaction is moderately alkaline or strongly alkaline.

Burnette Series

The Burnette series consists of very deep, well drained soils on fan aprons and terraces. These soils formed in slope alluvium derived dominantly from shale interbedded with sandstone. Slopes are 3 to 10 percent. Elevation is 7,500 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air

temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Burnette loam that has a slope of 3 percent, in an area of Burnette loam, 3 to 10 percent slopes; about 1,150 feet east and 2,000 feet south of the northwest corner of sec. 11, T. 42 N., R. 106 W.

A—0 to 2 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; about 10 percent gravel; neutral; clear wavy boundary.

BA—2 to 8 inches; brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; common fine and medium roots; continuous thick clay films on faces of peds; about 10 percent gravel; neutral; clear wavy boundary.

Bt—8 to 18 inches; dark grayish brown (2.5Y 4/2) clay, very dark grayish brown (2.5Y 3/2) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; common fine and medium roots; many thick clay films on faces of peds; about 10 percent gravel; slightly effervescent; disseminated carbonates; mildly alkaline; clear wavy boundary.

Bk1—18 to 26 inches; olive (5Y 5/3) clay, olive (5Y 4/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; hard, firm, sticky and plastic; few fine and medium roots; about 10 percent gravel; violently effervescent; disseminated carbonates and few medium threads and seams of carbonates; moderately alkaline; clear wavy boundary.

Bk2—26 to 60 inches; pale olive (5Y 6/3) clay, olive (5Y 5/3) moist; massive; hard, firm, sticky and plastic; few fine and medium roots; violently effervescent; disseminated carbonates and few medium threads and seams of carbonates; moderately alkaline.

The average content of clay in the control section ranges from 35 to 60 percent. The content of rock fragments in the control section is 0 to 15 percent. The A and Bt horizons have hue of 2.5Y or 10YR. The A horizon is slightly acid or neutral. The Bt horizon is clay or clay loam. It is neutral or mildly alkaline. The Bk horizon has hue of 10YR to 5Y. It is clay loam or clay. It is mildly alkaline or moderately alkaline.

Carmody Series

The Carmody series consists of moderately deep, well drained soils on hills, ridges, and knobs. These soils formed in residuum and slope alluvium derived dominantly from sandstone. Slopes are 2 to 40 percent. Elevation is 5,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Carmody fine sandy loam that has a slope of 4 percent, in an area of Blackhall-Carmody association, hilly; about 1,800 feet south and 1,150 feet east of the northwest corner of sec. 30, T. 34 N., R. 95 W.

A—0 to 4 inches; brown (10YR 5/3) fine sandy loam, yellowish brown (10YR 5/4) moist; weak fine granular structure; loose, nonsticky and nonplastic; many very fine and fine roots; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

C1—4 to 13 inches; pale brown (10YR 6/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to weak medium subangular blocky; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; slightly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

C2—13 to 24 inches; light yellowish brown (2.5Y 6/4) very fine sandy loam, light olive brown (2.5Y 5/4) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; strongly effervescent; disseminated carbonates; moderately alkaline; gradual wavy boundary.

Cr—24 inches; soft sandstone.

The depth to bedrock ranges from 20 to 40 inches. The control section is 10 to 18 percent clay. The C horizon has hue of 2.5Y or 10YR. It is sandy loam, fine sandy loam, or very fine sandy loam. It is moderately alkaline or strongly alkaline.

Chittum Series

The Chittum series consists of very shallow or shallow, well drained soils on the back slopes of hills. These soils formed in residuum and slope alluvium derived dominantly from quartzitic sandstone. Slopes are 5 to 25 percent. Elevation is 6,800 to 8,500 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Chittum loam that has a slope of 12 percent, in an area of Chittum-Bachus-Rock outcrop association, hilly; about 4,000 feet north and 1,300 feet east of the southwest corner of sec. 12, T. 40 N., R. 94 W.

A—0 to 3 inches; dark brown (10YR 3/3) loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium and few coarse roots; about 5 percent gravel; neutral; clear wavy boundary.

Bt—3 to 11 inches; dark reddish brown (5YR 3/3) loam, dark reddish brown (5YR 3/2) moist; moderate medium prismatic structure parting to moderate medium and fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; continuous thin clay films on faces of peds; about 5 percent gravel; neutral; abrupt smooth boundary.

R—11 inches; hard, quartzitic sandstone.

The depth to bedrock ranges from 8 to 20 inches. The A horizon has hue of 10YR or 7.5YR. It is moderately acid to neutral. The Bt horizon has hue of 5YR or 2.5YR. It is loam, clay loam, sandy clay loam, gravelly loam, gravelly clay loam, or gravelly sandy clay loam.

Cific Series

The Cific series consists of moderately deep, well drained soils on strath terraces. These soils formed in glacial drift underlain by residuum derived dominantly from variegated shale. Slopes are 1 to 15 percent. Elevation is 7,100 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Cific very gravelly sandy loam that has a slope of 6 percent, in an area of Cific-Hoodle complex, sloping; about 200 feet west and 250 feet south of the northeast corner of sec. 18, T. 27 N., R. 101 W.

A—0 to 2 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, dark brown (10YR 3/3) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; about 35 percent gravel and 15 percent cobbles; gravel, cobbles, and stones covering about 40 percent of the surface; mildly alkaline; abrupt smooth boundary.

BAt—2 to 7 inches; brown (7.5YR 4/2) gravelly fine sandy loam, dark brown (7.5YR 3/2) moist; weak coarse prismatic structure parting to weak medium subangular blocky; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few thin clay films on faces of peds; about 14 percent gravel and 2 percent cobbles; moderately alkaline; clear wavy boundary.

Bt1—7 to 14 inches; reddish brown (5YR 4/4) gravelly clay loam, reddish brown (5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; continuous moderately thick clay films on faces of peds; about 14 percent gravel and 2 percent cobbles; moderately alkaline; clear wavy boundary.

Bt2—14 to 18 inches; brown (10YR 5/3) gravelly loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few thin clay films on faces of peds; about 16 percent gravel and 2 percent cobbles; moderately alkaline; clear wavy boundary.

Bk1—18 to 24 inches; brown (10YR 5/3) gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; about 20 percent gravel and 2 percent cobbles; violently effervescent; disseminated carbonates, many medium and fine soft masses and threads of carbonates, and thin pendants of carbonates on rock fragments; very strongly alkaline; clear wavy boundary.

2Bk2—24 to 30 inches; olive (5Y 5/4) channery loam, olive (5Y 4/4) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; about 15 percent channery fragments; violently effervescent; disseminated carbonates, few fine soft masses and filaments of carbonates, and thin pendants of carbonates on rock fragments; very strongly alkaline; abrupt wavy boundary.

2Cr—30 inches; variegated, soft shale.

About 10 to 40 percent of the surface is covered with gravel, 0 to 25 percent with cobbles, and 5 to 20 percent with stones. The depth to bedrock ranges from 20 to 40 inches. The control section is 20 to 35 percent clay.

The A horizon is 10 to 35 percent gravel, 0 to 5 percent cobbles, and 0 to 10 percent stones. It has hue of 10YR or 7.5YR.

The Bt horizon has hue of 10YR to 2.5YR. It is gravelly sandy clay loam, gravelly clay loam, sandy clay loam, or clay loam. The content of rock fragments is 5 to 25 percent. Reaction is mildly alkaline or moderately alkaline.

The Bk horizon has hue of 10YR to 5YR. It is very fine sandy loam, sandy clay loam, clay loam, gravelly loam, channery loam, or gravelly sandy clay loam. The content of rock fragments is 5 to 35 percent. Reaction is moderately alkaline to very strongly alkaline.

The 2Bk horizon is loam, clay loam, sandy clay loam, gravelly loam, or gravelly sandy clay loam. The content of hard and soft shale fragments ranges from 5 to 35 percent. Reaction is strongly alkaline or very strongly alkaline.

Clarkelen Series

The Clarkelen series consists of very deep, well drained soils on flood plains. These soils formed in alluvium derived from various sources. Slopes are 0 to 3 percent. Elevation is 5,300 to 6,200 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Clarkelen sandy loam that has a slope of 1 percent, in an area of Haverdad-Clarkelen complex, 0 to 3 percent slopes; about 4,250 feet east and 1,600 feet north of the southwest corner of sec. 21, T. 36 N., R. 90 W.

A1—0 to 2 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; mildly alkaline; abrupt smooth boundary.

A2—2 to 5 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak thick platy structure parting to weak fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; mildly alkaline; abrupt smooth boundary.

C—5 to 60 inches; yellowish brown (10YR 5/4) sandy loam stratified with thin lenses of loam and loamy sand; yellowish brown (10YR 5/4) moist; few fine faint brownish yellow (10YR 6/8) mottles; single grain; loose, nonsticky and nonplastic; slightly effervescent; disseminated carbonates; mildly alkaline.

The control section is 0 to 15 percent rock fragments. The average content of clay ranges from 8 to 18 percent. Reaction is mildly alkaline or moderately alkaline throughout the profile. The A and C horizons have hue of 2.5Y or 10YR. The C horizon is dominantly loam or sandy loam but has thin strata of loamy sand, loamy coarse sand, very fine sandy loam, sandy clay loam, or clay loam.

Clifsand Series

The Clifsand series consists of very deep, well drained soils on terraces, on the crests of ridges and hills, and on dissected fan aprons. These soils formed in alluvium derived from various sources. Slopes are 2 to 30 percent. Elevation is 4,800 to 6,200 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Clifsand gravelly loam that has a slope of 5 percent, in an area of Clifsand-Persayo complex, hilly; about 600 feet north and 700 feet east of the southwest corner of sec. 28, T. 36 N., R. 93 W.

A—0 to 3 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; about 20 percent gravel; gravel covering about 50 percent of the surface; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

Bk1—3 to 7 inches; brown (10YR 5/3) gravelly loam, brown (10YR 4/3) moist; weak medium and coarse granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; about 20 percent gravel; strongly effervescent; disseminated carbonates and few medium soft masses and seams of carbonates; moderately alkaline; abrupt wavy boundary.

Bk2—7 to 60 inches; very pale brown (10YR 7/3) very gravelly sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots to a depth of 12 inches and few very fine, fine, and medium roots to a depth of 24 inches; about 50 percent gravel; strongly effervescent; disseminated carbonates, common medium and large soft masses of carbonates, and common thin pendants of carbonates on the bottom of coarse fragments; strongly alkaline.

About 15 to 50 percent of the surface is covered with gravel. The calcium carbonate equivalent is 8 to 20 percent in the calcic horizon.

The A and Bk horizons have hue of 2.5Y or 10YR. The A horizon is 5 to 30 percent gravel and 0 to 10 percent cobbles. It is mildly alkaline or moderately alkaline. The Bk1 horizon is gravelly loam or very gravelly sandy loam. It is mildly alkaline to strongly alkaline. The Bk2 horizon commonly is very gravelly sandy loam or very cobbly sandy loam, but in some pedons it has a few thin lenses of very gravelly sand or very gravelly loamy sand. It is moderately alkaline or strongly alkaline.

Cloud Peak Series

The Cloud Peak series consists of moderately deep, well drained soils on mountainsides. These soils formed in residuum and slope alluvium derived dominantly from limestone. Slopes are 10 to 30 percent. Elevation is 7,500 to 9,000 feet. The annual precipitation is 15 to 22 inches, the average annual air temperature is 33 to 38 degrees F, and the frost-free period is less than 60 days.

Typical pedon of a Cloud Peak gravelly loam that has a slope of 15 percent, in an area of Cloud Peak-Farlow complex, 10 to 30 percent slopes; about 550 feet east and 1,650 feet north of the southwest corner of sec. 5, T. 41 N., R. 107 W.

Oi—2 inches to 0; undecomposed forest litter.

E—0 to 1 inch; brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many fine and few medium and coarse roots; about 20 percent gravel; slightly effervescent; disseminated carbonates; slightly acid; abrupt smooth boundary.

Bt—1 to 6 inches; yellowish brown (10YR 5/4) very channery clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to weak medium and coarse subangular blocky; hard, friable, sticky and plastic; many fine and few medium and coarse roots; about 35 percent channery fragments and 15 percent flagstones; common thick clay films on faces of peds; slightly effervescent; disseminated carbonates; neutral; clear wavy boundary.

Btk—6 to 15 inches; yellowish brown (10YR 5/4) extremely channery clay loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many fine and few medium and coarse roots to a depth of 8 inches and common fine and few medium and coarse roots between depths of 8 and 15 inches; few thin clay films on faces of peds; about 50 percent channery fragments and 20 percent flagstones; violently effervescent; disseminated carbonates and many moderately thick coatings of carbonates on the bottom of coarse fragments; mildly alkaline; gradual wavy boundary.

Bk—15 to 30 inches; very pale brown (10YR 7/3) extremely channery loam, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine and few medium and coarse roots; about 50 percent channery fragments and 20 percent flagstones; violently effervescent; disseminated carbonates and many moderately thick coatings of carbonates on the bottom of coarse fragments; moderately alkaline; abrupt wavy boundary.

R—30 inches; hard limestone.

The depth to bedrock ranges from 20 to 40 inches. The control section is 35 to 70 percent rock fragments.

The E horizon is 0 to 35 percent gravel and channery fragments. It is slightly acid or neutral. The Bt and Bk horizons have hue of 10YR or 7.5YR. The Bt horizon is very channery clay loam, very gravelly silty clay loam, or very cobbly clay loam. It is 35 to 70 percent gravel, channery fragments, and flagstones. It is neutral or mildly alkaline. The Bk horizon is very gravelly silty clay loam, very channery clay loam, extremely channery loam, or extremely channery clay loam. It is 35 to 70 percent gravel, channery fragments, cobbles, and flagstones. It is mildly alkaline or moderately alkaline.

Coalmont Series

The Coalmont series consists of moderately deep, well drained soils on ridges and hillslopes. These soils formed in residuum and slope alluvium derived dominantly from shale interbedded with sandstone. Slopes are 2 to 20 percent. Elevation is 6,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Coalmont loam that has a slope of 15 percent, in an area of Coalmont-Milren-Cragosen complex, rolling; about 200 feet north and 2,300 feet west of the southeast corner of sec. 15, T. 32 N., R. 93 W.

A—0 to 2 inches; grayish brown (2.5Y 5/2) loam, dark grayish brown (2.5Y 4/2) moist; moderate medium granular structure; hard, firm, sticky and plastic; common very fine, fine, and medium roots; mildly alkaline; abrupt smooth boundary.

Bt—2 to 16 inches; olive (5Y 5/3) clay, olive (5Y 4/3) moist; moderate medium prismatic structure parting to moderate medium and fine angular blocky; very hard, firm, very sticky and very plastic; common very fine, fine, and medium roots; continuous thin and few thick clay films on vertical faces of peds; slightly effervescent; disseminated carbonates; mildly alkaline; clear wavy boundary.

Bk—16 to 23 inches; olive (5Y 5/3) clay loam, olive (5Y 5/3) moist; moderate medium and fine angular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; violently effervescent; many medium soft masses and seams of carbonates; few fine crystals of gypsum; moderately alkaline; gradual wavy boundary.

Cy—23 to 30 inches; olive (5Y 5/3) clay loam, olive (5Y 5/6) moist; common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure; hard, firm, sticky and plastic; strongly effervescent; disseminated carbonates; few small soft masses of gypsum; moderately alkaline; gradual wavy boundary.

Cr—30 inches; soft shale.

The depth to bedrock ranges from 20 to 40 inches. Depth to the base of the argillic horizon ranges from 13 to 21 inches. The content of rock fragments is 0 to 15 percent throughout the profile.

The A horizon has hue of 2.5Y or 10YR. The Bt, Bk, and C horizons have hue of 5Y to 10YR. They are clay loam or clay. The Bt horizon is 35 to 50 percent clay. It is mildly alkaline or moderately alkaline.

Conpeak Series

The Conpeak series consists of very shallow or shallow, well drained soils on ridges, hills, and pediments. These soils formed in residuum and slope alluvium derived dominantly from semiconsolidated sandstone. Slopes are 2 to 45 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Conpeak fine sandy loam that has a slope of 2 percent, in an area of Cryluha-Conpeak association, 1 to 15 percent slopes; about 800 feet west and 1,400 feet north of the southeast corner of sec. 1, T. 27 N., R. 100 W.

A—0 to 2 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; about 20 percent semiconsolidated sandstone fragments; semiconsolidated sandstone and siltstone fragments covering about 30 percent of the surface; strongly effervescent; disseminated carbonates and common thin coatings of carbonates on the bottom of sandstone fragments; mildly alkaline; abrupt smooth boundary.

Bk1—2 to 6 inches; pale brown (10YR 6/3) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; about 20 percent semiconsolidated sandstone fragments; strongly effervescent; disseminated carbonates and many thin coatings of carbonates on the bottom of sandstone fragments; moderately alkaline; clear wavy boundary.

Bk2—6 to 14 inches; light brownish gray (2.5Y 6/2) fine sandy loam, grayish brown (2.5Y 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; about 40 percent semiconsolidated sandstone fragments; strongly effervescent; disseminated carbonates, many fine and medium soft masses and filaments of carbonates, and thin coatings of carbonates on the bottom of sandstone fragments; moderately alkaline; abrupt wavy boundary.

Cr—14 inches; soft, fine grained sandstone.

The depth to bedrock ranges from 8 to 20 inches. About 5 to 40 percent of the surface is covered with semiconsolidated sandstone fragments. The control section is 35 to 60 percent semiconsolidated sandstone fragments that break down upon treatment with sodium hexametaphosphate. The calcium carbonate equivalent is 15 to 40 percent in the calcic horizon.

The A and Bk horizons have hue of 2.5Y or 10YR. The A horizon is 10 to 50 percent semiconsolidated sandstone fragments. It is mildly alkaline or moderately alkaline. The Bk horizon is fine sandy loam or loam. It is 10 to 18 percent clay and 10 to 60 percent semiconsolidated sandstone and siltstone fragments. It is moderately alkaline or strongly alkaline.

Countryman Series

The Countryman series consists of very deep, somewhat poorly drained soils on flood plains and in drainageways. These soils formed in alluvium derived from various sources. Slopes are 0 to 3 percent. Elevation is 6,500 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 115 days.

Typical pedon of a Countryman loam that has a slope of 1 percent, in an area of Iceslew-Countryman complex, 0 to 3 percent slopes; about 1,900 feet east and 400 feet north of the southwest corner of sec. 11, T. 30 N., R. 90 W.

A—0 to 2 inches; light brownish gray (10YR 6/2) loam, dark brown (10YR 3/3) moist; moderate very fine granular structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; many very fine pores; slightly effervescent; disseminated carbonates; moderately alkaline; clear smooth boundary.

C1—2 to 7 inches; light gray (10YR 7/1) very fine sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; few very fine pores; slightly effervescent; disseminated carbonates; moderately alkaline; clear smooth boundary.

C2—7 to 15 inches; light gray (10YR 7/1) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few medium and coarse roots; many very fine pores; strongly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

C3—15 to 21 inches; light brownish gray (10YR 6/2) sandy loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few medium and coarse roots; common fine pores; strongly effervescent; disseminated carbonates; moderately alkaline; clear smooth boundary.

Cg—21 to 60 inches; grayish brown (2.5Y 5/2) sandy loam stratified with thin lenses of fine sandy loam and loam; dark grayish brown (2.5Y 4/2) moist; few fine prominent dark gray (5Y 4/1) mottles; massive; hard, very friable, slightly sticky and slightly plastic; few medium roots; common fine pores; strongly effervescent; disseminated carbonates and few fine and medium soft masses of carbonates; moderately alkaline.

Distinct or prominent mottles that have hue of 2.5Y or 5Y or are neutral in hue are at a depth of 20 to 40 inches. The soils are occasionally or frequently flooded from March through July. A fluctuating water table is at a depth of 1.5 to 3.5 feet from May through September. The average content of clay in the particle-size control section ranges from 10 to 18 percent clay. Reaction is mildly alkaline or moderately alkaline throughout the profile. The electrical conductivity is 4 to 8 millimhos per centimeter in the A horizon and 2 to 8 millimhos per centimeter in the C horizon.

The A horizon has hue of 2.5Y to 7.5YR. The C horizon has hue of 5Y to 10YR. It is dominantly sandy loam, very fine sandy loam, or loam stratified with thin lenses of loamy sand, loamy fine sand, or clay loam. In some pedons, however, layers of very gravelly sand are below a depth of 40 inches.

Coutis Series

The Coutis series consists of very deep, well drained soils in drainageways and depressional areas among rolling hills. These soils formed in alluvium derived from various sources. Slopes are 2 to 15 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days. The soils receive additional moisture from melting snowdrifts.

Typical pedon of a Coutis fine sandy loam that has a slope of 3 percent, in an area of Coutis fine sandy loam, rolling; about 1,850 feet west and 300 feet north of the southeast corner of sec. 5, T. 27 N., R. 101 W.

A1—0 to 4 inches; dark brown (10YR 4/3) fine sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; neutral; abrupt smooth boundary.

A2—4 to 30 inches; dark grayish brown (10YR 4/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak coarse prismatic structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots to a depth of 10 inches and common very fine, fine, and medium roots between depths of 10 and 30 inches; mildly alkaline; gradual wavy boundary.

C—30 to 60 inches; dark brown (10YR 4/3) fine sandy loam, brown (10YR 4/3) moist; massive; loose, nonsticky and nonplastic; few very fine, fine, and medium roots; mildly alkaline.

Layers of organic material about 0.5 to 1.0 inch thick are on the surface in some pedons. The mollic epipedon is 16 to 38 inches thick. The A and C horizons have hue of 10YR or 7.5YR. They are neutral or mildly alkaline.

Crago Series

The Crago series consists of very deep, well drained soils on fan aprons, foot slopes, and piedmonts. These soils formed in alluvium derived dominantly from limestone. Slopes are 1 to 10 percent. Elevation is 5,300 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Crago gravelly loam that has a slope of 6 percent, in an area of Crago-Pensore association, undulating; about 1,400 feet east and 600 feet north of the southwest corner of sec. 32, T. 40 N., R. 92 W.

A—0 to 3 inches; brown (10YR 5/3) gravelly loam, brown (10YR 4/3) moist; moderate very fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine and few medium roots; about 20 percent gravel and 10 percent cobbles; gravel and cobbles covering about 30 percent of the surface; strongly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

Bk—3 to 60 inches; pale brown (10YR 6/3) extremely gravelly loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots to a depth of 14 inches and few very fine, fine, and medium roots between depths of 14 and 18 inches;

about 40 percent gravel, 15 percent cobbles, and 5 percent stones; violently effervescent; disseminated carbonates and a few thin pendants of carbonates on rock fragments; strongly alkaline.

The content of rock fragments is 35 to 70 percent in the control section and 20 to 50 percent in the A horizon. The Bk horizon is 18 to 30 percent clay. It is moderately alkaline or strongly alkaline. The calcium carbonate equivalent in this horizon is 40 to 60 percent.

Cragosen Series

The Cragosen series consists of shallow, well drained soils on hills, terrace escarpments, and ridges. These soils formed in residuum and slope alluvium derived dominantly from sandstone and conglomerate. Slopes are 5 to 60 percent. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Cragosen gravelly loam that has a slope of 20 percent, in an area of Cragosen-Carmody-Blazon complex, hilly; about 1,100 feet south and 3,200 feet west of the northeast corner of sec. 16, T. 33 N., R. 89 W.

A—0 to 2 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; about 20 percent gravel and 5 percent cobbles; gravel and cobbles covering about 30 percent of the surface; strongly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

Bw—2 to 6 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; weak fine subangular blocky structure parting to moderate very fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; about 25 percent gravel and 5 percent cobbles; strongly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

Bk—6 to 12 inches; light gray (2.5Y 7/2) very gravelly sandy loam, light brownish gray (2.5Y 6/2) moist; hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; about 40 percent gravel and 5 percent cobbles; strongly effervescent; disseminated carbonates and common large seams and soft masses of carbonates; moderately alkaline; abrupt wavy boundary.

Cr—12 inches; soft sandstone.

About 30 to 60 percent of the surface is covered with gravel and cobbles. The depth to bedrock ranges from 10 to 20 inches. The control section is 25 to 45 percent gravel, 5 to 20 percent cobbles, and 10 to 18 percent clay.

The A and Bw horizons are mildly alkaline or moderately alkaline. The A horizon has hue of 10YR or 7.5YR. The Bw horizon is 25 to 60 percent rock fragments. The Bk horizon has hue of 5Y to 10YR. It is very gravelly loam or very gravelly sandy loam. It is 35 to 60 percent rock fragments. It mildly alkaline to strongly alkaline.

Cryluha Series

The Cryluha series consists of moderately deep, well drained soils on pediments, fan aprons, and hillslopes. These soils formed in residuum and slope alluvium derived dominantly from weakly consolidated sandstone. Slopes are 1 to 15 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Cryluha gravelly sandy loam that has a slope of 6 percent, in an area of Cryluha-Conpeak association, 1 to 15 percent slopes; about 1,000 feet east and 2,350 feet north of the southwest corner of sec. 13, T. 27 N., R. 100 W.

A1—0 to 5 inches; brown (10YR 5/3) gravelly sandy loam, brown (10YR 4/3) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; about 20 percent gravel; gravel covering about 25 percent of the surface; strongly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

A2—5 to 13 inches; pale brown (10YR 6/3) gravelly loam, yellowish brown (10YR 5/4) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; about 20 percent gravel; strongly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

Bk1—13 to 19 inches; very pale brown (10YR 7/3) gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; weak very fine subangular blocky structure parting to weak very fine granular; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; about 20 percent gravel; strongly effervescent; disseminated carbonates and many large masses and seams of carbonates; moderately alkaline; clear wavy boundary.

Bk2—19 to 27 inches; very pale brown (10YR 7/3) gravelly loam, pale brown (10YR 6/3) moist; moderate medium angular blocky structure parting to moderate very fine angular blocky; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; about 20 percent gravel; strongly effervescent; disseminated carbonates and many fine soft masses and seams of carbonates; moderately alkaline; abrupt wavy boundary.

Cr—27 inches; weakly consolidated, calcareous sandstone.

About 5 to 35 percent of the surface is covered with sandstone and siltstone gravel. The depth to bedrock ranges from 20 to 40 inches.

The A and Bk horizons have hue of 2.5Y or 10YR. The A horizon is 15 to 35 percent channery fragments or gravel. The Bk horizon is fine sandy loam, sandy loam, or loam in the fine-earth fraction. The average content of channery fragments and gravel ranges from 15 to 35 percent. This horizon is moderately alkaline or strongly alkaline. The calcium carbonate equivalent in this horizon is 15 to 30 percent.

Cushool Series

The Cushool series consists of moderately deep, well drained soils on fan aprons and hillslopes. These soils formed in residuum and slope alluvium derived dominantly from sandstone. Slopes are 3 to 25 percent. Elevation is 5,700 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Cushool sandy loam that has a slope of 6 percent, in an area of Cushool-Rock River association, 1 to 15 percent slopes; about 2,300 feet east and 3,200 feet south of the northwest corner of sec. 9, T. 32 N., R. 93 W.

A—0 to 3 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; moderate fine and medium granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; mildly alkaline; abrupt smooth boundary.

Bt1—3 to 7 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; very dark grayish brown (10YR 3/2) coatings on faces of peds; moderate medium prismatic structure parting to strong fine and medium subangular blocky; hard, friable, sticky and plastic; continuous thick clay films on faces of peds; common very fine and fine and few medium roots; mildly alkaline; clear wavy boundary.

Bt2—7 to 17 inches; brown (10YR 5/3) sandy clay loam, brown (10YR 4/3) moist; very dark grayish brown (10YR 3/2) coatings on faces of peds; moderate coarse prismatic structure parting to strong coarse subangular blocky; very hard, very firm, sticky and plastic; continuous thick clay films on faces of peds; common very fine and fine and few medium roots; moderately alkaline; clear wavy boundary.

Btk—17 to 23 inches; pale brown (10YR 6/3) sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium prismatic structure; hard, very friable, slightly sticky and plastic; continuous thin clay films on faces of peds; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates and common medium soft masses and seams of carbonates; strongly alkaline; abrupt wavy boundary.

Bk—23 to 35 inches; very pale brown (10YR 7/3) fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, slightly sticky and plastic; strongly effervescent; disseminated carbonates and many medium and large soft masses and seams of carbonates; strongly alkaline; abrupt wavy boundary.

Cr—35 inches; soft, fine grained sandstone.

The depth to bedrock ranges from 20 to 40 inches. The A and Bt horizons are mildly alkaline or moderately alkaline. They have hue of 10YR or 7.5YR. The A horizon is 0 to 15 percent gravel. The Bt horizon is sandy clay loam or gravelly sandy clay loam. It is 20 to 35 percent clay and 0 to 25 percent gravel. The Bk horizon has hue of 2.5Y or 10YR. It is sandy loam, fine sandy loam, loam, or sandy clay loam. It is moderately alkaline or strongly alkaline.

Dahlquist Series

The Dahlquist series consists of very deep, well drained soils on fan aprons and piedmonts. These soils formed in gravelly alluvium derived from various sources. Slopes are 2 to 12 percent. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Dahlquist very cobbly loam that has a slope of 2 percent, in an area of Dahlquist-Rock River complex, 1 to 12 percent slopes; about 300 feet south and 1,800 feet west of the northeast corner of sec. 6, T. 28 N., R. 93 W.

A—0 to 3 inches; brown (10YR 5/3) very cobbly loam, dark yellowish brown (10YR 4/3) moist; weak and moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; about 30 percent gravel and 30 percent cobbles; gravel, cobbles, and stones covering about 20 percent of the surface; neutral; abrupt smooth boundary.

Btk1—3 to 9 inches; brown (10YR 5/3) very gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very firm, sticky and plastic; many very fine and fine and common medium roots; common moderately thick clay films on faces of peds; about 35 percent gravel and 15 percent cobbles; noneffervescent matrix; common thick carbonate pendants on the bottom of rock fragments; neutral; clear smooth boundary.

Btk2—9 to 14 inches; yellowish brown (10YR 5/4) very gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine, fine, and medium roots; common moderately thick clay films on faces of peds; about 35 percent gravel and 15 percent cobbles; strongly effervescent; disseminated carbonates and common thick pendants of carbonates on the bottom of rock fragments; mildly alkaline; gradual wavy boundary.

Bk—14 to 60 inches; light yellowish brown (10YR 6/4) extremely cobbly sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, firm, slightly sticky and nonplastic; about 35 percent gravel, 30 percent cobbles, and 5 percent stones; strongly effervescent; disseminated carbonates, common thick seams of carbonates, and common thick pendants of carbonates on the bottom of rock fragments; strongly alkaline.

About 20 to 50 percent of the surface is covered with gravel, cobbles, stones, or boulders. Some pedons have a Bt horizon above the Btk1 horizon. The Btk and Bt horizons are 18 to 35 percent clay. They are 30 to 45 percent gravel, 5 to 30 percent cobbles, and 0 to 15 percent stones. Reaction is neutral or mildly alkaline in the A, Btk, and Bt horizons. The Bk horizon is loam or sandy loam in the fine-earth fraction. It is 25 to 45 percent gravel, 15 to 40 percent cobbles, and 5 to 15 percent stones. It is moderately alkaline or strongly alkaline.

Decross Series

The Decross series consists of very deep, well drained soils on fan aprons and toe slopes. These soils formed in alluvium derived from various sources. Slopes are 1 to 25 percent. Elevation is 6,800 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Decross loam that has a slope of 5 percent, in an area of Woosley-Decross-Starman association, rolling; about 3,000 feet north and 2,000 feet west of the southeast corner of sec. 6, T. 40 N., R. 89 W.

A—0 to 3 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; about 5 percent gravel; mildly alkaline; abrupt wavy boundary.

Bt1—3 to 10 inches; very dark grayish brown (10YR 3/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; continuous thin clay films on faces of peds; about 5 percent gravel; mildly alkaline; clear wavy boundary.

Bt2—10 to 21 inches; very dark grayish brown (10YR 3/2) clay loam, very dark grayish brown (10YR 3/2) moist; strong medium prismatic structure parting to strong fine angular blocky; hard, friable, sticky and plastic; common very fine and fine and few medium roots; continuous thick clay films on faces of peds; about 5 percent gravel; mildly alkaline; clear wavy boundary.

Btk1—21 to 28 inches; brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; strong medium prismatic structure parting to strong fine angular blocky; hard, friable, sticky and plastic; common very fine and fine and few medium roots; continuous thick clay films on faces of peds; about 10 percent gravel; slightly effervescent; disseminated carbonates and common fine soft masses, threads, and seams of carbonates; moderately alkaline; clear wavy boundary.

Btk2—28 to 38 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate fine angular blocky; hard, very friable, sticky and plastic; few very fine and fine roots; continuous thick clay films on faces of peds; about 10 percent gravel; strongly effervescent; disseminated carbonates and many fine and medium soft masses, threads, and seams of carbonates; moderately alkaline; clear wavy boundary.

Bk—38 to 60 inches; very pale brown (10YR 7/3) loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; about 10 percent gravel; violently effervescent; disseminated carbonates, many very fine and fine soft masses, threads, and seams of carbonates, and thin coatings of carbonates on pebbles; moderately alkaline.

The mollic epipedon is 16 to 40 inches thick. The calcium carbonate equivalent is 15 to 40 percent in the calcic horizon. The A and Bt horizons are neutral or mildly alkaline. The Bt horizon has hue of 7.5YR or 10YR. It is loam or clay loam. The Bk horizon has hue of 2.5Y or 10YR. It is loam or clay loam in the fine-earth fraction. It is 0 to 35 percent gravel. It is moderately alkaline or strongly alkaline.

Decross Variant

The Decross Variant consists of very deep, well drained soils in kettles and drainageways. These soils formed in alluvium derived dominantly from glacial deposits. Slopes are 1 to 8 percent. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

Typical pedon of a Decross Variant sandy loam that has a slope of 2 percent, in an area of Brownsto very bouldery-Decross Variant-Brownsto complex, hilly; about 1,200 feet east and 250 feet south of the northwest corner of sec. 22, T. 41 N., R. 106 W.

A—0 to 2 inches; yellowish brown (10YR 5/4) sandy loam, dark brown (10YR 3/3) moist; weak medium platy structure parting to weak fine granular; slightly hard, friable, nonsticky and nonplastic; many fine and common medium roots; moderately alkaline; abrupt smooth boundary.

BA—2 to 7 inches; yellowish brown (10YR 5/4) sandy clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many fine and common medium roots; moderately alkaline; clear smooth boundary.

Bw—7 to 14 inches; dark yellowish brown (10YR 4/4) sandy clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, firm, sticky and slightly plastic; many fine and common medium roots; moderately alkaline; gradual smooth boundary.

Bk1—14 to 36 inches; light yellowish brown (10YR 6/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, firm, sticky and slightly plastic; few fine and medium roots; strongly effervescent; disseminated carbonates; strongly alkaline; gradual wavy boundary.

Bk2—36 to 60 inches; light yellowish brown (10YR 6/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots; about 10 percent gravel; strongly effervescent; disseminated carbonates and common thin coatings of carbonates on pebbles; strongly alkaline.

The Bw and Bk horizons are moderately alkaline or strongly alkaline.

Diamondville Series

The Diamondville series consists of moderately deep, well drained soils on hillslopes. These soils formed in residuum and slope alluvium derived dominantly from sandstone. Slopes are 1 to 15 percent. Elevation is 5,300 to 7,500 feet. The annual precipitation is 9 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Diamondville loam that has a slope of 4 percent, in an area of Diamondville-Forelle association, rolling; about 2,200 feet south and 1,600 feet east of the northwest corner of sec. 24, T. 33 N., R. 97 W.

A—0 to 2 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak very thin platy structure parting to weak very fine granular; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine and fine vesicular pores; mildly alkaline; abrupt smooth boundary.

Bt1—2 to 6 inches; brown (7.5YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; weak thin platy structure parting to weak very fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; few thin clay films on vertical faces of peds; many very fine, fine, and medium roots; mildly alkaline; clear wavy boundary.

Bt2—6 to 13 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, sticky and plastic; continuous thick clay films on faces of peds; common very fine, fine, and medium roots; moderately alkaline; clear wavy boundary.

Btk—13 to 18 inches; pale brown (10YR 6/3) loam, brown (7.5YR 5/4) moist; weak medium prismatic structure parting to moderate fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; few thin clay films on vertical faces of peds; common fine and medium roots; violently effervescent; disseminated carbonates and common fine soft masses and seams of carbonates; moderately alkaline; clear wavy boundary.

Bk—18 to 24 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to weak fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; violently effervescent; disseminated carbonates and many medium soft masses and seams of carbonates; strongly alkaline; abrupt wavy boundary.

Cr—24 inches; yellow, soft sandstone.

The depth to bedrock ranges from 20 to 40 inches. The depth to uniformly calcareous material is 12 to 18 inches.

The A horizon is neutral or mildly alkaline, and the Bt horizon is mildly alkaline or moderately alkaline. The Bt horizon has hue of 7.5YR or 10YR. It is sandy clay loam or clay loam. The control section is 20 to 35 percent clay. The Bk horizon has hue of 2.5Y or 10YR. It is loam, sandy loam, or sandy clay loam. It is 0 to 15 percent gravel. It is moderately alkaline or strongly alkaline.

Effington Series

The Effington series consists of very deep, well drained soils in drainageways. These soils formed in alluvium derived dominantly from sodic shale. Slopes are 0 to 8 percent. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of an Effington loam that has a slope of 1 percent, in an area of Youngston-Effington loams, 0 to 6 percent slopes; about 2,400 feet west and 50 feet south of the northeast corner of sec. 2, T. 34 N., R. 93 W.

E—0 to 4 inches; pale brown (10YR 6/3) loam, light olive brown (2.5Y 5/4) moist; weak fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; many very fine and fine vesicular pores; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

Btn1—4 to 9 inches; dark yellowish brown (10YR 4/4) clay loam, brown (10YR 4/3) moist; moderate coarse prismatic structure parting to strong coarse angular blocky; extremely hard, very firm, sticky and plastic; common very fine and fine and few medium roots; continuous thick clay films on faces of peds; slightly effervescent; disseminated carbonates; exchangeable sodium percentage of more than 15; very strongly alkaline; abrupt wavy boundary.

Btn2—9 to 16 inches; yellowish brown (10YR 5/4) clay loam, yellowish brown (10YR 5/4) moist; strong coarse angular blocky structure parting to strong medium subangular blocky; very hard, firm, sticky and slightly plastic; few fine and medium roots; continuous thick clay films on faces of peds; slightly effervescent; disseminated carbonates; exchangeable sodium percentage of more than 15; very strongly alkaline; gradual wavy boundary.

Bk1—16 to 25 inches; yellowish brown (10YR 5/4) clay loam, light olive brown (2.5Y 5/4) moist; moderate medium subangular blocky structure; hard, friable, very sticky and plastic; strongly effervescent; disseminated carbonates and common fine soft masses and seams of carbonates; very strongly alkaline; gradual wavy boundary.

Bk2—25 to 50 inches; light yellowish brown (2.5Y 6/4) clay loam, light olive brown (2.5Y 5/4) moist; weak medium subangular blocky structure; slightly hard, very friable, sticky and plastic; strongly effervescent; disseminated carbonates and common fine seams of carbonates; very strongly alkaline; gradual wavy boundary.

Bk3—50 to 60 inches; light yellowish brown (2.5Y 6/4) sandy loam, light olive brown (2.5Y 5/4) moist; single grain; loose, slightly sticky and nonplastic; strongly effervescent; disseminated carbonates; very strongly alkaline.

The E, Btn, and Bk horizons have hue of 2.5Y or 10YR. The Btn horizon is clay, sandy clay, or clay loam. It is 35 to 55 percent clay. The exchangeable sodium percentage in this horizon is 15 to 30. The Bk horizon is dominantly clay loam or sandy clay loam, but it has layers of sandy loam below a depth of 40 inches in some pedons. It is strongly alkaline or very strongly alkaline.

Elkol Series

The Elkol series consists of very deep, well drained soils on terraces and fan aprons. These soils formed in alluvium derived from various sources. Slopes are 0 to 3 percent. Elevation is 5,300 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of an Elkol silty clay loam that has a slope of 2 percent, in an area of Absher-Elkol complex, 0 to 4 percent slopes; about 400 feet west and 200 feet south of the northeast corner of sec. 19, T. 34 N., R. 96 W.

A—0 to 2 inches; brown (10YR 5/3) silty clay loam, brown (10YR 4/3) moist; moderate very fine granular structure; soft, firm, sticky and plastic; common fine, medium, and coarse roots; strongly effervescent; disseminated carbonates; strongly alkaline; clear smooth boundary.

C1—2 to 14 inches; brown (10YR 4/3) clay, dark brown (7.5YR 4/4) moist; weak thick platy and weak medium angular blocky structure; hard, very firm, very sticky and very plastic; common fine, medium, and coarse roots; strongly effervescent; disseminated carbonates; strongly alkaline; clear smooth boundary.

C2—14 to 54 inches; brown (7.5YR 5/4) clay, brown (7.5YR 4/4) moist; moderate medium and coarse angular blocky fragments; very hard, very firm, very sticky and very plastic; few fine, medium, and coarse roots to a depth of 30 inches; strongly effervescent; disseminated carbonates; strongly alkaline; exchangeable sodium percentage of more than 15; abrupt wavy boundary.

2C3—54 to 60 inches; light gray (10YR 7/2) very fine sandy loam, grayish brown (10YR 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; slightly effervescent; disseminated carbonates; strongly alkaline.

The control section is 35 to 45 percent clay. The A and C horizons have hue of 10YR or 7.5YR. The C horizon is clay, silty clay, or clay loam. The exchangeable sodium percentage in this horizon is 15 to 30. The 2C horizon has hue of 7.5YR or 10YR. Reaction is strongly alkaline or very strongly alkaline in the C and 2C horizons. Some pedons do not have a 2C horizon.

Emblem Series

The Emblem series consists of very deep, well drained soils on dissected fan aprons and terraces. These soils formed in alluvium derived from various sources. Slopes are 1 to 8 percent. Elevation is 4,800 to 6,200 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of an Emblem sandy loam that has a slope of 1 percent, in an area of Emblem-Clifsand-Rairdent complex, 1 to 25 percent slopes; about 3,200 feet north and 200 feet east of the southwest corner of sec. 6, T. 36 N., R. 93 W.

A—0 to 2 inches; light yellowish brown (10YR 6/4) sandy loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; gravel covering about 20 percent of the surface; moderately alkaline; clear wavy boundary.

Bw—2 to 10 inches; yellowish brown (10YR 5/4) loam, brown (10YR 4/3) moist; weak medium subangular blocky structure parting to moderate fine subangular blocky; hard, very firm, slightly sticky and slightly plastic; common very fine and fine roots; slightly effervescent; disseminated carbonates; mildly alkaline; clear wavy boundary.

Bk1—10 to 20 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak medium subangular blocky structure parting to moderate very fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots to a depth of 15 inches and few very fine and fine roots between depths of 15 and 20 inches; about 10 percent gravel; violently effervescent; disseminated carbonates, many very fine and fine soft masses of carbonates, and thin coatings of carbonates on the bottom of pebbles; strongly alkaline; clear smooth boundary.

2Bk2—20 to 30 inches; pale brown (10YR 6/3) gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; about 30 percent gravel; violently effervescent; disseminated carbonates, many fine and medium soft masses and seams of carbonates, and moderately thick coatings of carbonates on the bottom of pebbles; moderately alkaline; clear wavy boundary.

2Bk3—30 to 60 inches; light gray (10YR 7/2) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; about 45 percent gravel and 10 percent cobbles; violently effervescent; disseminated carbonates, common fine soft masses of carbonates, and moderately thick coatings of carbonates on the bottom of pebbles and cobbles; moderately alkaline.

About 15 to 40 percent of the surface is covered with gravel. The calcium carbonate equivalent is 15 to 30 percent in the calcic horizon.

The A and Bw horizons are mildly alkaline or moderately alkaline. The A horizon has hue of 2.5Y or 10YR. The Bw horizon is loam, gravelly loam, or sandy clay loam. The Bk horizon is loam or gravelly loam. The 2Bk horizon is gravelly loamy sand or very gravelly loamy sand. It is 30 to 60 percent gravel and 0 to 15 percent cobbles.

Farlow Series

The Farlow series consists of deep, well drained soils on mountainsides. These soils formed in residuum and slope alluvium derived dominantly from limestone. Slopes are 10 to 30 percent. Elevation is 7,500 to 9,000 feet. The annual precipitation is 15 to 22 inches, the average annual air temperature is 33 to 38 degrees F, and the frost-free period is less than 60 days.

Typical pedon of a Farlow gravelly clay loam that has a slope of 25 percent, in an area of Cloud Peak-Farlow complex, 10 to 30 percent slopes; about 1,750 feet north and 1,750 feet east of the southwest corner of sec. 27, T. 42 N., R. 108 W.

Oi—1 inch to 0; undecomposed forest litter.

A—0 to 6 inches; dark grayish brown (10YR 4/2) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium and thick platy structure parting to weak fine subangular blocky; soft, friable, sticky and plastic; many fine and medium roots; about 15 percent angular limestone gravel; neutral; abrupt smooth boundary.

Bk—6 to 55 inches; brown (10YR 5/3) extremely channery clay loam, dark yellowish brown (10YR 4/4) moist; massive; soft, friable, sticky and plastic; many fine and medium roots to a depth of 12 inches and few fine and medium roots below that depth; about 75 percent channery fragments of limestone; strongly effervescent; disseminated carbonates; moderately alkaline; abrupt wavy boundary.

R—55 inches; hard limestone.

The depth to bedrock ranges from 40 to 60 inches. The control section is 35 to 75 percent rock fragments. The calcium carbonate equivalent is 15 to 40 percent in the calcic horizon.

The A horizon is 15 to 35 percent gravel and channery fragments. The Bk horizon is very gravelly sandy clay loam or extremely channery clay loam. It is 35 to 75 percent gravel, channery fragments, and flagstones. It is moderately alkaline or strongly alkaline.

Farlow Variant

The Farlow Variant consists of moderately deep, well drained soils on mountainsides. These soils formed in residuum and slope alluvium derived dominantly from sandstone. Slopes are 10 to 30 percent. Elevation is 7,000 to 9,000 feet. The annual precipitation is 18 to 22 inches, the average annual air temperature is 33 to 38 degrees F, and the frost-free period is less than 60 days.

Typical pedon of a Farlow Variant loam that has a slope of 25 percent, in an area of Tongue River-Inchau-Farlow Variant complex, 10 to 30 percent slopes; about 1,150 feet west and 1,000 feet north of the southeast corner of sec. 22, T. 42 N., R. 108 W.

Oi—1 inch to 0; undecomposed forest litter.

A—0 to 1 inch; dark grayish brown (10YR 4/2) loam, black (10YR 2/1) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and common medium roots; slightly acid; clear smooth boundary.

Bw—1 to 11 inches; brown (10YR 4/3) channery loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many fine and common medium roots; about 15 percent channery fragments; slightly acid; gradual smooth boundary.

C—11 to 35 inches; very pale brown (10YR 7/3) very channery sandy clay loam, yellowish brown (10YR 5/6) moist; massive; very hard, friable, sticky and plastic; many fine and common medium roots to a depth of 18 inches and few fine and medium roots between depths of 18 and 35 inches; about 30 percent channery fragments and 10 percent flagstones; neutral.

Cr—35 inches; soft sandstone.

The depth to bedrock ranges from 20 to 40 inches. The average content of rock fragments in the control section ranges from 35 to 75 percent. The control section is 20 to 35 percent clay. The A and Bw horizons are slightly acid or neutral. The C horizon is neutral to moderately alkaline.

Forelle Series

The Forelle series consists of very deep, well drained soils on fan aprons, terraces, and toe slopes. These soils formed in alluvium derived from various sources. Slopes are 1 to 15 percent. Elevation is 5,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

Typical pedon of a Forelle loam that has a slope of 3 percent, in an area of Diamondville-Forelle association, rolling; about 1,050 feet north and 1,100 feet east of the southwest corner of sec. 11, T. 33 N., R. 98 W.

A1—0 to 2 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; mildly alkaline; abrupt smooth boundary.

A2—2 to 6 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; mildly alkaline; abrupt smooth boundary.

Bt1—6 to 10 inches; brown (7.5YR 5/4) clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; hard, friable, sticky and plastic; continuous thick clay films on faces of peds; common very fine, fine, and medium roots; mildly alkaline; clear wavy boundary.

Bt2—10 to 18 inches; brown (7.5YR 5/4) clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to strong fine subangular blocky; hard, friable, sticky and plastic; continuous thick clay films on faces of peds; common very fine, fine, and medium roots; mildly alkaline; clear wavy boundary.

Btk—18 to 22 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; weak medium prismatic structure parting to moderate fine subangular blocky; hard, friable, sticky and plastic; continuous thin clay films on faces of peds; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates and common fine threads and soft masses of carbonates; moderately alkaline; clear wavy boundary.

Bk—22 to 26 inches; light gray (10YR 7/2) loam, light brownish gray (10YR 6/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; violently effervescent; disseminated carbonates and common fine threads, seams, and soft masses of carbonates; moderately alkaline; clear wavy boundary.

C—26 to 60 inches; pale brown (10YR 6/3) loam, grayish brown (10YR 5/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; strongly effervescent; disseminated carbonates; moderately alkaline.

The A horizon has hue of 2.5Y or 10YR. It is neutral or mildly alkaline. The Bt horizon has hue of 2.5Y to 7.5YR. It is 28 to 35 percent clay. It is mildly alkaline or moderately alkaline. The Bk and C horizons have hue of 2.5Y or 10YR. The Bk horizon is loam, clay loam, or sandy clay loam. It is moderately alkaline or strongly alkaline. The C horizon is commonly loam, sandy loam, sandy clay loam, or clay loam, but in some pedons it has thin strata of loamy sand. It is mildly alkaline to strongly alkaline.

Fornor Series

The Fornor series consists of very deep, well drained soils on glacial moraines. These soils formed in glacial drift. Slopes are 2 to 30 percent. Elevation is 6,800 to 8,400 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Fornor very cobbly loam that has a slope of 4 percent, in an area of Fornor-Decross complex, hilly; about 2,300 feet south and 1,400 feet west of the northeast corner of sec. 8, T. 42 N., R. 108 W.

A—0 to 2 inches; brown (10YR 5/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure parting to moderate very fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; about 35 percent gravel, 20 percent cobbles, and 2 percent stones; gravel, cobbles, and stones covering about 40 percent of the surface; neutral; clear wavy boundary.

Bt—2 to 13 inches; dark brown (10YR 4/3) very gravelly sandy clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and plastic; many very fine and fine roots to a depth of 5 inches and common very fine, fine, and coarse roots between depths of 5 and 13 inches; common moderately thick clay films on faces of peds; about 30 percent gravel and 5 percent cobbles; mildly alkaline; clear wavy boundary.

Bk—13 to 19 inches; pale brown (10YR 6/3) extremely gravelly sandy clay loam, dark brown (10YR 3/3) moist; massive; hard, firm, slightly sticky and slightly plastic; common very fine and fine and few coarse roots; about 55 percent gravel and 5 percent cobbles; slightly effervescent; disseminated carbonates and common thin coatings of carbonates on rock fragments; mildly alkaline; gradual wavy boundary.

C1—19 to 25 inches; pale brown (10YR 6/3) extremely gravelly sandy clay loam, dark brown (10YR 3/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine, fine, and medium roots; about 55 percent gravel and 10 percent cobbles; slightly effervescent; disseminated carbonates; mildly alkaline; clear wavy boundary.

C2—25 to 60 inches; very pale brown (10YR 7/3) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine, fine, and coarse roots; about 35 percent gravel and 10 percent cobbles; slightly effervescent; disseminated carbonates; mildly alkaline.

About 10 to 70 percent of the surface is covered with rock fragments. The mollic epipedon is 7 to 15 inches thick. Depth to the base of the argillic horizon is 12 to 23 inches. The average content of rock fragments in the control section ranges from 35 to 60 percent. The control section is 18 to 35 percent clay.

The A and Bt horizons are neutral or mildly alkaline.

The A horizon is 20 to 50 percent gravel, 10 to 20 percent cobbles, and 0 to 10 percent stones. The Bt horizon has hue of 10YR or 7.5YR. It is very gravelly sandy clay loam or very gravelly clay loam. It is 30 to 45 percent gravel, 5 to 15 percent cobbles, and 0 to 5 percent stones.

The Bk horizon has hue of 2.5Y or 10YR. It is extremely gravelly sandy clay loam, very gravelly loam, or very gravelly sandy loam. It is 35 to 55 percent gravel and channery fragments, 5 to 20 percent cobbles, and 0 to 5 percent stones. It is mildly alkaline or moderately alkaline.

The C horizon is extremely gravelly sandy clay loam, very gravelly loam, or very gravelly sandy loam. It is 30 to 60 percent gravel and channery fragments, 5 to 15 percent cobbles, and 0 to 5 percent stones. It is neutral to moderately alkaline.

Frisite Series

The Frisite series consists of very deep, well drained soils on terraces and fan aprons. These soils formed in alluvium derived from various sources. Slopes are 1 to 8 percent. Elevation is 4,800 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Frisite fine sandy loam that has a slope of 2 percent, in an area of Frisite-Youngston complex, 1 to 8 percent slopes; about 300 feet west and 500 feet north of the southeast corner of sec. 5, T. 34 N., R. 92 W.

A—0 to 3 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many very fine and fine vesicular pores; moderately alkaline; abrupt smooth boundary.

BA—3 to 6 inches; yellowish brown (10YR 5/4) loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, very friable, nonsticky and slightly plastic; few very fine, fine, and medium roots; moderately alkaline; clear smooth boundary.

Bt—6 to 13 inches; pale brown (10YR 6/3) clay loam, yellowish brown (10YR 5/4) moist; strong medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; few very fine, fine, and medium roots; continuous thin and few thick clay films on faces of peds; moderately alkaline; clear smooth boundary.

Btk—13 to 16 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; few very fine, fine, and medium roots; continuous thin clay films on faces of peds; strongly effervescent; disseminated carbonates and common fine soft masses and seams of carbonates; moderately alkaline; gradual wavy boundary.

Bk—16 to 41 inches; light gray (10YR 7/2) loam, grayish brown (2.5Y 5/2) moist; massive; hard, friable, sticky and slightly plastic; strongly effervescent; disseminated carbonates and common fine soft masses and seams of carbonates; strongly alkaline; gradual wavy boundary.

C—41 to 60 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; slightly effervescent; disseminated carbonates; moderately alkaline.

The A horizon has hue of 10YR or 2.5Y. The Bt, Bk, and C horizons are moderately alkaline or strongly alkaline. The Bt horizon has hue of 2.5Y to 7.5YR. It is clay loam or loam. It is 25 to 35 percent clay and 15 to 35 percent fine sand or coarser sand. The Bk horizon has hue of 2.5Y or 10YR. It is loam or clay loam. It is 0 to 15 percent gravel. The C horizon has hue of 5Y to 10YR. It is loam, clay loam, or silty clay loam. It is 0 to 15 percent gravel.

Gelkie Series

The Gelkie series consists of very deep, well drained soils on dissected mountain pediments, hillslopes, and terraces. These soils formed in alluvium derived dominantly from sandstone, schist, and granite. Slopes are 2 to 10 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Gelkie loam that has a slope of 3 percent, in an area of Hoodle-Gelkie association, 2 to 15 percent slopes; about 650 feet north and 320 feet west of the southeast corner of sec. 19, T. 29 N., R. 99 W.

A—0 to 7 inches; brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; neutral; abrupt wavy boundary.

Bt1—7 to 14 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common moderately thick clay films on faces of peds; about 5 percent gravel; mildly alkaline; clear wavy boundary.

Bt2—14 to 29 inches; brown (10YR 5/3) sandy clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to weak medium subangular blocky; hard, friable, sticky and plastic; common very fine, fine, and medium roots to a depth of 18 inches and few roots between depths of 18 and 29 inches; many moderately thick clay films on faces of peds; about 5 percent gravel; mildly alkaline; clear smooth boundary.

Bk—29 to 35 inches; very pale brown (10YR 7/3) sandy loam, brown (10YR 5/3) moist; weak medium prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; about 10 percent gravel; violently effervescent; disseminated carbonates and many large masses and seams of carbonates; strongly alkaline; gradual wavy boundary.

C—35 to 60 inches; very pale brown (10YR 7/3) sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; about 10 percent gravel; strongly effervescent; disseminated carbonates; strongly alkaline.

Secondary calcium carbonate is at a depth of 20 to 47 inches. The control section is 18 to 35 percent clay and more than 35 percent fine sand or coarser sand. It is 5 to 30 percent rock fragments.

The A and Bt horizons are neutral or mildly alkaline. The A horizon is 0 to 15 percent gravel. The Bt horizon has hue of 7.5YR or 10YR. It is sandy clay loam, loam, or gravelly sandy clay loam. The Bk and C horizons are loam, sandy clay loam, sandy loam, or gravelly sandy clay loam. They are 10 to 35 percent rock fragments. They are moderately alkaline or strongly alkaline.

Gelkie Variant

The Gelkie Variant consists of deep, well drained soils on dissected terraces and mountain foot slopes. These soils formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. Slopes are 2 to 8 percent. Elevation is 7,000 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Gelkie Variant loam that has a slope of 2 percent, in an area of Gelkie Variant-Barrett Variant association, undulating; about 2,800 feet east and 2,650 feet north of the southwest corner of sec. 26, T. 27 N., R. 101 W.

A—0 to 2 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; moderately alkaline; abrupt smooth boundary.

Bt—2 to 9 inches; brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, sticky and plastic; many very fine and fine and few medium roots; continuous thin clay films on faces of peds; slightly effervescent; disseminated carbonates; moderately alkaline; gradual wavy boundary.

Bk1—9 to 16 inches; pale brown (10YR 6/3) silty clay loam, light olive brown (2.5Y 5/4) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, sticky and plastic; few very fine and medium roots; violently effervescent; disseminated carbonates and many medium soft masses of carbonates; moderately alkaline; gradual irregular boundary.

Bk2—16 to 30 inches; light yellowish brown (2.5Y 6/4) clay loam, light olive brown (2.5Y 5/4) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, slightly sticky and slightly plastic; few very fine and medium roots; few thin slickensides; violently effervescent; disseminated carbonates and few fine threads and soft masses of carbonates; moderately alkaline; gradual wavy boundary.

Bk3—30 to 42 inches; light olive brown (2.5Y 5/4) clay loam, light olive brown (2.5Y 5/4) moist; strong thin platy structure; hard, friable, sticky and plastic; strongly effervescent; disseminated carbonates and common large threads, seams, and soft masses of carbonates; moderately alkaline; abrupt wavy boundary.

Cr—42 inches; soft, sandy shale.

The depth to bedrock ranges from 40 to 60 inches. The mollic epipedon is 7 to 15 inches thick. The A and Bt horizons are mildly alkaline or moderately alkaline. They are 0 to 15 percent rock fragments. The Bk horizon is moderately alkaline or strongly alkaline.

Glendive Series

The Glendive series consists of very deep, well drained soils on flood plains. These soils formed in alluvium derived from various sources. Slopes are 0 to 3 percent. Elevation is 5,300 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Glendive sandy loam that has a slope of 2 percent, in an area of Havre-Forelle-Glendive complex, 0 to 3 percent slopes; about 800 feet west and 2,100 feet north of the southeast corner of sec. 27, T. 34 N., R. 97 W.

A—0 to 4 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; slightly effervescent; disseminated carbonates; mildly alkaline; abrupt smooth boundary.

C—4 to 60 inches; pale brown (10YR 6/3) sandy loam stratified with thin lenses of loamy sand, loam, and sandy clay loam; brown (10YR 5/3) moist; single grain; soft, very friable, nonsticky and nonplastic; slightly effervescent; disseminated carbonates; mildly alkaline.

The average content of clay in the control section ranges from 9 to 18 percent. The A horizon has hue of 2.5Y or 10YR. It is mildly alkaline or moderately alkaline. The C horizon is coarse sandy loam, sandy loam, fine sandy loam, or gravelly sandy loam stratified with thin lenses of loamy sand, loam, or sandy clay loam. It is mildly alkaline to strongly alkaline.

Granile Series

The Granile series consists of very deep, well drained soils on mountainsides. These soils formed in alluvium derived dominantly from granite and schist. Slopes are 5 to 30 percent. Elevation is 8,000 to 9,000 feet. The annual precipitation is 18 to 22 inches, the average annual air temperature is 33 to 38 degrees F, and the frost-free period is less than 60 days.

Typical pedon of a Granile gravelly sandy loam that has a slope of 19 percent, in an area of Granile-Ansel complex, hilly; about 500 feet west and 1,800 feet north of the southeast corner of sec. 3, T. 27 N., R. 91 W.

Oi—1 inch to 0; undecomposed needles, twigs, and leaves.

A—0 to 2 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to moderate medium granular; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; about 10 percent gravel and 5 percent cobbles; moderately acid; abrupt smooth boundary.

E—2 to 7 inches; light brownish gray (10YR 6/2) gravelly sandy loam, grayish brown (10YR 5/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; about 10 percent gravel and 5 percent cobbles; moderately acid; clear wavy boundary.

BE—7 to 10 inches; very pale brown (10YR 7/4) very gravelly sandy clay loam, light yellowish brown (10YR 6/4) moist; weak coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; few clay films bridging sand grains; about 25 percent gravel, 10 percent cobbles, and 5 percent stones; moderately acid; abrupt broken boundary.

Bt—10 to 46 inches; pale yellow (2.5Y 7/4) very gravelly sandy clay loam, light yellowish brown (2.5Y 6/4) moist; moderate coarse prismatic structure parting to moderate medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common clay films bridging sand grains and few thin clay films on faces of peds; about 25 percent gravel, 10 percent cobbles, and 10 percent stones; moderately acid; gradual wavy boundary.

C—46 to 60 inches; light gray (2.5Y 7/2) very gravelly sandy loam, light gray (2.5Y 7/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; about 40 percent gravel; moderately acid.

The content of rock fragments is 35 to 60 percent in the control section and in the C horizon and is 15 to 35 percent in the E horizon. The Bt and C horizons have hue of 2.5Y or 10YR. They are moderately acid or slightly acid. The C horizon is very gravelly sandy loam, very gravelly coarse sandy loam, or very gravelly sandy clay loam.

Griffy Series

The Griffy series consists of very deep, well drained soils on fan aprons and terraces. These soils formed in alluvium derived dominantly from sandstone interbedded with shale. Slopes are 1 to 8 percent. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 120 to 130 days.

Typical pedon of a Griffy sandy loam that has a slope of 4 percent, in an area of Griffy-Saddle-Wallson association, undulating; about 400 feet south and 2,400 feet west of the northeast corner of sec. 29, T. 35 N., R. 94 W.

A—0 to 2 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; weak medium platy structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine and fine vesicular pores; moderately alkaline; abrupt smooth boundary.

BA—2 to 6 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; moderately alkaline; clear smooth boundary.

Bt—6 to 13 inches; dark yellowish brown (10YR 4/4) sandy clay loam, dark yellowish brown (10YR 3/4) moist; moderate coarse prismatic structure parting to moderate coarse subangular blocky; hard, friable, slightly sticky and slightly plastic; common fine and medium roots; continuous moderately thick and few thick clay films on faces of peds; moderately alkaline; gradual wavy boundary.

Bw—13 to 19 inches; yellowish brown (10YR 5/4) sandy loam, brown (10YR 4/3) moist; moderate coarse subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; few fine and medium roots; moderately alkaline; gradual wavy boundary.

Bk—19 to 26 inches; very pale brown (10YR 8/3) sandy loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; violently effervescent; disseminated carbonates; strongly alkaline; gradual wavy boundary.

C—26 to 60 inches; yellowish brown (10YR 5/6) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; strongly effervescent; disseminated carbonates; strongly alkaline.

The A and Bt horizons are mildly alkaline or moderately alkaline. The Bt horizon has hue of 10YR or 7.5YR. It is sandy clay loam or clay loam. It is 20 to 35 percent clay and more than 35 percent fine sand or coarser sand. The Bw, Bk, and C horizons are moderately alkaline or strongly alkaline. The Bw horizon has hue of 10YR or 7.5YR. It is sandy loam or sandy clay loam. The Bk and C horizons have hue of 2.5Y or 10YR. The Bk horizon is sandy loam, loam, or sandy clay loam. The C horizon is fine sandy loam or sandy loam.

Haverdad Series

The Haverdad series consists of very deep, well drained soils on flood plains. These soils formed in alluvium derived from various sources. Slopes are 0 to 3 percent. Elevation is 5,300 to 6,200 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Haverdad loam that has a slope of 1 percent, in an area of Haverdad-Clarkelen complex, 0 to 3 percent slopes; about 2,400 feet north and 1,100 feet west of the southeast corner of sec. 20, T. 36 N., R. 90 W.

A1—0 to 2 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak thin platy structure parting to weak very fine granular; soft, very friable, slightly sticky and nonplastic; many very fine and fine and common medium roots; slightly effervescent; disseminated carbonates; mildly alkaline; abrupt smooth boundary.

A2—2 to 10 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak medium platy structure parting to weak medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; mildly alkaline; abrupt broken boundary.

C1—10 to 34 inches; light yellowish brown (10YR 6/4) loam stratified with thin lenses of sandy clay loam, sandy loam, and loamy sand; yellowish brown (10YR 5/4) moist; weak medium platy structure parting to weak fine subangular blocky; hard, very friable, sticky and plastic; common very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt broken boundary.

C2—34 to 60 inches; pale brown (10YR 6/3) loam stratified with thin lenses of sandy loam, loamy sand, sandy clay loam, and clay loam; brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; strongly effervescent; disseminated carbonates; moderately alkaline.

The control section is 0 to 15 percent rock fragments. The average content of clay in the control section ranges from 20 to 30 percent. The A and C horizons have hue of 2.5Y or 10YR. The A horizon is mildly alkaline or moderately alkaline. The C horizon is dominantly loam, sandy clay loam, or clay loam but is stratified with lenses of sand, sandy loam, or loamy sand. It is moderately alkaline or strongly alkaline.

Havre Series

The Havre series consists of very deep, well drained soils on flood plains. These soils formed in alluvium derived from various sources. Slopes are 0 to 3 percent. Elevation is 5,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Havre loam that has a slope of 1 percent, in an area of Havre-Absher-Forelle loams, 0 to 6 percent slopes; about 800 feet east and 2,000 feet north of the southwest corner of sec. 21, T. 33 N., R. 98 W.

A—0 to 3 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak thick platy structure parting to weak fine granular; slightly hard, very friable, nonsticky and slightly plastic; many very fine and fine and few medium roots; slightly effervescent; disseminated carbonates; mildly alkaline; abrupt smooth boundary.

C1—3 to 14 inches; light olive brown (2.5Y 5/4) loam stratified with thin lenses of fine sandy loam, silty clay loam, and clay loam; olive brown (2.5Y 4/4) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; gradual wavy boundary.

C2—14 to 60 inches; light olive brown (2.5Y 5/4) loam stratified with thin lenses of fine sandy loam, silty clay loam, and clay loam; olive brown (2.5Y 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; moderately alkaline.

The control section is 0 to 15 percent rock fragments. The average content of clay in the control section ranges from 20 to 35 percent. The A and C horizons have hue of 2.5Y or 10YR. They are mildly alkaline or moderately alkaline. The C horizon is dominantly loam or sandy clay loam but has thin strata of loamy sand, fine sandy loam, silty clay loam, or clay loam.

Havre Variant

The Havre Variant consists of very deep, somewhat poorly drained soils in swales and seep areas. These soils formed in alluvium derived from various sources. Slopes are 0 to 3 percent. Elevation is 5,300 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Havre Variant loam that has a slope of 1 percent, in an area of Havre-Havre Variant-Elkol complex, 0 to 3 percent slopes; about 2,000 feet west and 200 feet north of the southeast corner of sec. 4, T. 33 N., R. 96 W.

A—0 to 1 inch; brown (7.5YR 5/4) loam, brown (10YR 5/3) moist; weak medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; strongly effervescent; disseminated carbonates; strongly alkaline; abrupt smooth boundary.

C1—1 to 8 inches; very pale brown (10YR 7/4) sand, light yellowish brown (10YR 6/4) moist; common medium distinct yellowish brown (10YR 6/6) mottles; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; slightly effervescent; disseminated carbonates; moderately alkaline; clear broken boundary.

C2—8 to 60 inches; brown (10YR 5/2) sandy clay loam stratified with thin lenses of sand to clay loam; dark brown (10YR 4/2) moist; common large distinct dark gray (10YR 4/1) mottles; massive; slightly hard, friable, sticky and slightly plastic; common very fine and fine roots to a depth of 14 inches; slightly effervescent; disseminated carbonates; moderately alkaline.

A fluctuating water table is at a depth of 1.0 to 3.5 feet from April through September. The electrical conductivity is 8 to 16 millimhos per centimeter in the A horizon and 2 to 8 millimhos per centimeter in the C horizon. The A horizon is moderately alkaline or strongly alkaline. The C horizon is dominantly loam or sandy clay loam but is stratified with thin lenses of sand, loamy sand, fine sandy loam, or clay loam.

Highpoint Series

The Highpoint series consists of very shallow or shallow, well drained soils on ridges. These soils formed in residuum and slope alluvium derived dominantly from fissile shale. Slopes are 15 to 50 percent. Elevation is 5,300 to 7,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Highpoint channery clay loam that has a slope of 50 percent, in an area of Highpoint-Rock outcrop complex, steep; about 1,100 feet north and 1,000 feet east of the southwest corner of sec. 27, T. 33 N., R. 94 W.

A—0 to 1 inch; light brownish gray (10YR 6/2) channery clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, very friable, sticky and plastic; common very fine, fine, and medium roots; about 30 percent channery fragments; neutral; abrupt wavy boundary.

C—1 to 11 inches; light brownish gray (10YR 6/2) very channery clay loam, very dark grayish brown (10YR 3/2) moist; massive; hard, firm, very sticky and very plastic; common very fine, fine, and medium roots; about 60 percent channery fragments; neutral; abrupt wavy boundary.

Cr—11 inches; fissile shale.

The depth to bedrock ranges from 4 to 20 inches. The A and C horizons have hue of 2.5Y or 10YR. They are neutral or mildly alkaline. The A horizon is 15 to 35 percent gravel or channery fragments. The C horizon is very channery clay loam, very gravelly clay loam, or very gravelly silty clay loam. It is 27 to 35 percent clay and 35 to 60 percent channery fragments or gravel.

Hiland Series

The Hiland series consists of very deep, well drained soils on dunes and fan aprons. These soils formed in eolian deposits and alluvium derived from various sources. Slopes are 1 to 15 percent. Elevation is 5,200 to 6,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 115 to 130 days.

Typical pedon of a Hiland sandy loam that has a slope of 1 percent, in an area of Vonalee-Hiland complex, undulating; about 3,500 feet south and 1,450 feet west of the northeast corner of sec. 35, T. 37 N., R. 91 W.

A—0 to 4 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; moderately alkaline; abrupt wavy boundary.

Bt—4 to 15 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate medium platy structure parting to moderate fine and very fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; continuous thin and few thick clay films on faces of peds; moderately alkaline; abrupt wavy boundary.

Bk1—15 to 20 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; few very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; strongly alkaline; clear wavy boundary.

Bk2—20 to 22 inches; very pale brown (10YR 7/3) loamy sand, pale brown (10YR 6/3) moist; single grain; loose, nonsticky and nonplastic; violently effervescent; disseminated carbonates and many medium and large seams and soft masses of carbonates; strongly alkaline; clear wavy boundary.

C—22 to 60 inches; very pale brown (10YR 7/3) sand, pale brown (10YR 6/3) moist; single grain; loose, nonsticky and nonplastic; strongly effervescent; disseminated carbonates; strongly alkaline.

The A and Bt horizons are mildly alkaline or moderately alkaline. The A horizon is 0 to 15 percent gravel. The Bt horizon is 0 to 10 percent gravel. It has hue of 2.5Y to 7.5YR. The Bk and C horizons have hue of 2.5Y or 10YR. They are moderately alkaline or strongly alkaline. The Bk horizon is loamy sand, sandy loam, fine sandy loam, or coarse sandy loam. The C horizon is sand, loamy sand, or sandy loam.

Hoodle Series

The Hoodle series consists of very deep, well drained soils on pediments and terraces. These soils formed in alluvium derived dominantly from granite and schist. Slopes are 1 to 15 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Hoodle gravelly loam that has a slope of 2 percent, in an area of Hoodle-Gelkie association, 2 to 15 percent slopes; about 1,500 feet east and 500 feet north of the southwest corner of sec. 28, T. 29 N., R. 99 W.

A—0 to 3 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; about 17 percent gravel; gravel and channery fragments covering about 25 percent of the surface; mildly alkaline; abrupt smooth boundary.

Bt1—3 to 10 inches; dark brown (10YR 4/3) very gravelly sandy clay loam, dark brown (10YR 3/3) moist; moderate coarse prismatic structure parting to strong coarse and medium subangular blocky; slightly hard, friable, slightly sticky and plastic; common very fine, fine, and medium roots; many thin clay films and few moderately thick clay films on faces of peds; about 40 percent gravel; mildly alkaline; clear smooth boundary.

Bt2—10 to 13 inches; yellowish brown (10YR 5/4) very gravelly sandy clay loam, dark brown (10YR 3/3) moist; weak coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; few thin clay films on faces of peds; about 45 percent gravel; mildly alkaline; clear wavy boundary.

Bk—13 to 30 inches; light brownish gray (2.5Y 6/2) very gravelly sandy loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; about 35 percent gravel and 5 percent channery fragments; violently effervescent; disseminated carbonates, many large seams and soft masses of carbonates, and thin coatings of carbonates on the bottom of coarse fragments; moderately alkaline; gradual wavy boundary.

C—30 to 60 inches; light gray (2.5Y 7/2) very gravelly sandy loam, light olive brown (2.5Y 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; about 50 percent gravel; strongly effervescent; disseminated carbonates; moderately alkaline.

About 15 to 40 percent of the surface is covered with gravel and channery fragments. The mollic epipedon is 10 to 15 inches thick. The control section is 35 to 60 percent rock fragments.

The A horizon is 15 to 60 percent gravel, 0 to 10 percent cobbles, and 0 to 5 percent stones. It is neutral or mildly alkaline. The Bt, Bk, and C horizons are 35 to 60 percent gravel, 0 to 10 percent channery fragments and cobbles, and 0 to 5 percent stones. The Bt horizon has hue of 10YR or 7.5YR. It is 18 to 35 percent clay. The Bk and C horizons have hue of 2.5Y or 10YR. The Bk horizon is very gravelly sandy loam or very gravelly sandy clay loam. The C horizon is very gravelly loamy sand, very gravelly sandy loam, or very gravelly sandy clay loam.

Iceslew Series

The Iceslew series consists of very deep, poorly drained soils on flood plains and valley toe slopes. These soils formed in alluvium derived dominantly from sandstone and siltstone. Slopes are 0 to 3 percent. Elevation is 6,800 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 115 days.

Typical pedon of an Iceslew very fine sandy loam that has a slope of 1 percent, in an area of Iceslew-Countryman complex, 0 to 3 percent slopes; about 800 feet north and 1,800 feet west of the southeast corner of sec. 11, T. 30 N., R. 90 W.

A—0 to 2 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak fine granular structure; slightly hard, very friable, nonsticky and slightly plastic; many very fine and fine and few medium roots; slightly effervescent; disseminated carbonates; strongly alkaline; abrupt smooth boundary.

C1—2 to 8 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak thin platy structure parting to weak very fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; strongly effervescent; disseminated carbonates; strongly alkaline; abrupt wavy boundary.

C2—8 to 12 inches; light brownish gray (10YR 6/2) sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; strongly effervescent; disseminated carbonates; strongly alkaline; abrupt wavy boundary.

Cg1—12 to 32 inches; pale brown (10YR 6/3) loam, olive brown (2.5Y 4/4) moist; common fine and medium prominent brown (7.5YR 4/4) and gray (5Y 5/1) mottles; weak thin platy structure parting to moderate fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; strongly effervescent; disseminated carbonates; strongly alkaline; clear wavy boundary.

Cg2—32 to 60 inches; olive gray (5Y 5/2) loam stratified with thin lenses of fine sandy loam and very fine sandy loam; dark olive (5Y 3/2) moist; many medium and large faint dark gray (5Y 4/1) and few fine and medium prominent brown (10YR 5/3) mottles; massive; slightly hard, very friable, slightly sticky and slightly plastic; strongly effervescent; disseminated carbonates; strongly alkaline.

The water table fluctuates between 1 foot above the surface and a depth of 20 inches in spring. During the rest of the year, it is at a depth of 6 to 30 inches. The content of rock fragments ranges from 0 to 15 percent throughout the profile. The average content of clay in the control section ranges from 18 to 27 percent. Reaction is mildly alkaline to strongly alkaline throughout the profile.

The A, C1, and C2 horizons have hue of 10YR or 2.5Y. The electrical conductivity in the A horizon is 2 to 8 millimhos per centimeter. The C1 and C2 horizons are dominantly fine sandy loam, sandy loam, loam, or silt loam, but in some pedons they are stratified and have lenses of very fine sandy loam, sandy clay loam, silty clay loam, or clay loam. The Cg horizon has hue of 10YR to 5Y. It is dominantly fine sandy loam, sandy loam, loam, or silt loam but is stratified with thin lenses of very fine sandy loam, sandy clay loam, silty clay loam, or clay loam.

Inchau Series

The Inchau series consists of moderately deep, well drained soils on mountainsides and hillslopes. These soils formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. Slopes are 10 to 30 percent. Elevation is 7,000 to 9,000 feet. The annual precipitation is 15 to 22 inches, the average annual air temperature is 33 to 41 degrees, and the frost-free period is less than 90 days.

Typical pedon of an Inchau sandy clay loam that has a slope of 25 percent, in an area of Tongue River-Inchau-Farlow Variant complex, 10 to 30 percent slopes; about 1,900 feet west and 850 feet north of the southeast corner of sec. 22, T. 42 N., R. 108 W.

Oi—1 inch to 0; undecomposed forest litter.

A—0 to 1 inch; brown (10YR 4/3) sandy clay loam, dark brown (10YR 3/3) moist; moderate fine granular structure parting to very fine granular; soft, very friable, sticky and plastic; many fine and few medium roots; slightly acid; abrupt smooth boundary.

BAt—1 to 9 inches; brown (10YR 4/3) sandy clay loam, dark brown (10YR 3/3) moist; weak coarse prismatic structure parting to moderate medium and fine subangular blocky; hard, friable, sticky and plastic; many fine and few medium roots; few thick clay films on faces of peds; neutral; clear smooth boundary.

Bt—9 to 19 inches; brown (10YR 5/3) sandy clay loam, brown (10YR 4/3) moist; moderate medium and coarse prismatic structure parting to moderate medium and coarse subangular blocky; very hard, friable, sticky and plastic; many fine and few medium roots; common thick clay films on faces of peds; neutral; clear wavy boundary.

C—19 to 38 inches; very pale brown (10YR 7/3) very gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; massive; very hard, friable, sticky and plastic; common fine and few medium roots; about 40 percent angular sandstone gravel; neutral; clear wavy boundary.

Cr—38 inches; soft sandstone.

The depth to bedrock ranges from 20 to 40 inches. The mollic epipedon is 7 to 12 inches thick. The control section is 0 to 20 percent rock fragments and 25 to 35 percent clay.

The A and Bt horizons are slightly acid or neutral. The A horizon is 0 to 20 percent gravel. The Bt horizon is sandy clay loam, channery sandy clay loam, clay loam, or gravelly loam. It is less than 35 percent fine sand or coarser sand. The C horizon has hue of 2.5Y or 10YR. It is very gravelly clay loam or very gravelly sandy clay loam. It is 35 to 50 percent gravel or channery fragments and 0 to 10 percent flagstones. It is neutral or mildly alkaline.

Irigul Series

The Irigul series consists of very shallow or shallow, well drained soils on mountainsides and hillslopes. These soils formed in residuum and slope alluvium derived dominantly from granite and schist. Slopes are 3 to 60 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of an Irigul channery loam that has a slope of 3 percent, in an area of Irigul-Midelight-Rock outcrop association, rolling; about 2,500 feet east and 1,100 feet south of the northwest corner of sec. 6, T. 29 N., R. 100 W.

A1—0 to 3 inches; dark brown (10YR 4/3) channery loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; about 30 percent channery fragments; channery fragments and stones covering about 40 percent of the surface; mildly alkaline; clear wavy boundary.

A2—3 to 9 inches; dark yellowish brown (10YR 4/4) channery loam, dark brown (10YR 3/3) moist; weak medium granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine and few medium roots; about 30 percent channery fragments; mildly alkaline; clear wavy boundary.

AC—9 to 15 inches; brown (10YR 4/3) very channery loam, dark brown (10YR 3/3) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few very fine, fine, and medium roots; about 35 percent channery fragments and 10 percent stones; mildly alkaline; abrupt wavy boundary.

R—15 inches; hard schist.

About 30 to 50 percent of the surface is covered with channery fragments and stones. The depth to bedrock ranges from 6 to 20 inches. The mollic epipedon is 6 to 15 inches thick. The average content of clay in the control section ranges from 18 to 25 percent. The AC horizon is 35 to 60 percent channery fragments and 0 to 10 percent stones.

Lander Series

The Lander series consists of very deep, somewhat poorly drained soils on flood plains. These soils formed in alluvium derived from various sources. Slopes are 0 to 3 percent. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Lander loam that has a slope of 1 percent, in an area of Lander-Lander Variant loams, 0 to 3 percent slopes; about 2,600 feet west and 1,750 feet south of the northeast corner of sec. 30, T. 42 N., R. 107 W.

A—0 to 13 inches; grayish brown (10YR 5/2) loam, very dark brown (10YR 2/2) moist; weak medium angular blocky structure parting to moderate very fine and fine angular blocky; hard, firm, slightly sticky and slightly plastic; many fine, medium, and coarse roots; moderately alkaline; clear smooth boundary.

C—13 to 20 inches; light brownish gray (2.5Y 6/2) loam, dark grayish brown (2.5Y 4/2) moist; massive; hard, firm, slightly sticky and nonplastic; common medium and coarse roots; mildly alkaline; clear smooth boundary.

Cg—20 to 60 inches; light olive gray (5Y 6/2) loam, olive (5Y 4/3) moist; common fine and medium prominent reddish yellow (5YR 6/8) and few fine distinct very dark grayish brown (10YR 3/2) mottles; massive; slightly hard, friable, slightly sticky and nonplastic; common medium and coarse roots; slightly effervescent; disseminated calcium carbonates; mildly alkaline.

The mollic epipedon is 7 to 14 inches thick. In most areas the soils are occasionally flooded for brief periods from April through August. In areas along DuNoir Creek, however, they are subject to flooding of long duration during periods of heavy runoff in spring. A fluctuating water table is at a depth of 1.5 to 3.5 feet from May through September.

The A horizon is 0 to 10 percent gravel. The C horizon has hue of 5Y to 10YR. It is dominantly loam, silty clay loam, or sandy clay loam, but in some pedons it is stratified and has thin lenses of sandy loam or loamy sand. It is 0 to 15 percent gravel and cobbles. It is mildly alkaline or moderately alkaline.

Lander Variant

The Lander Variant consists of very deep, somewhat poorly drained soils on flood plains. These soils formed in alluvium derived from various sources. Slopes are 0 to 3 percent. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Lander Variant loam that has a slope of 1 percent, in an area of Lander-Lander Variant loams, 0 to 3 percent slopes; about 400 feet north and 950 feet west of the southeast corner of sec. 14, T. 42 N., R. 108 W.

A—0 to 3 inches; dark brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; moderate medium granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

AC—3 to 15 inches; dark brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; few fine and medium distinct strong brown (7.5YR 5/6) mottles; weak thin and medium platy structure parting to weak fine subangular blocky; slightly hard, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt wavy boundary.

2C—15 to 60 inches; brown (10YR 5/3) very gravelly sand stratified with a few thin lenses of fine sandy loam, loam, and silt loam; dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; about 60 percent gravel; slightly effervescent; disseminated carbonates; moderately alkaline.

Depth to the 2C horizon is 14 to 24 inches. A fluctuating water table is at a depth of 1.5 to 3.5 feet from May through September. The soils are occasionally flooded for brief periods from April through August. Reaction is mildly alkaline or moderately alkaline throughout the profile.

Lostwells Series

The Lostwells series consists of very deep, well drained soils on fans, aprons, and terraces. These soils formed in alluvium derived from various sources. Slopes are 0 to 8 percent. Elevation is 4,800 to 6,200 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Lostwells loam that has a slope of 1 percent, in an area of Apron-Lostwells complex, 0 to 10 percent slopes; about 2,650 feet north and 1,800 feet east of the southwest corner of sec. 1, T. 36 N., R. 94 W.

A—0 to 5 inches; pale brown (10YR 6/3) loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure parting to moderate very fine granular; soft, friable, slightly sticky and nonplastic; common very fine and fine and few medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

C1—5 to 14 inches; light yellowish brown (10YR 6/4) sandy loam that has a few thin strata of clay loam and loamy sand; brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

C2—14 to 27 inches; pale brown (10YR 6/3) sandy clay loam that has a few thin strata of clay loam and loamy sand; brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

C3—27 to 47 inches; pale brown (10YR 6/3) sandy clay loam that has a few thin strata of clay loam and loamy sand; brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; violently effervescent; disseminated carbonates and few small soft masses of carbonates; moderately alkaline; clear wavy boundary.

C4—47 to 50 inches; yellowish brown (10YR 5/4) sandy clay loam that has a few thin strata of clay loam and loamy sand; brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates and few small soft masses of carbonates; moderately alkaline; clear wavy boundary.

C5—50 to 60 inches; pale olive (5Y 6/3) loam that has a few thin strata of clay loam and loamy sand; olive (5Y 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; violently effervescent; disseminated carbonates and common fine soft masses and seams of carbonates; strongly alkaline.

The content of gravel ranges from 0 to 15 percent throughout the profile. The average content of clay in the control section ranges from 20 to 30 percent. The A and C horizons have hue of 5Y to 10YR. They are moderately alkaline or strongly alkaline. The C horizon is dominantly sandy clay loam, sandy loam, or loam but is stratified with lenses of loamy sand to clay loam.

Luhon Series

The Luhon series consists of very deep, well drained soils on fan aprons and terraces. These soils formed in alluvium derived from various sources. Slopes are 1 to 10 percent. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Luhon loam that has a slope of 3 percent, in an area of Luhon-Rock River-Forelle complex, undulating; about 2,500 feet south and 300 feet east of the northwest corner of sec. 32, T. 29 N., R. 96 W.

A—0 to 4 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

Bw—4 to 13 inches; pale brown (10YR 6/3) loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; very fine, fine, and medium roots; strongly effervescent; disseminated carbonates; moderately alkaline; clear smooth boundary.

Bk1—13 to 27 inches; white (10YR 8/2) loam, light gray (10YR 7/2) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; about 5 percent gravel; violently effervescent; disseminated carbonates, many fine and medium soft masses and seams of carbonates, and pendants of carbonates on rock fragments; strongly alkaline; gradual wavy boundary.

Bk2—27 to 60 inches; very pale brown (10YR 8/3) loam, very pale brown (10YR 7/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; about 5 percent gravel; violently effervescent; disseminated carbonates and many fine and medium soft masses and seams of carbonates; strongly alkaline.

The A horizon is 0 to 15 percent gravel. It is mildly alkaline or moderately alkaline. The Bk horizon has hue of 2.5Y to 7.5YR. It is loam, sandy clay loam, or gravelly loam. It is 18 to 30 percent clay and 5 to 25 percent gravel. It is moderately alkaline or strongly alkaline. The calcium carbonate equivalent in this horizon is 15 to 40 percent.

Lupinto Series

The Lupinto series consists of very deep, well drained soils on terraces. These soils formed in alluvium derived from various sources. Slopes are 1 to 6 percent. Elevation is 7,000 to 8,300 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Lupinto loam that has a slope of 1 percent, in an area of Lupinto loam, 1 to 6 percent slopes; about 2,200 feet north and 300 feet east of the southwest corner of sec. 36, T. 42 N., R. 106 W.

A—0 to 2 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; about 5 percent gravel; moderately alkaline; abrupt smooth boundary.

Bt—2 to 9 inches; brown (7.5YR 4/4) sandy clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; hard, firm, slightly sticky and slightly plastic; many very fine and fine and few medium roots to a depth of 5 inches and common very fine and fine roots between depths of 5 and 9 inches; common thick clay films on faces of peds; about 15 percent gravel; few thin coatings of carbonates on pebbles; moderately alkaline; clear wavy boundary.

Bk1—9 to 23 inches; white (10YR 8/1) sandy loam, very pale brown (10YR 7/4) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; about 15 percent gravel; violently effervescent; disseminated carbonates and many thick coatings of carbonates on pebbles; moderately alkaline; gradual wavy boundary.

2Bk2—23 to 60 inches; white (10YR 8/1) very gravelly clay loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; about 45 percent gravel and 15 percent cobbles; violently effervescent; disseminated carbonates and many thick coatings of carbonates on rock fragments; strongly alkaline.

Depth to the base of the argillic horizon ranges from 8 to 10 inches. The depth to secondary accumulations of carbonates ranges from 8 to 10 inches. The average content of rock fragments in the control section ranges from 35 to 50 percent. The average content of clay ranges from 20 to 30 percent. The calcium carbonate equivalent is 15 to 35 percent in the calcic horizon.

The A and Bt horizons are mildly alkaline or moderately alkaline. The A horizon is 0 to 15 percent gravel. The Bt and 2Bk horizons have hue of 7.5YR or 10YR. The Bt horizon is clay loam, sandy clay loam, or gravelly sandy clay loam. It is 0 to 25 percent gravel. The 2Bk horizon is very gravelly clay loam or very gravelly sandy clay loam. It is 35 to 60 percent rock fragments. It is moderately alkaline or strongly alkaline. Some pedons have a C horizon, which is very gravelly sandy loam.

Lymanson Series

The Lymanson series consists of moderately deep, well drained soils on ridges, hillslopes, and foot slopes. These soils formed in residuum and slope alluvium derived dominantly from sandstone. Slopes are 4 to 30 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Lymanson gravelly loam that has a slope of 4 percent, in an area of Lymanson-Abston-Gelkie association, hilly; about 300 feet south and 1,500 feet east of the northwest corner of sec. 4, T. 28 N., R. 99 W.

A—0 to 3 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (10YR 3/3) moist; weak medium granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine and common medium roots; about 30 percent gravel; gravel and channery fragments covering about 20 percent of the surface; moderately alkaline; abrupt smooth boundary.

BA—3 to 7 inches; dark yellowish brown (10YR 4/4) gravelly sandy clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; about 25 percent gravel; moderately alkaline; abrupt smooth boundary.

Bt—7 to 10 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; weak coarse angular blocky structure parting to moderate medium subangular blocky; hard, friable, slightly sticky and plastic; common very fine, fine, and medium roots; continuous thin and thick clay films on faces of peds; about 10 percent gravel; moderately alkaline; clear smooth boundary.

Btk—10 to 13 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, sticky and plastic; few very fine, fine, and medium roots; continuous thin and thick clay films on faces of peds; slightly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

Bk1—13 to 20 inches; very pale brown (10YR 8/3) very fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots to a depth of 16 inches; violently effervescent; disseminated carbonates; strongly alkaline; abrupt wavy boundary.

Bk2—20 to 36 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, very sticky and slightly plastic; strongly effervescent; disseminated carbonates; strongly alkaline; abrupt smooth boundary.

Cr—36 inches; soft sandstone.

About 10 to 35 percent of the surface is covered with gravel and channery fragments. The depth to bedrock ranges from 20 to 40 inches. The mollic epipedon is 7 to 10 inches thick.

The A and Bt horizons are mildly alkaline or moderately alkaline. The A horizon is 5 to 35 percent gravel. The Bt horizon has hue of 10YR or 7.5YR. It is gravelly loam, sandy clay loam, gravelly sandy clay loam, or loam. It is 20 to 35 percent clay and 5 to 35 percent gravel. The Bk horizon has hue of 2.5Y or 10YR. It is sandy loam, very fine sandy loam, gravelly loam, gravelly sandy loam, or gravelly sandy clay loam. It is 0 to 35 percent gravel. It is moderately alkaline or strongly alkaline.

The Lymanson soil in the Lymanson-Abston-Gelkie association, hilly, is a taxadjunct because it receives less precipitation and has a thinner or lighter colored epipedon than is typical for the series. These differences, however, do not significantly affect the use and management of the soil.

Midelight Series

The Midelight series consists of deep, well drained soils on pediments and hillslopes. These soils formed in residuum and slope alluvium derived dominantly from schist and gneiss. Slopes are 1 to 15 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Midelight channery loam that has a slope of 4 percent, in an area of Irigul-Midelight-Rock outcrop association, rolling; about 2,600 feet east and 1,400 feet south of the northwest corner of sec. 15, T. 29 N., R. 100 W.

A—0 to 5 inches; brown (10YR 5/3) channery loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; about 25 percent channery fragments; channery fragments and stones covering about 35 percent of the surface; mildly alkaline; clear wavy boundary.

Bk—5 to 21 inches; yellowish brown (10YR 5/4) very channery loam, dark brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots to a depth of 10 inches and few very fine, fine, and medium roots between depths of 10 and 21 inches; about 35 percent channery fragments; common thin coatings of carbonates on the channery fragments; moderately alkaline; clear wavy boundary.

C—21 to 41 inches; light olive brown (2.5Y 5/4) very channery loam, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; about 60 percent channery fragments; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

R—41 inches; hard schist.

About 10 to 40 percent of the surface is covered with channery fragments and stones. The depth to bedrock ranges from 40 to 60 inches. The depth to accumulations of calcium carbonate ranges from 5 to 14 inches. The average content of clay in the control section ranges from 18 to 27 percent. The average content of gravel and channery fragments ranges from 30 to 50 percent, and the average content of stones ranges from 5 to 15 percent.

The A horizon is 15 to 35 percent channery fragments and gravel. It is neutral or mildly alkaline. The Bk and C horizons have hue of 2.5Y or 10YR. The Bk horizon is gravelly, very gravelly, channery, or very channery loam. The C horizon is very gravelly or very channery loam.

The Midelight soil in the Irigul-Midelight-Rock outcrop association, rolling, is a taxadjunct to the series because the epipedon is too thin to qualify as a mollic epipedon. This difference, however, does not significantly affect the use and management of the soil.

Midelight Variant

The Midelight Variant consists of moderately deep, well drained soils on mountainsides and ridges. These soils formed in residuum and slope alluvium derived dominantly from sandstone and limestone. Slopes are 10 to 50 percent. Elevation is 7,400 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Midelight Variant gravelly loam that has a slope of 4 percent, in an area of Midelight Variant-Winada Variant-Starman gravelly loams, steep; about 700 feet west and 350 feet north of the southeast corner of sec. 32, T. 41 N., R. 106 W.

A—0 to 6 inches; brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; about 25 percent angular gravel; gravel and channery fragments covering about 30 percent of the surface;

slightly effervescent; disseminated carbonates; mildly alkaline; clear smooth boundary.

Bk1—6 to 13 inches; pale brown (10YR 6/3) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; many fine and medium roots; about 30 percent angular gravel and 10 percent cobbles; strongly effervescent; disseminated carbonates and many moderate thick coatings of carbonates on rock fragments; moderately alkaline; gradual smooth boundary.

Bk2—13 to 22 inches; very pale brown (10YR 7/3) very gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; about 40 percent angular gravel and 10 percent cobbles; violently effervescent; disseminated carbonates and many moderately thick coatings of carbonates on rock fragments; moderately alkaline; gradual wavy boundary.

Cr—22 inches; soft sandstone.

About 15 to 40 percent of the surface is covered with gravel and cobbles. The depth to bedrock ranges from 20 to 40 inches. The control section is 35 to 50 percent rock fragments. The calcium carbonate equivalent is 15 to 30 percent in the calcic horizon.

The A horizon is 20 to 35 percent angular gravel and 0 to 15 percent cobbles. It is neutral to moderately alkaline. The Bk horizon is 20 to 55 percent angular gravel and channery fragments and 5 to 15 percent cobbles. It is mildly alkaline to strongly alkaline.

Milren Series

The Milren series consists of very deep, well drained soils on fan aprons and terraces. These soils formed in alluvium derived from various sources. Slopes are 1 to 8 percent. Elevation is 6,300 to 7,800 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Milren sandy loam that has a slope of 3 percent, in an area of Milren-Bosler-Rock River sandy loams, 1 to 12 percent slopes; about 480 feet south and 1,300 feet east of the northwest corner of sec. 4, T. 31 N., R. 90 W.

A—0 to 2 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; about 10 percent gravel; neutral; abrupt smooth boundary.

E—2 to 3 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; weak medium platy structure parting to weak medium granular; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; about 10 percent gravel; mildly alkaline; abrupt broken boundary.

Bt—3 to 11 inches; brown (7.5YR 4/4) sandy clay, brown (10YR 4/3) moist; moderate medium prismatic structure parting to strong medium subangular blocky; very hard, firm, very sticky and very plastic; common very fine and fine and few medium roots; continuous thick clay films on faces of peds; about 5 percent gravel; moderately alkaline; gradual wavy boundary.

Btk—11 to 16 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few thin clay films on faces of peds; strongly effervescent; disseminated carbonates and few large threads, seams, and soft masses of carbonates; moderately alkaline; clear wavy boundary.

Bk—16 to 23 inches; very pale brown (10YR 7/3) loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; about 2 percent gravel; violently effervescent; disseminated carbonates and many large soft masses, threads, and seams of carbonates; strongly alkaline; gradual wavy boundary.

C1—23 to 51 inches; very pale brown (10YR 7/4) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; about 2 percent gravel; strongly effervescent; disseminated carbonates; strongly alkaline; gradual wavy boundary.

C2—51 to 56 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; about 2 percent gravel; slightly effervescent; disseminated carbonates; strongly alkaline; clear wavy boundary.

C3—56 to 60 inches; very pale brown (10YR 7/3) loamy fine sand, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; slightly effervescent; disseminated carbonates; strongly alkaline.

Depth to the base of the Bt horizon is 15 to 25 inches. The content of gravel is 0 to 10 percent in the A, E, and Bt horizons and 0 to 15 percent in the Bk and C horizons.

The A and E horizons have hue of 2.5Y or 10YR. They are neutral or mildly alkaline. The Bt horizon has hue of 10YR or 7.5YR. It is clay or sandy clay. It is mildly alkaline or moderately alkaline. The Bk horizon has hue of 2.5Y or 10YR. It is fine sandy loam, sandy loam, sandy clay loam, loam, or clay loam. The C horizon has hue of 5Y to 10YR. It is dominantly fine sandy loam, loam, sandy clay loam, gravelly loam, or gravelly sandy clay loam. In some pedons, however, it is loamy fine sand below a depth of 40 inches. It is moderately alkaline or strongly alkaline.

Milvar Series

The Milvar series consists of very deep, well drained soils on outwash plains and mountain toe slopes. These soils formed in alluvium derived from various sources. Slopes are 1 to 6 percent. Elevation is 6,700 to 7,800 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Milvar stony loam that has a slope of 2 percent, in an area of Milvar-Milren complex, 1 to 6 percent slopes; about 200 feet north and 2,350 feet west of the southeast corner of sec. 22, T. 28 N., R. 90 W.

A—0 to 2 inches; brown (10YR 5/3) stony loam, very dark grayish brown (10YR 3/2) moist; moderate medium and fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; about 10 percent gravel, 5 percent cobbles, and 10 percent stones; gravel, cobbles, and stones covering about 40 percent of the surface; moderately alkaline; abrupt wavy boundary.

AB—2 to 3 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; about 10 percent gravel; mildly alkaline; abrupt wavy boundary.

Bt—3 to 13 inches; brown (7.5YR 5/4) gravelly clay loam, brown (7.5YR 4/4) moist; strong medium prismatic structure parting to strong medium and fine subangular blocky; very hard, firm, very sticky and very plastic; common very fine and fine and few medium roots; continuous moderately thick and few thick clay films on faces of peds; about 15 percent gravel; mildly alkaline; clear wavy boundary.

Btk—13 to 16 inches; brown (7.5YR 5/4) gravelly clay loam, brown (7.5YR 5/4) moist; weak medium prismatic structure parting to weak medium subangular blocky; common very fine and fine and few medium roots; few moderately thick clay films on faces of peds; about 15 percent gravel and 5 percent cobbles; strongly effervescent; disseminated carbonates, common medium seams of carbonates, and pendants of carbonates on rock fragments; mildly alkaline; clear wavy boundary.

Bk1—16 to 26 inches; very pale brown (10YR 8/3) very gravelly loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few very fine, fine, and medium roots; about 30 percent gravel and 5 percent cobbles; violently effervescent; disseminated carbonates and many large seams of carbonates; moderately alkaline; gradual wavy boundary.

2Bk2—26 to 60 inches; pale brown (10YR 6/3) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; about 40 percent gravel, 15 percent cobbles, and 5 percent stones; slightly effervescent; disseminated carbonates and few large seams and soft masses of carbonates; moderately alkaline.

The average content of clay in the control section ranges from 35 to 60 percent. The A horizon is 1 to 5 percent stones, 5 to 20 percent cobbles, and 10 to 40 percent gravel. The Bt horizon is gravelly clay, gravelly sandy clay, or gravelly clay loam. It is 15 to 35 percent gravel and cobbles. The Bk and 2Bk horizons are 35 to 60 percent gravel, 0 to 15 percent cobbles, and 0 to 5 percent stones. The calcium carbonate equivalent in the Bk horizon is 15 to 30 percent.

Monbutte Series

The Monbutte series consists of very deep, well drained soils on strath terraces. These soils formed in residuum and slope alluvium derived dominantly from variegated shale. Slopes are 0 to 10 percent. Elevation is 5,400 to 6,200 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Monbutte fine sandy loam that has a slope of 3 percent, in an area of Almy-Monbutte-Rallod complex, 1 to 10 percent slopes; about 850 feet south and 600 feet west of the northeast corner of sec. 20, T. 33 N., R. 97 W.

E—0 to 4 inches; very pale brown (10YR 8/3) fine sandy loam, brown (7.5YR 4/4) moist; vesicular crust; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; moderately alkaline; abrupt smooth boundary.

Btn1—4 to 8 inches; dark reddish brown (5YR 3/4) clay, dark reddish brown (5YR 3/4) moist; strong coarse columnar structure parting to strong medium angular blocky; extremely hard, very firm, very sticky and very plastic; many very fine, fine, and medium roots; continuous thick clay films on faces of peds; strongly alkaline; clear wavy boundary.

Btn2—8 to 13 inches; yellowish red (5YR 4/6) clay, yellowish red (5YR 4/6) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, very firm, very sticky and very plastic; common very fine, fine, and medium roots; continuous thick clay films on faces of peds; strongly alkaline; clear wavy boundary.

Btnk—13 to 23 inches; yellowish red (5YR 4/6) clay, yellowish red (5YR 4/6) moist; moderate medium prismatic structure parting to moderate medium angular blocky; very hard, very firm, very sticky and very plastic; very fine, fine, and medium roots; continuous thick clay films on horizontal faces of peds and few thick clay films on vertical faces of peds; strongly effervescent; few fine masses and seams of calcium carbonate; strongly alkaline; clear wavy boundary.

Bk1—23 to 32 inches; pink (7.5YR 7/4) sandy clay loam, reddish brown (7.5YR 4/4) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, friable, sticky and plastic; few very fine, fine, and medium roots to a depth of 30 inches; violently effervescent; common medium masses and seams of calcium carbonate; very strongly alkaline; clear wavy boundary.

Bk2—32 to 60 inches; pinkish gray (7.5YR 7/2) sandy clay loam, brown (7.5YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; strongly effervescent; common medium masses and seams of calcium carbonate; very strongly alkaline.

The E horizon has hue of 10YR or 7.5YR. It is moderately alkaline or strongly alkaline. The Btn and Bk horizons have hue of 2.5YR to 7.5YR. They are strongly alkaline or very strongly alkaline. The Btn horizon is clay loam or clay. The exchangeable sodium percentage in this horizon is 15 to 30. The Bk horizon is sandy clay loam, clay loam, or clay. Some pedons have a C horizon.

Mosroc Series

The Mosroc series consists of very shallow or shallow, well drained soils on hillslopes and mountain ridges. These soils formed in residuum and slope alluvium derived dominantly from granite. Slopes are 1 to 15 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Mosroc very gravelly fine sandy loam that has a slope of 3 percent, in an area of Mosroc-Lymanson association, hilly; about 1,200 feet south and 800 feet west of the northeast corner of sec. 2, T. 28 N., R. 98 W.

A—0 to 2 inches; brown (10YR 5/3) very gravelly fine sandy loam, dark brown (10YR 3/3) moist; weak medium and fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; about 35 percent gravel and channery fragments; gravel, channery fragments, and stones covering about 40 percent of the surface; moderately alkaline; abrupt smooth boundary.

BA—2 to 5 inches; dark yellowish brown (10YR 4/4) very gravelly sandy clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure parting to weak medium granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; about 40 percent gravel and channery fragments; moderately alkaline; clear smooth boundary.

Bt—5 to 12 inches; dark brown (7.5YR 4/4) very gravelly sandy clay loam, dark brown (7.5YR 3/2) moist; weak medium prismatic structure parting to strong medium subangular blocky; slightly hard, very friable, sticky and plastic; common very fine, fine, and medium roots; continuous thin and few moderately thick clay films on faces of peds; about 40 percent gravel; moderately alkaline; clear smooth boundary.

C—12 to 18 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; about 55 percent gravel and 5 percent cobbles; moderately alkaline; abrupt wavy boundary.

R—18 inches; granite.

About 25 to 60 percent of the surface is covered with gravel, channery fragments, and stones. The depth to bedrock ranges from 9 to 20 inches. The mollic epipedon is 7 to 15 inches thick. Reaction is neutral to moderately alkaline throughout the profile.

The A horizon is 25 to 50 percent gravel and 0 to 10 percent channery fragments. The Bt horizon has hue of 10YR or 7.5YR. It is very gravelly loam, very gravelly sandy clay loam, or very gravelly clay loam. It is 30 to 50 percent gravel, 0 to 15 percent cobbles, and 0 to 5 percent stones. The C horizon has hue of 2.5Y or 10YR. It is very gravelly sandy loam, very gravelly loam, or very gravelly sandy clay loam. It is 30 to 55 percent gravel, 5 to 15 percent cobbles, and 0 to 5 percent stones.

Mudray Series

The Mudray series consists of shallow, well drained soils on hills and ridges. These soils formed in residuum and slope alluvium derived dominantly from sodic shale. Slopes are 1 to 8 percent. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Mudray clay loam that has a slope of 3 percent, in an area of Effington-Mudray complex, 0 to 8 percent slopes; about 400 feet north and 100 feet west of the southeast corner of sec. 36, T. 35 N., R. 94 W.

A—0 to 2 inches; light brownish gray (2.5Y 6/2) clay loam, pale olive (5Y 6/3) moist; moderate very fine granular structure; slightly hard, very friable, very sticky and plastic; few fine and medium roots; many very fine and fine vesicular pores; strongly alkaline; abrupt smooth boundary.

Btn—2 to 9 inches; olive (5Y 5/4) clay, olive (5Y 4/4) moist; strong coarse columnar structure parting to strong medium and fine angular blocky; hard, firm, sticky and very plastic; few fine and medium roots to a depth of 5 inches; continuous thick clay films on faces of peds; strongly effervescent; disseminated carbonates; exchangeable sodium percentage of more than 15; very strongly alkaline; clear wavy boundary.

Bkn—9 to 14 inches; olive (5Y 5/4) clay, olive (5Y 4/4) moist; strong medium angular blocky structure; hard, firm, sticky and plastic; about 40 percent shale fragments that break down when wetted; strongly effervescent; disseminated carbonates; very strongly alkaline; abrupt wavy boundary.

Cr—14 inches; soft, sodic shale.

The depth to bedrock ranges from 10 to 20 inches. The A horizon has hue of 5Y to 10YR. It is strongly alkaline or very strongly alkaline. The Btn and Bkn horizons have hue of 5Y to 7.5YR. The Btn horizon is clay, clay loam, or sandy clay. It is 35 to 50 percent clay. The exchangeable sodium percentage in this horizon ranges from 15 to 30. The Bkn horizon is clay or silty clay loam. It is strongly alkaline or very strongly alkaline.

Muff Series

The Muff series consists of moderately deep, well drained soils on hillslopes. These soils formed in residuum and slope alluvium derived dominantly from shale interbedded with sandstone. Slopes are 1 to 12 percent. Elevation is 4,800 to 6,200 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Muff loam that has a slope of 5 percent, in an area of Uffens-Muff-Frisite loams, 1 to 12 percent slopes; about 1,700 feet north and 1,320 feet west of the southeast corner of sec. 19, T. 37 N., R. 89 W.

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; soft, very friable, sticky and plastic; many very fine, fine, and medium roots; moderately alkaline; abrupt wavy boundary.

Btn—2 to 12 inches; brown (10YR 5/3) clay loam, light olive brown (2.5Y 5/4) moist; moderate medium and coarse columnar structure parting to moderate medium angular blocky; very hard, firm, very sticky and very plastic; common very fine, fine, and medium roots; continuous moderately thick and few thick clay films on faces of peds; slightly effervescent; disseminated carbonates; exchangeable sodium percentage of 15 to 30; very strongly alkaline; clear wavy boundary.

Btk—12 to 20 inches; light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4) moist; weak medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; few very fine, fine, and medium roots; continuous thin clay films on faces of peds; strongly effervescent; disseminated carbonates and many fine soft masses, threads, and seams of carbonates; very strongly alkaline; clear wavy boundary.

Bk—20 to 29 inches; light yellowish brown (2.5Y 6/4) sandy clay loam, light olive brown (2.5Y 5/4) moist; massive; hard, friable, sticky and plastic; strongly effervescent; disseminated carbonates and many fine threads and seams of carbonates; strongly alkaline; abrupt wavy boundary.

Cr—29 inches; soft shale.

The depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 0 to 15 percent.

The A horizon has hue of 5Y to 10YR. The Btn and Bk horizons are strongly alkaline or very strongly alkaline. The Btn horizon has hue of 2.5Y or 10YR. It is sandy clay loam or clay loam. It is 20 to 35 percent clay. The exchangeable sodium percentage in this horizon is 15 to 30. The Bk horizon has hue of 5Y or 2.5Y.

Oceanet Series

The Oceanet series consists of shallow, well drained soils on hills and ridges. These soils formed in residuum and slope alluvium derived dominantly from sandstone. Slopes are 5 to 45 percent. Elevation is 5,200 to 6,500 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of an Oceanet sandy loam that has a slope of 6 percent, in an area of Worland-Oceanet-Persayo association, rolling; about 3,000 feet north and 1,300 feet west of the southeast corner of sec. 33, T. 39 N., R. 93 W.

A—0 to 1 inch; light yellowish brown (10YR 6/4) sandy loam, brown (10YR 4/3) moist; weak fine granular structure parting to moderate very fine granular; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; slightly effervescent; disseminated carbonates; mildly alkaline; abrupt wavy boundary.

C1—1 to 8 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; strongly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

C2—8 to 19 inches; pale brown (10YR 6/3) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; strongly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

Cr—19 inches; soft sandstone.

The depth to bedrock ranges from 10 to 20 inches. The A and C horizons have hue of 5Y to 10YR. They are mildly alkaline or moderately alkaline. They are 0 to 15 percent gravel. The C horizon is fine sandy loam or sandy loam.

Onason Series

The Onason series consists of shallow, well drained soils on ridges and hills. These soils formed in residuum and slope alluvium derived dominantly from sandstone. Slopes are 5 to 45 percent. Elevation is 6,500 to 7,600 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of an Onason gravelly sandy loam that has a slope of 25 percent, in an area of Bluerim-Onason complex, hilly; about 400 feet north and 2,850 feet east of the southwest corner of sec. 33, T. 27 N., R. 91 W.

A1—0 to 2 inches; brown (10YR 5/3) gravelly sandy loam, brown (10YR 4/3) moist; weak very fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many fine and few medium roots; about 15 percent gravel; gravel and cobbles covering about 30 percent of the surface; neutral; abrupt smooth boundary.

A2—2 to 6 inches; yellowish brown (10YR 5/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium and coarse granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine and few medium roots; about 15 percent gravel; neutral; clear smooth boundary.

C—6 to 17 inches; light yellowish brown (2.5Y 6/4) gravelly sandy loam, light olive brown (2.5Y 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; many fine and few medium roots; about 15 percent gravel; neutral; abrupt wavy boundary.

Cr—17 inches; soft, coarse grained sandstone.

The depth to bedrock ranges from 10 to 20 inches. The A and C horizons are neutral or mildly alkaline. They have hue of 2.5Y or 10YR. They are 5 to 35 percent rock fragments. The C horizon is gravelly sandy loam or sandy loam.

Orpha Series

The Orpha series consists of very deep, excessively drained soils on dunes. These soils formed in sandy eolian material derived from various sources. Slopes are 5 to 40 percent. Elevation is 5,300 to 6,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 120 days to 130 days.

Typical pedon of an Orpha sand that has a slope of 15 percent, in an area of Orpha-Vonalee complex, hilly; about 2,300 feet south and 12 feet west of the northeast corner of sec. 6, T. 36 N., R. 89 W.

A1—0 to 1 inch; pale brown (10YR 6/3) sand, grayish brown (10YR 5/2) moist; single grain; loose, nonsticky and nonplastic; common very fine, fine, and medium roots; neutral; abrupt wavy boundary.

A2—1 to 5 inches; yellowish brown (10YR 5/4) sand, yellowish brown (10YR 5/4) moist; weak coarse subangular blocky structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; neutral; clear wavy boundary.

AC—5 to 10 inches; yellowish brown (10YR 5/4) sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; common very fine, fine, and medium roots; mildly alkaline; clear wavy boundary.

C—10 to 60 inches; yellowish brown (10YR 5/4) sand, dark yellowish brown (10YR 4/4) moist; single grain;

loose, nonsticky and nonplastic; few very fine, fine, and medium roots to a depth of 28 inches; moderately alkaline.

The depth to calcareous material is more than 40 inches. The A and C horizons have hue of 2.5Y or 10YR. The A horizon is neutral or mildly alkaline. The C horizon is fine sand or sand. It is mildly alkaline or moderately alkaline.

Owen Creek Series

The Owen Creek series consists of moderately deep, well drained soils on hillslopes and fan aprons. These soils formed in residuum and slope alluvium derived dominantly from shale interbedded with sandstone. Slopes are 2 to 15 percent. Elevation is 7,500 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of an Owen Creek very stony clay loam that has a slope of 8 percent, in an area of Owen Creek very stony clay loam, 2 to 15 percent slopes; about 2,700 feet north and 600 feet west of the southeast corner of sec. 10, T. 42 N., R. 106 W.

A—0 to 2 inches; grayish brown (10YR 5/2) very stony clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, very friable, sticky and plastic; many very fine and fine roots; about 40 percent channery fragments and stones; stones and channery fragments covering about 40 percent of the surface; mildly alkaline; abrupt wavy boundary.

Bt1—2 to 11 inches; brown (10YR 5/3) clay loam, very dark grayish brown (10YR 3/2) moist; strong medium prismatic structure; very hard, firm, very sticky and very plastic; many very fine and fine roots to a depth of 4 inches and common very fine, fine, and medium roots between depths of 4 and 11 inches; many thick clay films on faces of peds; mildly alkaline; clear wavy boundary.

Bt2—11 to 16 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; common very fine and fine and few medium roots to a depth of 14 inches and few very fine and fine roots between depths of 14 and 16 inches; few thin clay films on faces of peds; slightly effervescent; disseminated carbonates; mildly alkaline; clear wavy boundary.

Bk—16 to 29 inches; olive gray (5Y 5/2) clay loam, olive gray (5Y 4/2) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; violently effervescent; disseminated carbonates, common large irregular soft masses of carbonates, and many fine and medium filaments and seams of carbonates; few fine seams of gypsum; strongly alkaline; clear wavy boundary.

C—29 to 39 inches; olive gray (5Y 5/2) clay loam, olive gray (5Y 4/2) moist; moderate thin platy structure; slightly hard, very friable, sticky and plastic; few very fine and fine roots; strongly effervescent; disseminated carbonates; strongly alkaline; gradual wavy boundary.

2Cr—39 inches; soft shale.

About 20 to 60 percent of the surface is covered with channery fragments and stones. The depth to bedrock ranges from 20 to 40 inches. The control section is 0 to 15 percent rock fragments.

The A and Bt horizons are mildly alkaline or moderately alkaline. The content of rock fragments is 35 to 50 percent in the A horizon and 0 to 15 percent in the Bt, Bk, and C horizons. The Bt horizon has hue of 2.5Y to 7.5YR. It is clay loam or clay. The Bk and C horizons have hue of 5Y to 10YR. They are clay loam or silty clay loam. They are moderately alkaline or strongly alkaline.

Pensore Series

The Pensore series consists of shallow, well drained soils on ridges and hills. These soils formed in residuum and slope alluvium derived dominantly from limestone. Slopes are 5 to 45 percent. Elevation is 5,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Pensore very channery loam that has a slope of 20 percent, in an area of Pensore-Rock outcrop complex, hilly; about 200 feet north and 650 feet east of the southwest corner of sec. 7, T. 28 N., R. 96 W.

A—0 to 3 inches; brown (10YR 5/3) very channery loam, dark brown (10YR 3/3) moist; moderate medium granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine and few medium roots; about 45 percent channery fragments; gravel and channery fragments covering about 40 percent of the surface; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

Bk—3 to 11 inches; brown (10YR 5/3) very channery loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; about 60 percent channery fragments; violently effervescent; disseminated carbonates, many very fine soft masses of carbonates, and thick pendants of carbonates on the bottom of rock fragments; moderately alkaline; abrupt wavy boundary.

R—11 inches; hard limestone.

About 25 to 60 percent of the surface is covered with gravel and channery fragments. The depth to bedrock ranges from 10 to 20 inches. The control section is 35 to 60 percent rock fragments. The content of clay is 15 to 25 percent.

The A and Bk horizons have hue of 2.5Y or 10YR. The Bk horizon is very channery sandy loam, very channery loam, or very channery sandy clay loam. It is moderately alkaline or strongly alkaline. The calcium carbonate equivalent in this horizon is 40 to 50 percent.

Persayo Series

The Persayo series consists of very shallow or shallow, well drained soils on ridges, hills, and escarpments. These soils formed in residuum and slope alluvium derived dominantly from soft shale. Slopes are 3 to 45 percent. Elevation is 4,800 to 6,500 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Persayo clay loam that has a slope of 8 percent, in an area of Persayo-Rock outcrop complex, hilly; about 2,200 feet north and 500 feet west of the southeast corner of sec. 6, T. 34 N., R. 92 W.

A—0 to 3 inches; light yellowish brown (2.5Y 6/4) clay loam, light olive brown (2.5Y 5/4) moist; weak medium platy structure; soft, very friable, sticky and plastic; common very fine, fine, and medium roots; about 5 percent soft shale fragments; strongly effervescent; disseminated carbonates; strongly alkaline; abrupt smooth boundary.

C—3 to 16 inches; light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4) moist; massive; hard, very friable, sticky and plastic; common very fine, fine, and medium roots to a depth of 5 inches and few very fine, fine, and medium roots between depths of 5 and 9 inches; about 5 percent soft shale fragments; violently effervescent; disseminated carbonates; strongly alkaline; abrupt smooth boundary.

Cr—16 inches; soft shale.

The depth to bedrock ranges from 4 to 20 inches. The A and C horizons are moderately alkaline or strongly alkaline. The A horizon has hue of 2.5Y or 10YR. The C horizon has hue of 5Y or 2.5Y. It is loam, silt loam, silty clay loam, or clay loam. It is 18 to 35 percent clay.

Pesmore Series

The Pesmore series consists of moderately deep, well drained soils on mountainsides, ridges, and hillslopes. These soils formed in residuum and slope alluvium derived dominantly from schist and gneiss. Slopes are 10 to 60 percent. Elevation is 6,300 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Pesmore very channery sandy loam that has a slope of 20 percent, in an area of Pesmore-Rock outcrop-Asholler complex, steep; about 1,875 feet north and 1,700 feet east of the southwest corner of sec. 22, T. 40 N., R. 92 W.

A—0 to 3 inches; dark grayish brown (2.5Y 4/2) very channery sandy loam, very dark grayish brown (2.5Y 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; about 40 percent channery fragments; mildly alkaline; abrupt smooth boundary.

Bw—3 to 10 inches; brown (10YR 4/3) very channery loam, dark brown (10YR 3/3) moist; weak coarse prismatic structure parting to weak medium and fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; about 40 percent channery fragments; mildly alkaline; clear wavy boundary.

Bk1—10 to 12 inches; olive brown (2.5Y 4/4) very channery loam, dark grayish brown (2.5Y 4/2) moist; weak coarse prismatic structure parting to weak medium and fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; about 40 percent channery fragments; strongly effervescent; disseminated carbonates and thin coatings of carbonates on the bottom of rock fragments; moderately alkaline; clear wavy boundary.

Bk2—12 to 20 inches; light brownish gray (2.5Y 6/2) very channery loam, grayish brown (2.5Y 5/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; about 50 percent channery fragments; violently effervescent; disseminated carbonates and many medium soft masses of carbonates; moderately alkaline; clear wavy boundary.

C—20 to 24 inches; olive (5Y 5/3) very channery loam, olive (5Y 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; about 50 percent channery fragments; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt wavy boundary.

R—24 inches; hard schist.

The depth to bedrock ranges from 20 to 40 inches. The mollic epipedon is 7 to 15 inches thick. The average content of rock fragments in the control section ranges from 35 to 60 percent. The control section is 18 to 35 percent clay. The content of rock fragments is 10 to 40 percent in the A horizon, 15 to 60 percent in the Bw horizon, and 35 to 60 percent in the Bk and C horizons.

The A and Bw horizons have hue of 2.5Y to 7.5YR. The Bw horizon is very gravelly sandy loam, gravelly loam, very gravelly sandy clay loam, very channery loam, or very channery sandy clay loam. It is mildly alkaline or moderately alkaline. The Bk and C horizons have hue of 5Y to 7.5YR. They are very channery loam or very channery sandy clay loam. They are moderately alkaline or strongly alkaline.

Peyton Series

The Peyton series consists of very deep, well drained soils on fan aprons and valley side slopes. These soils formed in alluvium derived from various sources. Slopes are 0 to 10 percent. Elevation is 7,000 to 8,000 feet. The annual precipitation is 13 to 16 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days. The soils receive additional moisture from melting snowdrifts.

Typical pedon of a Peyton sandy loam that has a slope of 10 percent, in an area of Peyton sandy loam, 1 to 10 percent slopes; about 1,300 feet north and 1,500 feet east of the southwest corner of sec. 30, T. 27 N., R. 90 W.

A—0 to 2 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; slightly acid; abrupt smooth boundary.

Bt1—2 to 7 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 3/3) moist; moderate medium and coarse prismatic structure parting to moderate medium and coarse subangular blocky; hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common moderately thick clay films on faces of peds and as bridges between sand grains; neutral; clear wavy boundary.

Bt2—7 to 15 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 3/3) moist; moderate medium and coarse prismatic structure parting to moderate medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; few thin clay films on faces of peds and as bridges between sand grains; neutral; clear wavy boundary.

BCt—15 to 22 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; few thin clay films on faces of peds; neutral; clear wavy boundary.

C1—22 to 30 inches; light yellowish brown (10YR 6/4) coarse sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; neutral; clear wavy boundary.

C2—30 to 60 inches; light yellowish brown (10YR 6/4) loamy sand, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, nonsticky and nonplastic; neutral.

Depth to the base of the argillic horizon is 18 to 34 inches. The control section is 0 to 15 percent rock fragments. The Bt horizon has hue of 10YR or 7.5YR. The C horizon has hue of 2.5Y or 10YR. It is loamy sand, sandy loam, or coarse sandy loam. It is 0 to 15 percent rock fragments.

Pishkun Variant

The Pishkun Variant consists of very deep, well drained soils on terrace escarpments. These soils formed in alluvium derived from various sources. Slopes are 3 to 25 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Pishkun Variant very gravelly loam that has a slope of 20 percent, in an area of Pishkun Variant-Hoodle complex, hilly; about 1,000 feet north and 800 feet west of the southeast corner of sec. 11, T. 28 N., R. 101 W.

A—0 to 3 inches; brown (10YR 5/3) very gravelly loam, brown (10YR 4/3) moist; weak medium granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine and common medium roots; about 60 percent gravel; gravel and stones covering about 45 percent of the surface; slightly effervescent; disseminated carbonates; mildly alkaline; abrupt wavy boundary.

Bk1—3 to 9 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine and common medium roots; about 60 percent gravel; strongly effervescent; disseminated carbonates and few medium soft masses of carbonates; mildly alkaline; clear wavy boundary.

Bk2—9 to 15 inches; very pale brown (10YR 7/3) very gravelly sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; about 60 percent gravel; strongly effervescent; disseminated carbonates and common thin pendants of carbonates on pebbles; mildly alkaline; clear wavy boundary.

Bk3—15 to 28 inches; light gray (10YR 7/2) very gravelly sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; about 60 percent gravel; strongly effervescent; disseminated carbonates and common thin pendants of carbonates on pebbles; strongly alkaline; clear wavy boundary.

Bk4—28 to 35 inches; white (10YR 8/2) very gravelly sandy loam, light gray (10YR 7/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; about 60 percent gravel; violently effervescent; disseminated carbonates and common thin pendants of carbonates on pebbles; strongly alkaline; clear wavy boundary.

Bk5—35 to 60 inches; light gray (10YR 7/2) very gravelly sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; about 60 percent gravel; strongly effervescent; disseminated carbonates and few thin coatings of carbonates on pebbles; moderately alkaline.

About 30 to 60 percent of the surface is covered with gravel, channery fragments, and stones. The A horizon is 35 to 60 percent gravel and channery fragments. The Bk horizon is 10 to 20 percent clay, 35 to 60 percent gravel, and 10 to 15 percent channery fragments.

Poposhia Series

The Poposhia series consists of very deep, well drained soils on fan aprons and toe slopes. These soils formed in alluvium derived from various sources. Slopes are 1 to 20 percent. Elevation is 5,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Poposhia loam that has a slope of 3 percent, in an area of Forelle-Poposhia association, 2 to 12 percent slopes; about 800 feet east and 2,975 feet south of the northwest corner of sec. 23, T. 33 N., R. 98 W.

A—0 to 3 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

Bk—3 to 15 inches; pale brown (10YR 6/3) clay loam, light olive brown (2.5Y 5/4) moist; weak medium prismatic structure; hard, firm, sticky and plastic; common very fine and fine and few medium roots; slightly effervescent; disseminated carbonates and few fine threads and seams of carbonates; moderately alkaline; clear wavy boundary.

C—15 to 60 inches; pale brown (10YR 6/3) loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots to a depth of 22 inches and no roots below that depth; slightly effervescent; disseminated carbonates; moderately alkaline.

The control section ranges from 18 to 35 percent clay and from 0 to 20 percent gravel. The electrical conductivity is 1 to 4 millimhos per centimeter in the A horizon and 1 to 8 millimhos per centimeter in the Bk and C horizons.

The A, Bk, and C horizons have hue of 2.5Y or 10YR. The A horizon is mildly alkaline to strongly alkaline. The Bk horizon commonly is loam or clay loam, but it is sandy clay loam in some pedons. It is mildly alkaline to strongly alkaline. Some pedons do not have a Bk horizon. The C horizon is commonly loam, sandy clay loam, or clay loam, but in some pedons it is stratified with lenses of loamy sand or sandy loam below a depth of 40 inches. It commonly is moderately alkaline or strongly alkaline, but it ranges to very strongly alkaline in areas where the soil is designated as a sodic phase.

Quander Series

The Quander series consists of very deep, well drained soils on the back slopes and foot slopes of mountains. These soils formed in alluvium derived from various sources. Slopes are 5 to 45 percent. Elevation is 7,000 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Quander cobbly loam that has a slope of 25 percent, in an area of Quander-Youga-Onason complex, steep; about 2,800 feet west and 4,000 feet north of the southeast corner of sec. 29, T. 28 N., R. 91 W.

A—0 to 3 inches; grayish brown (10YR 5/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and few medium roots; about 10 percent gravel, 15 percent cobbles, and 5 percent stones; gravel, cobbles, and stones covering about 35 percent of the surface; neutral; abrupt smooth boundary.

Bt1—3 to 10 inches; brown (10YR 5/3) very cobbly sandy clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to weak fine and medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many fine and few medium roots; common thick clay films on faces of peds; about 10 percent gravel, 30 percent cobbles, and 5 percent stones; neutral; clear wavy boundary.

Bt2—10 to 16 inches; yellowish brown (10YR 5/4) very cobbly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to weak fine and medium subangular blocky; hard, friable, sticky and plastic; common fine and few medium roots; common thick clay films on faces of peds; about 10 percent gravel, 30 percent cobbles, and 5 percent stones; neutral; gradual wavy boundary.

C1—16 to 42 inches; yellowish brown (10YR 5/6) very cobbly sandy clay loam, dark yellowish brown (10YR 4/6) moist; massive; hard, friable, sticky and plastic; about 10 percent gravel, 30 percent cobbles, and 5 percent stones; neutral; diffuse wavy boundary.

C2—42 to 60 inches; brownish yellow (10YR 6/6) very cobbly sandy clay loam, yellowish brown (10YR 5/6) moist; massive; hard, friable, sticky and plastic; about 10 percent gravel, 30 percent cobbles, and 10 percent stones; neutral.

About 5 to 40 percent of the surface is covered with gravel, cobbles, or stones. Reaction is slightly acid or neutral throughout the profile.

The A, Bt, and C horizons have hue of 2.5Y or 10YR. The content of rock fragments is 15 to 35 percent in the A horizon and 35 to 60 percent in the Bt and C horizons. The Bt horizon is very cobbly sandy clay loam or very gravelly sandy clay loam. The C horizon is very cobbly loam, very cobbly sandy clay loam, or very gravelly loam.

Rairdent Series

The Rairdent series consists of very deep, well drained soils on dissected fan aprons and terraces. These soils formed in alluvium derived from various sources. Slopes are 1 to 8 percent. Elevation is 4,800 to 6,200 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Rairdent loam that has a slope of 3 percent, in an area of Emblem-Clifsand-Rairdent complex, 1 to 25 percent slopes; about 1,800 feet north and 2,200 feet east of the southwest corner of sec. 25, T. 40 N., R. 90 W.

A—0 to 2 inches; yellowish brown (10YR 5/4) loam, yellowish brown (10YR 5/4) moist; weak fine granular structure; soft, very friable, sticky and plastic; many very fine and fine and few medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

Bw—2 to 7 inches; yellowish brown (10YR 5/4) loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to weak medium and fine subangular blocky; slightly hard, friable, sticky and plastic; many very fine and fine and few medium roots; strongly effervescent; disseminated carbonates; moderately alkaline; abrupt wavy boundary.

Bky—7 to 45 inches; light yellowish brown (10YR 6/4) loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, very friable, sticky and plastic; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates and few soft masses of carbonates; many fine, medium, and large soft masses, seams, and crystals of gypsum; mildly alkaline; gradual wavy boundary.

By—45 to 60 inches; pale yellow (2.5Y 7/4) loam, light yellowish brown (2.5Y 6/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; many large crystals of gypsum; mildly alkaline.

Depth to the gypsic horizon is 7 to 21 inches. The control section is 18 to 33 percent clay. Reaction is mildly alkaline or moderately alkaline throughout the profile.

The A horizon is 0 to 15 percent gravel. The Bw, Bky, and By horizons are loam, sandy clay loam, or clay loam. The Bw horizon has hue of 10YR or 7.5YR. The Bky and By horizons have hue of 2.5Y or 10YR.

Rallod Series

The Rallod series consists of very shallow or shallow, well drained, sodic soils on hills and ridges. These soils formed in residuum and slope alluvium derived dominantly from variegated shale. Slopes are 3 to 25 percent. Elevation is 5,300 to 6,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Rallod very fine sandy loam that has a slope of 5 percent, in an area of Almy-Monbutte-Rallod complex, 1 to 10 percent slopes; about 1,100 feet east and 250 feet north of the southwest corner of sec. 31, T. 34 N., R. 97 W.

A1—0 to 4 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine vesicular pores; moderately alkaline; clear smooth boundary.

A2—4 to 7 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak thin platy structure parting to moderate very fine granular; soft, very friable, slightly sticky and plastic; common very fine, fine, and medium roots; strongly alkaline; abrupt smooth boundary.

Btn—7 to 12 inches; reddish brown (5YR 5/4) sandy clay, reddish brown (5YR 4/4) moist; strong medium columnar structure parting to moderate coarse angular blocky; extremely hard, extremely firm, very sticky and very plastic; few very fine, fine, and medium roots; continuous thick clay films on faces of peds; slightly effervescent; disseminated carbonates; strongly alkaline; clear wavy boundary.

Btnk—12 to 14 inches; brown (7.5YR 5/4) sandy clay, yellowish brown (10YR 5/4) moist; strong medium prismatic structure parting to moderate coarse angular blocky; extremely hard, extremely firm, very sticky and very plastic; few very fine, fine, and medium roots; continuous thick clay films on faces of peds; strongly effervescent; disseminated carbonates and few small and medium soft masses and seams of carbonates; very strongly alkaline; clear broken boundary.

Bk—14 to 18 inches; variegated brown (7.5YR 5/4) and light olive brown (2.5Y 5/4) sandy clay loam, brown (7.5YR 5/4) and light olive brown (2.5Y 5/4) moist; weak coarse angular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates and few medium seams of carbonates; strongly alkaline; abrupt wavy boundary.

Cr—18 inches; soft, variegated shale.

The depth to bedrock ranges from 9 to 20 inches. The A horizon has hue of 10YR to 5YR. It is mildly alkaline to strongly alkaline. The Btn horizon has hue of 10YR to 2.5YR. It is clay loam or sandy clay. It is 35 to 50 percent clay. It is strongly alkaline or very strongly alkaline. The exchangeable sodium percentage in this horizon is 15 to 30. The Bk horizon has hue of 2.5Y to 2.5YR. It is sandy clay loam or clay loam.

Relsob Series

The Relsob series consists of very deep, well drained soils on fan aprons and toe slopes. These soils formed in alluvium derived dominantly from sandstone. Slopes are 1 to 6 percent. Elevation is 7,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Relsob sandy loam that has a slope of 2 percent, in an area of Relsob-Bluerim sandy loams, 1 to 10 percent slopes; about 960 feet south and 670 feet west of the northeast corner of sec. 33, T. 27 N., R. 92 W.

A—0 to 3 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; moderately alkaline; abrupt smooth boundary.

Bt1—3 to 12 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; many very fine and fine and common medium roots; common thin clay films on faces of peds and as bridges between sand grains; mildly alkaline; clear wavy boundary.

Bt2—12 to 15 inches; light yellowish brown (10YR 6/4) gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; strong medium prismatic structure parting to strong medium subangular blocky; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots; many moderately thick clay films on faces of peds; about 15 percent gravel; mildly alkaline; abrupt wavy boundary.

2C—15 to 60 inches; light yellowish brown (10YR 6/4) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots to a depth of 28 inches and no roots below that depth; about 40 percent gravel; mildly alkaline.

The A horizon is 0 to 15 percent rock fragments. It is mildly alkaline or moderately alkaline. The Bt horizon is sandy clay loam or gravelly sandy clay loam. It is 0 to 20 percent rock fragments. The 2C horizon has hue of 2.5Y or 10YR. It is very gravelly loamy sand or sand. It is 5 to 60 percent rock fragments. It is mildly alkaline or moderately alkaline.

Rentsac Series

The Rentsac series consists of shallow, well drained soils on ridges. These soils formed in residuum and slope alluvium derived from sandstone. Slopes are 6 to 40 percent. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Rentsac very gravelly loam that has a slope of 12 percent, in an area of Rentsac-Carmody complex, hilly; about 1,100 feet west and 2,750 feet north of the southeast corner of sec. 2, T. 31 N., R. 95 W.

A—0 to 5 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; about 50 percent gravel and channery fragments; gravel and cobbles covering about 30 percent of the surface; strongly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

C—5 to 14 inches; light gray (2.5Y 7/2) very gravelly loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots; about 50 percent gravel and channery fragments; violently effervescent; disseminated carbonates; moderately alkaline; abrupt wavy boundary.

R—14 inches; hard sandstone.

About 15 to 75 percent of the surface is covered with gravel, channery fragments, and cobbles. The depth to bedrock ranges from 10 to 20 inches. The control section is 50 to 60 percent gravel and channery fragments and 0 to 10 percent cobbles and flagstones.

The C horizon has hue of 2.5Y or 10YR. It is very gravelly sandy loam or very gravelly loam. It is moderately alkaline or strongly alkaline.

Rockinchair Series

The Rockinchair series consists of moderately deep, well drained soils on hills and ridges. These soils formed in residuum and slope alluvium derived dominantly from variegated shale interbedded with sandstone. Slopes are 1 to 45 percent. Elevation is 6,500 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Rockinchair fine sandy loam that has a slope of 6 percent, in an area of Rockinchair-Rock outcrop-Sinkson complex, hilly; about 225 feet west and 1,400 feet south of the northeast corner of sec. 31, T. 42 N., R. 106 W.

A—0 to 4 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium platy structure parting to moderate medium granular; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; strongly effervescent; disseminated carbonates; mildly alkaline; abrupt wavy boundary.

Bk1—4 to 18 inches; pale brown (10YR 6/3) sandy clay loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, friable, slightly sticky and plastic; common very fine, fine, and medium roots; about 5 percent gravel; strongly effervescent; disseminated carbonates, many fine and medium soft masses and seams of carbonates, and thin pendants of carbonates on pebbles; moderately alkaline; clear wavy boundary.

Bk2—18 to 32 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine, fine, and medium roots to a depth of 24 inches; about 5 percent gravel; strongly effervescent; disseminated carbonates and thin coatings of carbonates on pebbles; moderately alkaline; abrupt wavy boundary.

Cr—32 inches; soft shale.

The depth to bedrock ranges from 20 to 40 inches. The depth to secondary calcium carbonate is 4 to 18 inches.

The A horizon has hue of 10YR to 5YR. It is 0 to 15 percent gravel and 0 to 10 percent cobbles. It is mildly alkaline or moderately alkaline. The Bk horizon has hue of 2.5Y to 2.5YR. It is loam, sandy clay loam, or clay loam. It is 18 to 30 percent clay, 0 to 20 percent gravel, and 0 to 10 percent cobbles. It is moderately alkaline or strongly alkaline. The calcium carbonate equivalent in this horizon is 15 to 35 percent.

Rock River Series

The Rock River series consists of very deep, well drained soils on fan aprons, toe slopes, and terraces. These soils formed in alluvium derived from various sources. Slopes are 1 to 12 percent. Elevation is 5,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Rock River fine sandy loam that has a slope of 4 percent, in an area of Cushool-Rock River association, 1 to 15 percent slopes; about 3,000 feet east and 50 feet south of the northwest corner of sec. 31, T. 34 N., R. 95 W.

A—0 to 3 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak medium platy structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many very fine and fine vesicular pores; mildly alkaline; abrupt smooth boundary.

Bt—3 to 13 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; continuous thick clay films on faces of peds; common very fine and fine and few medium roots; mildly alkaline; clear wavy boundary.

Btk—13 to 18 inches; brown (10YR 5/3) sandy clay loam, brown (10YR 5/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; continuous thin and few thick clay films on faces of peds; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates and many large soft masses and seams of carbonates; moderately alkaline; clear wavy boundary.

Bk—18 to 34 inches; pale brown (10YR 6/3) sandy clay loam, grayish brown (10YR 5/2) moist; moderate medium prismatic structure; hard, friable, sticky and plastic; few very fine, fine, and medium roots to a depth of 22 inches; strongly effervescent; disseminated carbonates and many large soft masses and seams of carbonates; moderately alkaline; clear wavy boundary.

C—34 to 60 inches; light brownish gray (10YR 6/2) sandy clay loam, grayish brown (10YR 5/2) moist; massive; hard, friable, sticky and plastic; slightly effervescent; disseminated carbonates; moderately alkaline.

The average content of clay in the control section ranges from 20 to 35 percent. The A and Bt horizons are mildly alkaline or moderately alkaline, and the Bk and C horizons are moderately alkaline or strongly alkaline. The A, Bt, and Bk horizons have hue of 10YR or 7.5YR. The Bk horizon is sandy loam, fine sandy loam, sandy clay loam, or gravelly sandy loam. It is 0 to 25 percent gravel. The C horizon has hue of 2.5Y to 7.5YR. It is sandy loam, fine sandy loam, or sandy clay loam.

Roxal Series

The Roxal series consists of shallow, well drained soils on mountainsides, hills, and ridges. These soils formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. Slopes are 20 to 65 percent. Elevation is 7,500 to 9,000 feet. The annual precipitation is 15 to 22 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is less than 60 days.

Typical pedon of a Roxal sandy clay loam that has a slope of 28 percent, in an area of Roxal-Tongue River complex, hilly; about 1,650 feet south and 1,650 feet west of the northeast corner of sec. 17, T. 42 N., R. 108 W.

A—0 to 4 inches; light yellowish brown (2.5Y 6/4) sandy clay loam, light olive brown (2.5Y 5/4) moist; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and common medium roots; strongly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

C1—4 to 8 inches; pale yellow (2.5Y 7/4) sandy clay loam, light olive brown (2.5Y 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; many fine and common medium roots; strongly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

C2—8 to 13 inches; pale yellow (2.5Y 7/4) loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many fine and common medium roots; strongly effervescent; disseminated carbonates; moderately alkaline; clear wavy boundary.

Cr—13 inches; soft sandstone.

The depth to bedrock ranges from 10 to 20 inches. The control section is 0 to 25 percent rock fragments and 18 to 35 percent clay. The A horizon has hue of 2.5Y or 10YR. It is neutral to moderately alkaline. The C horizon has hue of 2.5Y or 5Y. It is sandy clay loam, clay loam, loam, gravelly sandy clay loam, or gravelly clay loam.

Ryan Park Series

The Ryan Park series consists of very deep, well drained soils on fan aprons and terraces. These soils formed in alluvium and eolian deposits derived from various sources. Slopes are 1 to 8 percent. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Ryan Park loamy fine sand that has a slope of 6 percent, in an area of Ryan Park loamy fine sand, undulating; about 1,800 feet north and 1,300 feet east of the southwest corner of sec. 34, T. 34 N., R. 91 W.

A—0 to 3 inches; grayish brown (10YR 5/2) loamy fine sand, dark grayish brown (10YR 4/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; mildly alkaline; abrupt smooth boundary.

Bt—3 to 12 inches; brown (10YR 5/3) fine sandy loam, olive brown (2.5Y 4/4) moist; moderate coarse prismatic structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; continuous thin clay films on vertical faces of peds and few thin clay films on horizontal faces of peds; mildly alkaline; clear wavy boundary.

Btk—12 to 17 inches; light olive brown (2.5Y 5/4) fine sandy loam, olive brown (2.5Y 4/4) moist; weak coarse prismatic structure; slightly hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; few thin clay films on vertical faces of peds; strongly effervescent; disseminated carbonates and common fine filaments and soft masses of carbonates; moderately alkaline; clear wavy boundary.

Bk—17 to 34 inches; light olive brown (2.5Y 5/4) fine sandy loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates and many fine and medium filaments and soft masses of carbonates; moderately alkaline; gradual wavy boundary.

C—34 to 60 inches; light olive brown (2.5Y 5/4) sandy loam, olive brown (2.5Y 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few medium roots; strongly effervescent; disseminated carbonates; moderately alkaline.

The Bt and Bk horizons have hue of 2.5Y to 7.5YR. The Bt horizon is fine sandy loam or sandy loam. It is mildly alkaline or moderately alkaline. The Bk horizon is loamy sand, loamy fine sand, sandy loam, or fine sandy loam. It is moderately alkaline or strongly alkaline. The C horizon has hue of 2.5Y or 10YR. It is loamy sand, loamy fine sand, or sandy loam.

Ryan Park Variant

The Ryan Park Variant consists of deep, well drained soils on dunes, low terraces, and fan aprons. These soils formed in alluvium and eolian deposits derived from various sources. Slopes are 1 to 8 percent. Elevation is 6,800 to 7,500 feet. The annual precipitation is 7 to 9 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Ryan Park Variant loamy fine sand that has a slope of 2 percent, in an area of Sandbranch-Ryan Park Variant-Poposhia complex, 1 to 8 percent slopes; about 700 feet north and 3,000 feet west of the southeast corner of sec. 23, T. 27 N., R. 102 W.

A1—0 to 1 inch; brown (7.5YR 5/4) loamy fine sand, brown (7.5YR 4/4) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; mildly alkaline; abrupt smooth boundary.

A2—1 to 6 inches; brown (7.5YR 5/4) loamy fine sand, brown (7.5YR 4/4) moist; weak thick platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; moderately alkaline; abrupt wavy boundary.

Bt1—6 to 23 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 4/2) moist; moderate coarse prismatic structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few clay bridges between sand grains; moderately alkaline; clear wavy boundary.

Bt2—23 to 38 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 4/2) moist; weak coarse prismatic structure; soft, very friable, nonsticky and nonplastic; moderately alkaline; gradual wavy boundary.

Bk1—38 to 48 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; slightly effervescent; disseminated carbonates; strongly alkaline; clear wavy boundary.

Bk2—48 to 55 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; strongly effervescent; disseminated carbonates and few fine filaments and soft masses of carbonates; very strongly alkaline; abrupt irregular boundary.

Cr—55 inches; reddish brown, soft shale.

The depth to bedrock ranges from 40 to 60 inches. The A and Bt horizons are mildly alkaline or moderately alkaline. The Bk horizon is strongly alkaline or very strongly alkaline.

Ryark Series

The Ryark series consists of very deep, well drained soils on fan aprons. These soils formed in alluvium derived dominantly from sandstone. Slopes are 1 to 10 percent. Elevation is 6,700 to 7,500 feet. The annual precipitation is 9 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 80 to 110 days.

Typical pedon of a Ryark sandy loam that has a slope of 2 percent, in an area of Ryark sandy loam, 1 to 6 percent slopes; about 400 feet south and 600 feet west of the northeast corner of sec. 27, T. 27 N., R. 102 W.

A1—0 to 2 inches; grayish brown (10YR 5/2) sandy loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; neutral; abrupt smooth boundary.

A2—2 to 5 inches; grayish brown (10YR 5/2) sandy loam, dark brown (7.5YR 4/2) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and nonplastic; many very fine and fine and few medium roots; mildly alkaline; clear wavy boundary.

Bt1—5 to 12 inches; dark yellowish brown (10YR 4/4) sandy loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common very fine and fine and few medium roots; clay bridges between sand grains; mildly alkaline; abrupt wavy boundary.

Bt2—12 to 27 inches; dark yellowish brown (10YR 4/4) sandy loam, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; few thin clay films on faces of peds and clay bridges between sand grains; mildly alkaline; clear wavy boundary.

2C—27 to 60 inches; yellowish brown (10YR 5/4) gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few very fine, fine, and medium roots; about 15 percent gravel; mildly alkaline.

Reaction is neutral or mildly alkaline throughout the profile. The A and Bt horizons have hue of 10YR or 7.5YR. The Bt horizon is 10 to 18 percent clay. The 2C horizon has hue of 2.5Y or 10YR. It is loamy sand or gravelly loamy sand. It is 5 to 35 percent rock fragments.

Saddle Series

The Saddle series consists of moderately deep, well drained soils on pediments, ridges, and hills. These soils formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. Slopes are 1 to 12 percent. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 120 to 130 days.

Typical pedon of a Saddle sandy loam that has a slope of 2 percent, in an area of Griffy-Saddle-Wallson association, undulating; about 875 feet east and 800 feet south of the northwest corner of sec. 17, T. 35 N., R. 94 W.

A—0 to 2 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; weak thin platy structure parting to moderate very fine granular; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; mildly alkaline; clear smooth boundary.

Bt—2 to 13 inches; yellowish brown (10YR 5/6) sandy clay loam, brown (10YR 5/3) moist; moderate medium prismatic structure parting to weak medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; continuous thin and few thick clay films on faces of peds; moderately alkaline; clear wavy boundary.

Bk1—13 to 16 inches; pale brown (10YR 6/3) fine sandy loam, light olive brown (2.5Y 5/4) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates and common fine filaments and soft masses of carbonates; moderately alkaline; gradual wavy boundary.

Bk2—16 to 23 inches; light yellowish brown (2.5Y 6/4) fine sandy loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates and common fine filaments and soft masses of carbonates; strongly alkaline; gradual wavy boundary.

C—23 to 33 inches; light yellowish brown (2.5Y 6/4) fine sandy loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; few very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; strongly alkaline; abrupt wavy boundary.

Cr—33 inches; light yellowish brown, soft, calcareous sandstone.

The depth to bedrock ranges from 20 to 40 inches. The A and Bt horizons are mildly alkaline or moderately alkaline. The Bt horizon is 20 to 35 percent clay. The Bk and C horizons are moderately alkaline or strongly alkaline. The Bk horizon has hue of 2.5Y or 10YR. It is sandy loam, fine sandy loam, or sandy clay loam. The C horizon has hue of 5Y or 2.5Y. It is fine sandy loam or sandy clay loam.

Sandbranch Series

The Sandbranch series consists of very deep, well drained soils on fan aprons and terraces. These soils formed in alluvium derived from sodic sandstone interbedded with shale. Slopes are 1 to 3 percent. Elevation is 6,800 to 7,500 feet. The annual precipitation is 7 to 9 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Sandbranch loam that has a slope of 1 percent, in an area of Sandbranch-Ryan Park Variant-Poposhia complex, 1 to 8 percent slopes; about 2,680 feet south and 1,320 feet east of the northwest corner of sec. 31, T. 27 N., R. 101 W.

A—0 to 2 inches; light brownish gray (2.5Y 6/2) loam, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine vesicular pores in the upper 1 inch and common fine vesicular pores in the lower 1 inch; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

Btn—2 to 17 inches; light brownish gray (2.5Y 6/2) clay loam, dark grayish brown (2.5Y 4/2) moist; moderate fine prismatic structure parting to moderate medium subangular blocky; very hard, firm, sticky and plastic; many very fine and fine roots; many thin clay films on faces of peds; slightly effervescent; disseminated carbonates; exchangeable sodium percentage of more than 15; very strongly alkaline; clear wavy boundary.

Btky—17 to 20 inches; brown (10YR 5/3) sandy clay loam, dark grayish brown (2.5Y 4/2) moist; weak fine prismatic structure; hard, firm, very sticky and very plastic; many very fine and fine roots; few thin clay films on faces of peds; strongly effervescent; disseminated carbonates and many fine and medium threads, seams, and soft masses of carbonates; common fine soft masses of gypsum; strongly alkaline; clear wavy boundary.

Bky—20 to 34 inches; olive (5Y 5/3) loam, grayish brown (2.5Y 5/2) moist; weak fine prismatic structure; slightly hard, friable, sticky and plastic; few very fine and fine roots to a depth of 30 inches and no roots below that depth; strongly effervescent; disseminated carbonates and many fine and medium threads, seams, and soft masses of carbonates; common fine masses of gypsum; very strongly alkaline; abrupt wavy boundary.

C—34 to 60 inches; grayish brown (2.5Y 5/3) fine sandy loam stratified with thin lenses of loam, sandy loam, and clay loam; dark grayish brown (2.5Y 4/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; slightly effervescent; disseminated carbonates; very strongly alkaline.

The A horizon has hue of 2.5Y or 10YR. It is moderately alkaline or strongly alkaline. The Btn horizon has hue of 2.5Y to 7.5YR. It is sandy clay loam or clay loam. It is 20 to 35 percent clay and 0 to 10 percent gravel. It is strongly alkaline or very strongly alkaline. The percentage of exchangeable sodium in this horizon is 15 to 30. The Bky and C horizons have hue of 5Y to 10YR. They are loam, fine sandy loam, sandy loam, clay loam, or sandy clay loam. They are moderately alkaline to very strongly alkaline.

Seaverson Series

The Seaverson series consists of very shallow or shallow, well drained soils on hills and ridges. These soils formed in residuum and slope alluvium derived dominantly from variegated sodic shale interbedded with sandstone. Slopes are 6 to 40 percent. Elevation is 5,300 to 6,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Seaverson loam that has a slope of 6 percent, in an area of Rallod-Rock outcrop-Seaverson complex, hilly; about 1,150 feet north and 3,700 feet east of the southwest corner of sec. 24, T. 34 N., R. 96 W.

A—0 to 2 inches; pinkish gray (7.5YR 6/2) loam, brown (7.5YR 5/2) moist; moderate very fine granular structure; slightly hard, friable, slightly sticky and plastic; common very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; strongly alkaline; abrupt smooth boundary.

Bk—2 to 7 inches; reddish brown (5YR 5/3) clay loam, brown (7.5YR 5/2) moist; weak coarse prismatic structure; very hard, firm, sticky and plastic;

common very fine, fine, and medium roots; slightly effervescent; disseminated carbonates and few fine soft masses of carbonates; very strongly alkaline; clear wavy boundary.

C—7 to 11 inches; light gray (5Y 7/2) loam, olive gray (5Y 5/2) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; strongly effervescent; disseminated carbonates; very strongly alkaline; gradual wavy boundary.

Cr—11 inches; variegated, soft, sodic shale.

The depth to bedrock ranges from 4 to 20 inches. The A horizon has hue of 2.5Y to 5YR. It is moderately alkaline or strongly alkaline. The Bk and C horizons have hue of 5Y to 5YR. They are loam or clay loam. They are strongly alkaline or very strongly alkaline. The exchangeable sodium percentage in these horizons is 15 to 30.

Silas Series

The Silas series consists of very deep, moderately well drained soils on terraces and in mountain drainageways. These soils formed in alluvium derived from various sources. Slopes are 1 to 6 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Silas loam that has a slope of 4 percent, in an area of Venapass-Silas loams, 0 to 6 percent slopes; about 2,000 feet north and 1,900 feet west of the southeast corner of sec. 25, T. 43 N., R. 108 W.

A1—0 to 3 inches; very dark gray (10YR 3/1) loam, very dark gray (10YR 3/1) moist; weak fine and very fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; neutral; clear wavy boundary.

A2—3 to 16 inches; very dark grayish brown (10YR 3/2) loam, black (10YR 2/1) moist; moderate fine and medium granular structure parting to strong very fine and fine granular; hard, firm, sticky and plastic; common very fine and fine and few medium roots; mildly alkaline; gradual wavy boundary.

C—16 to 48 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; massive; hard, firm, sticky and plastic; common very fine and fine and few medium roots to a depth of 28 inches and no roots below that depth; neutral; clear wavy boundary.

Cg—48 to 60 inches; gray (10YR 6/1) clay loam, gray (10YR 5/1) moist; common medium faint gray (5Y 5/1) and few fine distinct strong brown (7.5YR 5/6) mottles; massive; hard, firm, sticky and plastic; neutral.

The mollic epipedon is 16 to 30 inches thick. The control section is 0 to 15 percent rock fragments and 18 to 35 percent clay. The A and C horizons are neutral or mildly alkaline. The A horizon has hue of 2.5Y or 10YR. The C horizon is loam or clay loam.

Sinkson Series

The Sinkson series consists of very deep, well drained soils on fan aprons. These soils formed in alluvium derived dominantly from red sandstone and siltstone. Slopes are 0 to 20 percent. Elevation is 5,500 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Sinkson loam that has a slope of 6 percent, in an area of Thermopolis-Sinkson association, hilly; about 2,500 feet east and 3,500 feet north of the southwest corner of sec. 11, T. 40 N., R. 91 W.

A—0 to 3 inches; yellowish red (5YR 4/6) loam, dark reddish brown (5YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt wavy boundary.

Bky—3 to 14 inches; yellowish red (5YR 5/6) loam, red (2.5YR 4/6) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; strongly effervescent; disseminated carbonates and few fine soft masses of carbonates; few fine soft masses of gypsum; moderately alkaline; clear wavy boundary.

C—14 to 60 inches; yellowish red (5YR 5/6) silt loam, red (2.5YR 4/6) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots to a depth of 20 inches and no roots blow that depth; strongly effervescent; disseminated carbonates; moderately alkaline.

The control section ranges from 0 to 10 percent rock fragments. It is 18 to 30 percent clay and more than 15 percent fine sand or coarser sand. The A horizon has hue of 7.5YR or 5YR. The B and C horizons are sandy clay loam, loam, or silt loam. Some pedons do not have a B horizon.

Starman Series

The Starman series consists of very shallow or shallow, well drained soils on mountains, ridges, and hills. These soils formed in residuum and slope alluvium derived dominantly from limestone. Slopes are 5 to 50 percent. Elevation is 6,800 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Starman very gravelly loam that has a slope of 35 percent, in an area of Starman-Rock outcrop-Woosley complex, steep; about 2,500 feet north and 2,500 feet west of the southeast corner of sec. 6, T. 40 N., R. 89 W.

A—0 to 2 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; about 40 percent gravel; limestone gravel and cobbles covering about 40 percent of the surface; slightly effervescent; disseminated carbonates; mildly alkaline; abrupt wavy boundary.

Bk1—2 to 5 inches; brown (10YR 5/3) very gravelly loam, brown (10YR 4/3) moist; weak medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; about 40 percent gravel; strongly effervescent; disseminated carbonates; moderately alkaline; abrupt wavy boundary.

Bk2—5 to 12 inches; light gray (2.5Y 7/2) very gravelly loam, light yellowish brown (2.5Y 6/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; about 50 percent gravel and 10 percent cobbles; violently effervescent; disseminated carbonates; moderately alkaline; abrupt wavy boundary.

R—12 inches; limestone.

About 10 to 40 percent of the surface is covered with gravel and cobbles. The depth to bedrock ranges from 8 to 20 inches. The control section is 18 to 27 percent clay and 35 to 60 percent rock fragments.

The A horizon has hue of 5Y to 7.5YR. It is mildly alkaline or moderately alkaline. Some pedons have a C horizon. The Bk and C horizons have hue of 2.5Y or 10YR. They are moderately alkaline or strongly alkaline.

Taluce Series

The Taluce series consists of shallow, well drained soils on hillslopes and ridges. These soils formed in residuum and slope alluvium derived dominantly from sandstone. Slopes are 5 to 45 percent. Elevation is 5,300 to 6,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 115 to 130 days.

Typical pedon of a Taluce sandy loam that has a slope of 18 percent, in an area of Taluce-Bowbac sandy loams, hilly; about 4,000 feet south and 2,950 feet west of the northeast corner of sec. 30, T. 36 N., R. 89 W.

A—0 to 4 inches; brown (10YR 4/3) sandy loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; slightly effervescent; disseminated carbonates; mildly alkaline; clear smooth boundary.

C—4 to 12 inches; dark yellowish brown (10YR 4/6) sandy loam, dark yellowish brown (10YR 4/6) moist; single grain; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; strongly effervescent; disseminated carbonates; moderately alkaline; abrupt wavy boundary.

Cr—12 inches; soft sandstone.

The depth to bedrock ranges from 10 to 20 inches. The C horizon is 10 to 18 percent clay.

Thermopolis Series

The Thermopolis series consists of very shallow or shallow, well drained soils on hills and ridges. These soils formed in residuum and slope alluvium derived dominantly from sandstone and siltstone. Slopes are 10 to 30 percent. Elevation is 5,500 to 7,800 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Thermopolis loam that has a slope of 8 percent, in an area of Sinkson-Almy-Thermopolis association, rolling; about 3,200 feet north and 1,900 feet east of the southwest corner of sec. 11, T. 40 N., R. 91 W.

A—0 to 3 inches; red (2.5YR 5/6) loam, red (2.5YR 4/6) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; few fine and medium roots; strongly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

C—3 to 16 inches; red (2.5YR 5/6) loam, red (2.5YR 4/6) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few fine and medium roots; strongly effervescent; disseminated carbonates; moderately alkaline; abrupt wavy boundary.

Cr—16 inches; soft siltstone.

The depth to bedrock ranges from 6 to 20 inches. The control section is 0 to 15 percent channery fragments. The A horizon has hue of 7.5YR to 2.5YR. It is mildly alkaline or moderately alkaline. The C horizon has hue of 5YR or 2.5YR. It is loam or silt loam.

Tisworth Series

The Tisworth series consists of very deep, well drained soils on fan aprons and toe slopes. These soils formed in alluvium derived from various sources. Slopes are 0 to 8 percent. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of a Tisworth loamy sand that has a slope of 1 percent, in an area of Tisworth-Ryan Park-Countryman complex, gently undulating; about 2,600 feet south and 1,300 feet west of the northeast corner of sec. 16, T. 29 N., R. 91 W.

A—0 to 3 inches; pale brown (10YR 6/3) loamy sand, brown (10YR 4/3) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; mildly alkaline; abrupt wavy boundary.

Btn1—3 to 9 inches; brown (7.5YR 5/4) sandy clay loam, brown (10YR 4/3) moist; moderate medium columnar structure parting to moderate medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; continuous thin clay films on faces of peds; exchangeable sodium percentage of more than 15; very strongly alkaline; clear wavy boundary.

Btn2—9 to 20 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate subangular blocky; very hard, firm, sticky and plastic; few very fine, fine, and medium roots; continuous thin and few thick clay films on faces of peds; slightly effervescent; disseminated carbonates; exchangeable sodium percentage of more than 15; very strongly alkaline; clear wavy boundary.

Bk1—20 to 27 inches; light brown (7.5YR 6/4) sandy clay loam, brown (7.5YR 4/4) moist; weak medium prismatic structure; hard, friable, sticky and plastic; strongly effervescent; disseminated carbonates and many fine soft masses, threads, and seams of carbonates; very strongly alkaline; abrupt wavy boundary.

Bk2—27 to 60 inches; pale brown (10YR 6/3) sandy loam stratified with a few thin discontinuous lenses of gravelly loamy sand, loamy sand, fine sandy loam, and sandy clay loam; brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; about 5 percent gravel; violently effervescent; disseminated carbonates and many fine and medium soft masses and seams of carbonates; very strongly alkaline.

The average content of clay in the control section ranges from 18 to 30 percent. The control section is 35 percent or more fine sand or coarser sand.

The A, Btn, and Bk horizons have hue of 10YR or 7.5YR. The A horizon is mildly alkaline to strongly alkaline. The Btn and Bk horizons are strongly alkaline or very strongly alkaline. The Btn horizon is loam, sandy clay loam, or clay loam. The exchangeable sodium percentage in this horizon is 15 to 30. The Bk horizon is dominantly sandy loam, sandy clay loam, or clay loam in which the content of coarse fragments ranges from 0 to 15 percent, but in some pedons it has thin lenses of very gravelly loamy sand or gravelly loamy sand.

Tongue River Series

The Tongue River series consists of moderately deep, well drained soils on mountainsides. These soils formed in residuum and slope alluvium derived dominantly from sandstone interbedded with shale. Slopes are 10 to 30 percent. Elevation is 7,000 to 9,000 feet. The annual precipitation is 18 to 22 inches, the average annual air temperature is 33 to 38 degrees F, and the frost-free period is less than 60 days.

Typical pedon of a Tongue River loam that has a slope of 30 percent, in an area of Tongue River-Inchau-Farlow Variant complex, 10 to 30 percent slopes; about 250 feet north and 800 feet west of the southeast corner of sec. 22, T. 42 N., R. 108 W.

Oi—2 inches to 0; undecomposed forest litter.

E—0 to 1 inch; brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and common medium roots; neutral; abrupt smooth boundary.

Bt1—1 to 7 inches; dark yellowish brown (10YR 4/4) sandy clay loam, dark yellowish brown (10YR 3/4) moist; weak medium prismatic structure parting to weak fine and medium subangular blocky; hard, friable, sticky and plastic; few thick clay films on faces of peds and in pores; many fine and common medium roots; about 10 percent channery fragments of sandstone and 5 percent flagstones; neutral; abrupt smooth boundary.

Bt2—7 to 19 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse prismatic structure parting to moderate fine and medium subangular blocky; very hard, friable, sticky and plastic; common thick clay films on faces of peds and in pores; many fine and few medium roots; about 10 percent channery fragments of sandstone and 5 percent flagstones; neutral; clear wavy boundary.

C—19 to 34 inches; very pale brown (10YR 7/3) very channery sandy clay loam, yellowish brown (10YR 5/6) moist; massive; very hard, firm, sticky and plastic; many fine and few medium roots; about 40 percent channery fragments of sandstone and 10 percent flagstones; neutral; abrupt wavy boundary.

Cr—34 inches; soft sandstone.

The depth to bedrock ranges from 20 to 40 inches. The E and Bt horizons are slightly acid or neutral. The Bt horizon has hue of 2.5Y or 10YR. It is sandy clay loam or channery sandy clay loam. It is 0 to 25 percent channery fragments and flagstones. The C horizon is sandy clay loam, very channery sandy clay loam, or very gravelly sandy clay loam. It is 10 to 50 percent channery fragments and flagstones. It is neutral or mildly alkaline.

Uffens Series

The Uffens series consists of very deep, well drained soils on terraces and fan aprons. These soils formed in alluvium derived dominantly from soft shale interbedded with sandstone. Slopes are 1 to 8 percent. Elevation is 4,800 to 6,200 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of an Uffens loam that has a slope of 3 percent, in an area of Uffens-Muff-Frisite loams, 1 to 12 percent slopes; about 2,000 feet east and 1,500 feet south of the northwest corner of sec. 23, T. 37 N., R. 94 W.

E—0 to 4 inches; light yellowish brown (2.5Y 6/4) loam, brown (10YR 4/3) moist; weak thick platy structure; soft, very friable, slightly sticky and slightly plastic; few fine and medium roots; strongly effervescent; disseminated carbonates; moderately alkaline; clear smooth boundary.

Btn—4 to 9 inches; light olive brown (2.5Y 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; weak coarse columnar structure parting to moderate fine and medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots; many thick clay films on faces of peds; strongly effervescent; disseminated carbonates; exchangeable sodium percentage of 15 to 30; strongly alkaline; clear smooth boundary.

Btnk—9 to 20 inches; light yellowish brown (2.5Y 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse prismatic structure parting to moderate medium subangular blocky; hard, firm, slightly sticky and plastic; few fine and medium roots; many thick clay films on faces of peds; violently effervescent; disseminated carbonates and common fine soft masses and filaments of carbonates; exchangeable sodium percentage of 15 to 30; strongly alkaline; clear wavy boundary.

Btk—20 to 40 inches; light yellowish brown (2.5Y 6/4) clay loam, olive brown (2.5Y 4/4) moist; moderate medium and coarse prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; few fine and medium roots; common thick clay films on faces of peds; strongly effervescent; disseminated carbonates and few fine soft masses and filaments of carbonates; moderately alkaline; clear wavy boundary.

2Bk1—40 to 45 inches; pale brown (10YR 6/3) sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; about 5 percent gravel; violently effervescent; disseminated carbonates, common fine and medium soft masses of carbonates, and thin pendants of carbonates on pebbles; moderately alkaline; clear smooth boundary.

2Bk2—45 to 60 inches; pale brown (10YR 6/3) loamy sand, yellowish brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; about 10 percent gravel; violently effervescent; disseminated carbonates, common fine and medium soft masses of carbonates, and thin coatings of carbonates on pebbles; moderately alkaline.

The control section is 0 to 15 percent rock fragments. It is 28 to 35 percent clay. The exchangeable sodium percentage is less than 15 below a depth of 20 inches.

The E horizon has hue of 5Y to 10YR. It is moderately alkaline or strongly alkaline. The Btn horizon has hue of 2.5Y or 10YR. It is clay loam or sandy clay loam. It is strongly alkaline or very strongly alkaline. The exchangeable sodium percentage in this horizon is 15 to 30. The Bk and 2Bk horizons have hue of 5Y to 10YR. They are sandy loam, loamy sand, sandy clay loam, clay loam, or silty clay loam in the fine-earth fraction. They are 0 to 35 percent gravel. They are moderately alkaline or strongly alkaline.

Uhl Series

The Uhl series consists of very deep, well drained soils on alluvial fans. These soils formed in alluvium derived from various sources. Slopes are 1 to 6 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of an Uhl loam that has a slope of 1 percent, in an area of Uhl-Gelkie loams, 1 to 8 percent slopes; about 3,500 feet north and 900 feet west of the southeast corner of sec. 32, T. 29 N., R. 100 W.

A—0 to 4 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; neutral; abrupt smooth boundary.
Bw—4 to 15 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, sticky and plastic; many very fine and fine and common medium roots; mildly alkaline; gradual wavy boundary.
C—15 to 60 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; mildly alkaline.

The control section is 18 to 35 percent clay. The mollic epipedon is 8 to 15 inches thick. The Bw horizon is sandy clay loam or loam. It is neutral or mildly alkaline. The C horizon has hue of 2.5Y or 10YR. It is commonly loam, but in some pedons it has thin lenses of sandy clay loam or gravelly sandy clay loam.

Venapass Series

The Venapass series consists of very deep, poorly drained soils on flood plains. These soils formed in alluvium derived from various sources. Slopes are 0 to 3 percent. Elevation is 7,000 to 8,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Venapass loam that has a slope of 1 percent, in an area of Venapass-Silas loams, 0 to 6 percent slopes; about 2,500 feet north and 1,150 feet west of the southeast corner of sec. 5, T. 28 N., R. 100 W.

Oi—2 inches to 0; decomposing organic material.
A—0 to 3 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; neutral; abrupt wavy boundary.
ABg—3 to 16 inches; gray (5Y 5/1) loam, dark olive gray (5Y 3/2) moist; many medium distinct strong brown (7.5YR 5/6) mottles; weak fine prismatic structure parting to moderate and strong very fine subangular blocky; slightly hard, very friable, sticky and plastic; many very fine and fine roots; few fine soft masses of carbonates; neutral; abrupt wavy boundary.
Cg1—16 to 30 inches; gray (5Y 5/1) loam, olive gray (5Y 4/2) moist; common medium distinct dark grayish brown (10YR 4/2) mottles; massive; slightly hard, very friable, sticky and plastic; few very fine and fine roots; mildly alkaline; abrupt wavy boundary.
Cg2—30 to 60 inches; gray (5Y 5/1) gravelly coarse sandy loam, dark gray (5Y 4/1) moist; few medium distinct dark grayish brown (10YR 4/2) mottles; single grain; loose, nonsticky and nonplastic; about 25 percent gravel; mildly alkaline.

The surface commonly is covered with a mat of organic material 1 to 2 inches thick. A seasonal high water table fluctuates between depths of 0 and 18 inches from April through June. The mollic epipedon is 16 to 24 inches thick.

The Cg horizon has hue of 5Y to 10YR. It is commonly gravelly coarse sandy loam, sandy loam, or loam in which the content of clay is 5 to 18 percent, but in some pedons it has thin strata of gravelly loamy sand to sandy clay loam. It is 0 to 35 percent gravel.

Vonalee Series

The Vonalee series consists of very deep, somewhat excessively drained soils on hillslopes. These soils formed in eolian deposits derived dominantly from sandstone. Slopes are 1 to 12 percent. Elevation is 5,300 to 6,500 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 45 to 49 degrees F, and the frost-free period is 120 to 130 days.

Typical pedon of a Vonalee loamy sand that has a slope of 8 percent, in an area of Vonalee-Hiland complex, undulating; about 250 feet south and 250 feet west of the northeast corner of sec. 6, T. 36 N., R. 89 W.

A—0 to 4 inches; brown (10YR 5/3) loamy sand, brown (10YR 4/3) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; neutral; abrupt wavy boundary.
Bt—4 to 11 inches; brown (7.5YR 4/4) sandy loam, brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few thin clay films on faces of peds and bridging sand grains; mildly alkaline; clear wavy boundary.
BCk—11 to 19 inches; brown (10YR 5/3) loamy sand,

brown (10YR 5/3) moist; weak medium prismatic structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; slightly effervescent; disseminated carbonates; mildly alkaline; gradual wavy boundary.

C—19 to 60 inches; pale brown (10YR 6/3) loamy sand, pale brown (10YR 6/3) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots to a depth of 24 inches; mildly alkaline.

The A horizon is neutral or mildly alkaline. The Bt, Bk, and C horizons are mildly alkaline or moderately alkaline. The Bt horizon has hue of 10YR or 7.5YR. It is sandy loam or fine sandy loam. The Bk and C horizons are sandy loam, loamy sand, or loamy fine sand.

Wallson Series

The Wallson series consists of very deep, well drained soils on fan aprons and toe slopes. These soils formed in alluvium derived dominantly from sandstone. Slopes are 1 to 10 percent. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Wallson sandy loam that has a slope of 5 percent, in an area of Apron-Wallson-Worland association, 1 to 15 percent slopes; about 600 feet west and 1,300 feet south of the northeast corner of sec. 2, T. 34 N., R. 93 W.

A—0 to 3 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

BA—3 to 8 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate coarse subangular blocky structure parting to weak medium subangular blocky; slightly hard, very friable, slightly sticky and nonplastic; few very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; clear smooth boundary.

Bt1—8 to 15 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate very coarse prismatic structure parting to moderate coarse angular blocky; hard, very friable, slightly sticky and nonplastic; few very fine, fine, and medium roots; continuous thin clay films on faces of peds; slightly effervescent; disseminated carbonates; moderately alkaline; clear smooth boundary.

Bt2—15 to 22 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; strong very coarse prismatic structure parting to strong very coarse angular blocky; hard, very friable, slightly sticky and nonplastic; few very fine and fine roots; continuous thin and few moderately thick clay films on faces of peds; slightly effervescent; disseminated carbonates; moderately alkaline; gradual wavy boundary.

Bk1—22 to 30 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; weak coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and nonplastic; strongly effervescent; disseminated carbonates; moderately alkaline; gradual wavy boundary.

Bk2—30 to 60 inches; very pale brown (10YR 7/3) sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; violently effervescent; disseminated carbonates; moderately alkaline.

The A and Bt horizons are mildly alkaline or moderately alkaline. The Bt horizon is sandy loam or fine sandy loam. The content of clay in this horizon is 10 to 18 percent. The Bk horizon has hue of 2.5Y or 10YR. It is commonly sandy loam or fine sandy loam. In some pedons, however, it is loamy sand below a depth of 40 inches. It is moderately alkaline or strongly alkaline.

Winada Variant

The Winada Variant consists of moderately deep, well drained soils on ridges and mountainsides. These soils formed in residuum and slope alluvium derived dominantly from sandstone or limestone. Slopes are 10 to 50 percent. Elevation is 7,400 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Winada Variant gravelly loam that has a slope of 18 percent, in an area of Midelight Variant-Winada Variant-Starman gravelly loams, steep; about 3,000 feet north and 1,000 feet west of the southeast corner of sec. 9, T. 41 N., R. 107 W.

A—0 to 2 inches; dark brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and slightly plastic; many fine and medium roots; about 20 percent gravel; gravel and channery fragments covering about 35 percent of the surface; moderately alkaline; abrupt smooth boundary.

Bt—2 to 8 inches; dark brown (10YR 4/3) very gravelly sandy clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; many fine and medium roots; common thin clay films on faces of peds; about 40 percent gravel and 5 percent channery fragments; moderately alkaline; clear wavy boundary.

Btk—8 to 13 inches; light yellowish brown (10YR 6/4) very gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common fine and medium roots; few thin clay films on faces of peds; about 40 percent gravel; violently effervescent; disseminated carbonates, many fine soft masses of carbonates, and thin coatings of carbonates on pebbles; moderately alkaline; gradual wavy boundary.

Bk—13 to 26 inches; very pale brown (10YR 7/3) very gravelly sandy clay loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine and few medium roots; about 50 percent gravel; violently effervescent; disseminated carbonates, many fine and medium soft masses of carbonates, and thin coatings of carbonates on pebbles; strongly alkaline; abrupt wavy boundary.

Cr—26 inches; soft sandstone.

About 15 to 35 percent of the surface is covered with gravel and cobbles. The depth to bedrock ranges from 20 to 40 inches. The A and Bt horizons are neutral to moderately alkaline. The content of rock fragments is 15 to 35 percent in the A horizon and 35 to 60 percent in the Bt horizon. The Bk horizon is moderately alkaline or strongly alkaline.

Woosley Series

The Woosley series consists of moderately deep, well drained soils on mountainsides. These soils formed in residuum and slope alluvium derived dominantly from limestone. Slopes are 2 to 25 percent. Elevation is 6,800 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Woosley loam that has a slope of 6 percent, in an area of Woosley-Decross-Starman association, rolling; about 2,200 feet north and 2,350 feet east of the southwest corner of sec. 5, T. 40 N., R. 89 W.

A—0 to 5 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; mildly alkaline; abrupt wavy boundary.

Bt—5 to 15 inches; dark brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, sticky and plastic; common very fine, fine, and medium roots; continuous thin clay films on faces of peds; slightly effervescent; disseminated carbonates; mildly alkaline; clear wavy boundary.

Bk1—15 to 19 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate medium and fine subangular blocky; slightly hard, very friable, sticky and plastic; few very fine, fine, and medium roots; violently effervescent; disseminated carbonates and common fine and medium soft masses, threads, and seams of carbonates; moderately alkaline; clear wavy boundary.

Bk2—19 to 25 inches; very pale brown (10YR 7/3) gravelly loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; about 20 percent gravel; violently effervescent; disseminated carbonates and many large soft masses, threads, and seams of carbonates; moderately alkaline; clear wavy boundary.

Bk3—25 to 31 inches; very pale brown (10YR 7/3) gravelly loam, light yellowish brown (10YR 6/4) moist; massive; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; about 30 percent gravel; violently effervescent; disseminated carbonates and many large soft masses, threads, and seams of carbonates; moderately alkaline; abrupt wavy boundary.

R—31 inches; hard limestone.

The depth to bedrock ranges from 20 to 40 inches. The mollic epipedon is 10 to 15 inches thick. The depth to secondary carbonates is 15 to 30 inches.

The A and Bt horizons are neutral or mildly alkaline. The A horizon has hue of 2.5Y or 10YR. The Bt horizon has hue of 2.5Y to 7.5YR. It is 28 to 35 percent clay and 0 to 15 percent gravel and cobbles. The Bk horizon has hue of 5Y to 10YR. It is loam, clay loam, gravelly loam, or gravelly clay loam. It is 0 to 35 percent rock fragments.

Worland Series

The Worland series consists of moderately deep, well drained soils on hills and ridges. These soils formed in residuum and slope alluvium derived dominantly from sandstone. Slopes are 1 to 15 percent. Elevation is 5,200 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Worland sandy loam that has a slope of 3 percent, in an area of Worland-Oceanet-Persayo association, rolling; about 2,800 feet north and 3,480 feet east of the southwest corner of sec. 27, T. 38 N., R. 94 W.

A—0 to 4 inches; pale brown (10YR 6/3) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate very fine and medium granular structure; soft, very friable, slightly sticky and nonplastic; many very fine, fine, and medium roots; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt wavy boundary.

C1—4 to 21 inches; pale brown (10YR 6/3) sandy loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; strongly effervescent; disseminated carbonates; moderately alkaline; gradual wavy boundary.

C2—21 to 34 inches; very pale brown (10YR 7/3) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; violently effervescent; disseminated carbonates; strongly alkaline; abrupt wavy boundary.

Cr—34 inches; soft sandstone.

The depth to bedrock ranges from 20 to 40 inches. The control section ranges from 10 to 18 percent clay. The A and C horizons have hue of 2.5Y or 10YR. The A horizon is loamy sand or sandy loam. It is mildly alkaline or moderately alkaline. The C horizon is sandy loam or fine sandy loam. It is moderately alkaline or strongly alkaline.

Youga Series

The Youga series consists of very deep, well drained soils on foot slopes. These soils formed in alluvium derived from various sources. Slopes are 2 to 30 percent. Elevation is 7,000 to 9,000 feet. The annual precipitation is 15 to 19 inches, the average annual air temperature is 33 to 41 degrees F, and the frost-free period is 60 to 90 days.

Typical pedon of a Youga loam that has a slope of 20 percent, in an area of Youga-Quander complex, 2 to 25 percent slopes; about 900 feet north and 50 feet east of the southwest corner of sec. 18, T. 28 N., R. 93 W.

A—0 to 3 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to moderate medium granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; about 5 percent gravel; neutral; abrupt smooth boundary.

Bt1—3 to 14 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate coarse prismatic structure parting to moderate coarse and medium subangular blocky; hard, firm, sticky and plastic; many very fine and fine and few medium roots; common moderately thick clay films on faces of peds; about 5 percent gravel; neutral; clear wavy boundary.

Bt2—14 to 21 inches; yellowish brown (10YR 5/4) sandy clay loam, yellowish brown (10YR 5/4) moist; weak coarse prismatic structure parting to moderate coarse and medium subangular blocky; hard, firm, sticky and plastic; few very fine, fine, and medium roots; common moderately thick clay films on faces of peds; about 5 percent gravel; neutral; clear wavy boundary.

C—21 to 60 inches; very pale brown (10YR 7/4) sandy clay loam that has a few thin strata of sandy loam; very pale brown (10YR 7/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few medium roots to a depth of 34 inches; about 10 percent gravel; mildly alkaline.

The depth to a continuous horizon that has secondary carbonates is more than 50 inches. The content of rock fragments is 0 to 35 percent in the B and C horizons. Reaction is slightly acid to mildly alkaline throughout the profile. The Bt horizon is loam or sandy clay loam. The C horizon has hue of 5Y to 10YR. It is sandy loam or sandy clay loam.

Youngston Series

The Youngston series consists of very deep, well drained soils on low terraces, in drainageways, and on fan aprons. These soils formed in alluvium derived from various sources. Slopes are 0 to 6 percent. Elevation is 4,800 to 6,300 feet. The annual precipitation is 5 to 9 inches, the average annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of a Youngston clay loam that has a slope of 2 percent, in an area of Youngston-Lostwells complex, 1 to 3 percent slopes; about 175 feet west and 2,200 feet north of the southeast corner of sec. 12, T. 39 N., R. 93 W.

A—0 to 4 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; weak thick platy structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; slightly effervescent; disseminated carbonates; moderately alkaline; abrupt smooth boundary.

C—4 to 60 inches; pale brown (10YR 6/3) clay loam stratified with thin lenses of fine sandy loam and sandy clay loam; light olive brown (2.5Y 5/4) moist; massive; slightly hard, friable, sticky and plastic; common very fine and fine roots to a depth of 8 inches and few very fine and fine roots between depths of 8 and 14 inches; slightly effervescent; disseminated carbonates; moderately alkaline.

The average content of clay in the control section ranges from 18 to 35 percent. The A and C horizons have hue of 2.5Y or 10YR. The A horizon is mildly alkaline or moderately alkaline. The C horizon is dominantly loam or clay loam but has strata of loamy sand to clay loam. It is moderately alkaline or strongly alkaline.

Zeomont Series

The Zeomont series consists of very deep, excessively drained soils on dunes. These soils formed in sandy eolian material derived from various sources. Slopes are 2 to 35 percent. Elevation is 6,700 to 8,000 feet. The annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 45 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Zeomont loamy sand, hilly; about 250 feet north and 2,500 feet west of the southeast corner of sec. 11, T. 29 N., R. 92 W.

A—0 to 7 inches; grayish brown (10YR 5/2) loamy sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; many very fine, fine, and medium roots; mildly alkaline; abrupt smooth boundary.

C—7 to 60 inches; very pale brown (10YR 7/3) sand, pale brown (10YR 6/3) moist; single grain; loose, nonsticky and nonplastic; few very fine, fine, and medium roots; mildly alkaline.

The A horizon is mildly alkaline or moderately alkaline. The C horizon has hue of 2.5Y or 10YR. It is sand or loamy sand.

Formation of the Soils

This section relates the factors of soil formation to the soils in the survey area and describes the processes of horizon differentiation.

Factors of Soil Formation

Soil is a naturally occurring body on the surface of the earth. It is made up of mineral material, organic material, air, and water. The characteristics of a soil at any given place are determined by the interaction of five factors of soil formation—parent material, climate, living organisms, relief, and time *(7, 17)*. Although no single factor is responsible for the formation of a soil, one or more factors may be dominant. The relationship of parent material, climate, and relief to some of the soils in the survey area is shown in figure 9.

Parent Material

Soils exhibit characteristics that are related to the material in which they formed. Some of the soil characteristics that are affected by parent material are texture, chemical composition, mineral composition, profile development, and relief.

Oceanet and Worland soils formed in material weathered dominantly from sandstone. As a result, they have a texture of sandy loam. Persayo and Blazon soils formed in material weathered dominantly from shale. As a result, they have a texture of clay loam.

Soil reaction and the presence or absence of salts in a soil commonly are related to the properties of the parent material. Birdsley, Muff, and Absher soils have very strongly alkaline horizons that have a high concentration of sodium salts. Rairdent soils are mildly alkaline to strongly alkaline and contain a significant amount of gypsum. Ryark soils are neutral or mildly alkaline, are noncalcareous throughout, and do not contain an appreciable amount of salts.

Pensore soils, which formed in material weathered from limestone and have a high content of carbonates, are assigned to the carbonatic mineralogy class. Owen Creek and Effington soils, which formed in material weathered from shale that has a high content of the clay mineral montmorillonite, are assigned to the montmorillonitic mineralogy class. Rock River, Hoodle, and Frisite soils are assigned to the mixed mineralogy class because they formed in material containing a variety of minerals rather than a single dominant type of mineral.

Uffens soils formed in material containing a large amount of sodium salts. They have a well developed subsoil that contains a significant amount of translocated clay. Sodium salts accelerate the rate at which clay is translocated to form a well developed subsoil.

Orpha and Zeomont soils formed in windblown material that consists mainly of sand particles. As a result, they are coarse textured. The relief associated with these soils is determined by the effects of the wind and commonly is that of undulating and hilly sand dunes.

The soils in this survey area formed in recent alluvium, old alluvium, residuum, eolian material, and glaciofluvial material.

Recent alluvium is material that has been deposited in streambeds, drainageways, and areas of valley fill. The soils that formed in this material are subject to flooding. Examples are Havre, Clarkelen, Lander, and Countryman soils.

Old alluvium is material that was deposited by floodwater in areas that are no longer subject to deposition from flooding. The soils that formed in this material typically are on terraces and fan aprons. Examples are Emblem, Bosler, Forelle, Griffy, and Hoodle soils.

Residuum is material that has weathered in place from consolidated rock. The soils that formed in this material typically are on hillslopes, ridges, and mountains. Examples are Oceanet, Blackhall, Rockinchair, Worland, Rentsac, and Starman soils.

Eolian material has been transported and deposited by the wind. The soils that formed in this material typically are on sand dunes and on the leeward side of hills and ridges. Examples are Ryark, Orpha, and Zeomont soils.

Glaciofluvial material was moved by glaciers and subsequently was sorted and deposited by streams

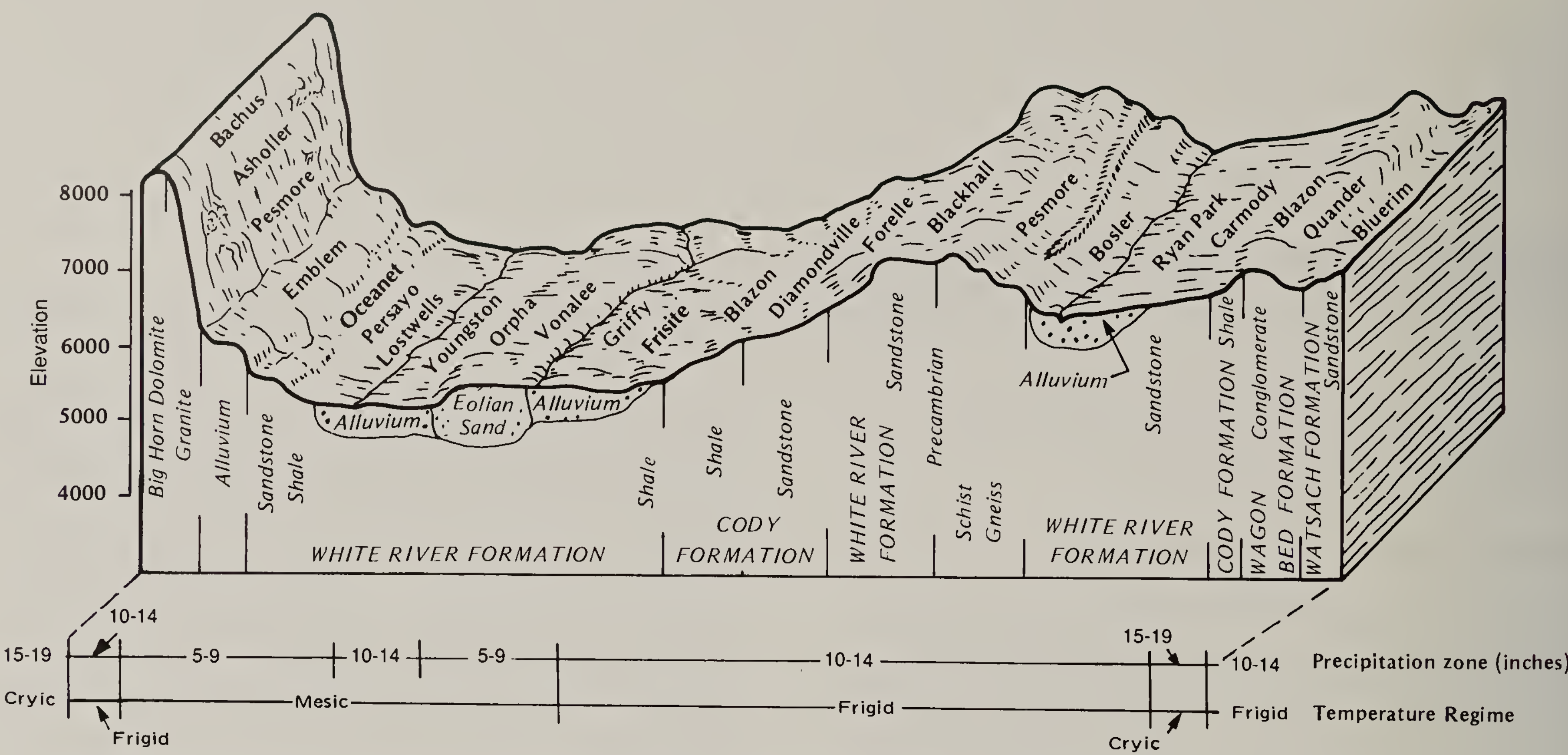

Figure 9.—Soils and their landscape positions as they relate to parent material, precipitation zones, and temperature regimes.

flowing from the melting ice. The soils that formed in this material typically are on moraines, terraces, hills, and ridges. Examples are Brownsto and Fornor soils.

Climate

This survey area generally is characterized by a continental climate that is arid or semiarid. In the small part of the survey area that is in the mountains, however, the climate is cool and subhumid.

In the arid or semiarid areas, the average annual precipitation is 5 to 14 inches and the average annual air temperature is 43 to 49 degrees F. Most of the precipitation falls in spring and early in summer. In the cool, subhumid areas in the mountains, the average annual precipitation is 15 to 22 inches and the average annual air temperature is 33 to 41 degrees. Most of the precipitation falls as snow late in fall and in winter. Generally, the average annual precipitation increases and the average annual temperature decreases as elevation increases. More detailed information about the climate is given in the section "General Nature of the Survey Area."

Climate has had a strong influence on soil formation in the survey area. Temperature and precipitation affect the weathering of rock; the decomposition of minerals; the processes of leaching, illuviation, and eluviation; the kind and amount of vegetation that grows on the soils; and the accumulation and decomposition of organic matter *(7)*. The most significant effect of climate has been on the kind and amount of vegetation and the accumulation and decomposition of organic matter.

The soils in the warmest and driest parts of the survey area, such as Apron, Emblem, Griffy, and Frisite soils, have a light colored surface layer in which the content of organic matter is about 1 percent. The vegetation is somewhat sparse because of the limited precipitation. As a result, the amount of organic matter annually returned to the soils is small. The warm temperatures favor the activity of micro-organisms, which results in more rapid decomposition of the organic matter.

The soils in the coldest and wettest parts of the survey area, such as Youga, Inchau, Quander, and Fornor soils, have a dark surface layer in which the content of organic matter is about 3 to 5 percent. The vegetation on these soils is plentiful and is dominated by grasses and shrubs. A large amount of organic matter is returned to the soils annually. The cool temperatures inhibit the activity of micro-organisms and thus enhance the accumulation of organic matter.

Living Organisms

Plants and animals play an active role in soil formation. Plant roots grow downward and outward into the parent material, displacing the various soil particles, increasing porosity, distributing organic material, and thus aiding in the formation of soil structure. The roots also recycle nutrients from the lower soil layers to the upper layers. Burrowing animals, including rodents, earthworms, and a variety of insects, mix soil particles and contribute to the accumulation of organic matter. Bacteria and fungi living on and in the soil feed on the organic debris, breaking it down into nutrients that are eventually recycled into plant and animal tissue. Human activities, such as land leveling, tilling, irrigating, and planting, also have affected soil formation.

Relief

Relief refers not only to differences in elevation but also to the general shape of the landscape. It influences soil formation through its effects on surface runoff, drainage, erosion, and exposure to sunlight and the wind.

Sloping or moderately steep soils on uplands, such as Persayo and Blackhall soils on hills and ridges, are shallow or very shallow and show little evidence of profile development. The degree of profile development is limited because of erosion and the small amount of moisture that moves through the profile. Precipitation is lost through runoff and through exposure of the soils to sunlight and the wind.

In the less sloping areas below the hills and ridges, deeper soils that have a well defined subsoil formed. Examples are Griffy and Forelle soils. Less soil material is lost through erosion on these soils than on the steeper soils, and more moisture moves through the profile because of slower runoff and a lower evaporation rate. As a result, genetic horizons have formed.

Relief also is an important factor in low areas. Coutis and Decross soils are in depressional areas and swales. They are deeper than the adjacent soils and have a thicker dark surface layer because additional moisture is received from melting snowdrifts and as runoff from the higher adjacent areas. Other soils in low areas are Clarkelen and Havre soils, which are on flood plains and are briefly flooded in some years, and Countryman and Lander soils, which are along stream channels, have a fluctuating water table, and are somewhat poorly drained.

Time

Time is required for the formation of a soil. The length of time required depends on the other soil-forming factors. The young soils in the survey area are characterized by little or no horizon development. The older soils have distinct horizons. In most areas thousands of years are required for the formation of these horizons.

Oceanet, Persayo, and Carmody soils formed in residuum and slope alluvium, and Lostwells, Countryman, and Havre soils formed in alluvium derived from various sources. All of these soils are considered young. They have a surface layer that commonly is slightly darkened by organic material and may have weak soil structure, but they still retain most of the characteristics of the parent material.

Frisite, Forelle, and Milren soils are among the older soils in the survey area. They are more strongly developed than the young soils, as is evidenced by the movement of calcium carbonate and clay. As a young soil ages, calcium carbonate in the soil is leached out of the upper layers and is deposited at a lower depth. With the passage of more time, clay particles eventually are moved from the upper layers to a lower depth. Frisite, Forelle, and Milren soils have a layer in which calcium carbonate has accumulated and a layer in which clay has accumulated.

Formation of Soil Horizons

The first stage in the development of soil horizons is the accumulation of organic matter in the surface layer, or the A horizon. Apron, Carmody, Havre, and Persayo soils are in this stage of horizon development.

As horizon development continues, carbonates and other bases in the soil are leached to lower depths and the formation and translocation of silicate clay begin. With the passage of time, distinct horizons in which calcium carbonate and clay accumulate *(12)* form. The accumulation of clay results in the formation of an argillic horizon. Griffy, Forelle, and Fornor are examples of soils in this stage of development. Some of the soils in the survey area have a natric horizon, which is a sodium-charged argillic horizon. Absher, Effington, and Muff soils are examples.

Air is excluded from very wet soils. As a result, the chemical reduction of iron occurs in these soils. This process, which is called gleying, gives a grayish or bluish color to the soils. Fluvaquents and Haplaquolls are examples of soils that have gleyed horizons.

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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.

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.

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 commonly is defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It commonly is 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 to 7.5
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, K), expressed as a percentage of the total cation-exchange capacity.

Basin. A depressional area that has few, if any, outlets for surface water.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of 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 helps to control 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.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

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.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a channery fragment.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that loosen the subsoil and bring clods to the surface. A form of emergency tillage to control wind erosion.

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.

Climax plant community. The plant community on a given site that will be established if present environmental conditions continue to prevail and the site is properly managed.

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.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conglomerate. A coarse grained, clastic rock composed of rounded to subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer 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, soil-improving crops and practices more than offset the effects of soil-depleting crops and practices. 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.

Coppice mound (coppice dune). A small dune of fine grained soil material stabilized around shrubs or small trees.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Critical area planting. Planting vegetation, such as trees, shrubs, grasses, and legumes, in highly erodible or critically eroding areas.

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.

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.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming with the dip of underlying bedded rock.

Diversion (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 commonly is 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 activities 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 activities 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, generally more open and with broader bottom land than a ravine or gulch.

Duff. A term used to identify 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.

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.

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 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 salt (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Fan apron. A sheetlike mantle of relatively young alluvium covering part of an older fan piedmont (and in some areas an alluvial fan) surface. It may bury a pedogenic soil that can be traced to the edge of the fan apron, where the soil emerges as the land surface or a relict soil. No buried soils should occur within a fan-apron mantle; rather, they separate mantles.

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.

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.

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.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (about 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.

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 mature soil, from the unconsolidated parent material.

Glacial outwash (geology). Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till (geology). Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

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.

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 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, and as much as 3 inches (7.6 centimeters) in diameter.

Ground water (geology). Water filling all the unblocked pores of underlying 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 commonly is not used in construction.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Hillslope. The steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of the hill. In descending order, geomorphic components of a simple hillslope may include a shoulder slope, back slope, foot slope, and toe slope; however, not all of these components are necessarily evident in any given hillslope continuum. Complex hillslopes may include two or more sequences of back slopes, foot slopes, and toe slopes.

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 horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, gneiss, schist, and granite.

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.

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:

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 in ditches laid out approximately on the contour.

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.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the 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.

Kettle. A steep-sided, bowl-shaped depression that does not have an outlet for surface water. It is in areas of glacial drift and probably formed when a large, detached block of stagnant ice buried in the drift melted.

Knob. A rounded eminence, such as a knoll, a hillock, or a small hill or mountain, especially a prominent or isolated hill that has steep sides, commonly occurring in the southern part of the United States; a peak or other projection extending from the top of a hill or mountain; or a boulder, a group of boulders, or an area of resistant rocks protruding from the side of a hill or mountain.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Light textured soil. Sand or loamy sand.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

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.

Miscellaneous area. An area that has little or no natural soil and supports little if any 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 (geology). 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.

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 between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant and 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.

Outcrop. The exposed part of a geologic formation or structure.

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain commonly is smooth; where pitted, it is generally low in relief.

Oxbow. A closely looping stream meander having such an extreme curvature that only a neck of land is left between the two parts of the stream.

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.)

Pebble. See Gravel.

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, adversely affecting the specified use.

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. For example, 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.

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 is 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.

Ponding. Standing water on soils in closed depressional areas. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability, 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.

Potential native plant community. See Climax plant community.

Pressure face. The smooth and shiny surface of a soil ped, caused by the process of shrinking and swelling in the soil in response to water content. Generally associated with fine textured soils.

Productivity, soil. The capability of a soil to produce 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.

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
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

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.

Ridge. A long, narrow elevation of the land surface that is sharp crested, has steep sides, and forms an extended upland between valleys. The term is used in areas of both hill and mountain relief.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Riverwash. Barren alluvial land, commonly coarse textured, exposed along streams at low water levels, and subject to shifting during normal high water levels.

Road cut. A sloping surface produced by mechanical means during road construction. It commonly is 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.

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 growth of plants. A saline soil does not contain excess exchangeable sodium.

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.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer 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.

Shoulder slope. The geomorphic component that forms the uppermost inclined surface at the top of a hillslope. It is the transition zone from the back slope to the summit of an upland. The surface is dominantly convex and erosional.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It also can damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

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.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey the following slope classes are recognized:

Nearly level	0 to 3 percent
Gently sloping	3 to 10 percent
Moderately sloping	10 to 15 percent
Moderately steep	15 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.

Slope alluvium. Sediment transported on hill or mountain slopes and deposited on the lower parts of these slopes.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to $Ca^{++} + Mg^{++}$. The degrees of sodicity and their respective ratios are:

Slight	less than 13:1
Moderate	13-30:1
Strong	more than 30:1

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil depth. The thickness of the soil over bedrock. Very shallow soils are 4 to 10 inches deep over bedrock; shallow soils, 10 to 20 inches; moderately deep soils, 20 to 40 inches; deep soils, 40 to 60 inches; and very deep soils, more than 60 inches.

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

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Strath terrace. See Stream terrace.

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream, and representing the dissected remnants of an abandoned flood plain, streambed, or valley floor produced during a former stage of erosion or deposition. Erosional surfaces cut into bedrock and thinly mantled with stream deposits (alluvium) are called "strath terraces." Remnants of constructional valley floors are called "alluvial terraces."

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summit. A general term for the top, or highest level, of an upland feature, such as a hill, mountain, or tableland. It commonly refers to a high interfluve area of gentler slopes flanked by steeper hillslopes (for example, mountain fronts or tableland escarpments). Summit areas may or may not include distinct crest lines or high points that rise above their general level.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from about 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Tailwater. The water just downstream of a structure.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

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 too thin for the specified use.

Till plain. An extensive flat to undulating area 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.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, are in soils in extremely small amounts. They are essential to plant growth.

Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.

Upland (geology). 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.

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.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

TABLE 1.--FREEZE DATES IN SPRING AND FALL

(Recorded at Boysen Dam, Dubois, Muddy Gap, Sand Draw, and South Pass City, Wyoming)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
BOYSEN DAM*:			
Last freezing temperature in the period January through June			
1 year in 10 later than--	May 2	May 11	May 25
2 years in 10 later than--	Apr. 26	May 4	May 18
5 years in 10 later than--	Apr. 13	Apr. 22	May 6
First freezing temperature in the period August through December			
1 year in 10 earlier than--	Oct. 6	Sept. 30	Sept. 17
2 years in 10 earlier than--	Oct. 13	Oct. 6	Sept. 23
5 years in 10 earlier than--	Oct. 26	Oct. 18	Oct. 5
DUBOIS*:			
Last freezing temperature in the period January through June			
1 year in 10 later than--	June 5	June 20	July 2
2 years in 10 later than--	May 30	June 13	June 27
5 years in 10 later than--	May 19	May 31	June 17
First freezing temperature in the period August through December			
1 year in 10 earlier than--	Sept. 7	Aug. 23	Aug. 12
2 years in 10 earlier than--	Sept. 13	Aug. 28	Aug. 17
5 years in 10 earlier than--	Sept. 23	Sept. 7	Aug. 27

TABLE 1.--FREEZE DATES IN SPRING AND FALL--Continued

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
MUDDY GAP*:			
Last freezing temperature in the period January through June			
1 year in 10 later than--	May 10	May 28	June 15
2 years in 10 later than--	May 6	May 23	June 9
5 years in 10 later than--	Apr. 28	May 13	May 29
First freezing temperature in the period August through December			
1 year in 10 earlier than--	Sept. 18	Sept. 10	Sept. 5
2 years in 10 earlier than--	Sept. 25	Sept. 15	Sept. 9
5 years in 10 earlier than--	Oct. 7	Sept. 25	Sept. 16
SAND DRAW*:			
Last freezing temperature in the period January through June			
1 year in 10 later than--	May 16	May 27	June 9
2 years in 10 later than--	May 11	May 21	June 3
5 years in 10 later than--	Apr. 30	May 10	May 22
First freezing temperature in the period August through December			
1 year in 10 earlier than--	Sept. 20	Sept. 11	Sept. 4
2 years in 10 earlier than--	Sept. 28	Sept. 17	Sept. 9
5 years in 10 earlier than--	Oct. 12	Sept. 29	Sept. 18

TABLE 1.--FREEZE DATES IN SPRING AND FALL--Continued

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
SOUTH PASS CITY*:			
Last freezing temperature in the period January through June			
1 year in 10 later than--	June 27	July 3	June 30
2 years in 10 later than--	June 30	June 28	June 29
5 years in 10 later than--	June 7	June 18	June 26
First freezing temperature in the period August through December			
1 year in 10 earlier than--	Aug. 16	Aug. 2	July 27
2 years in 10 earlier than--	Aug. 23	Aug. 9	Aug. 1
5 years in 10 earlier than--	Sept. 4	Aug. 23	Aug. 12

* The period of record is as follows: Boysen Dam and Dubois, 1948-90; Muddy Gap, 1950-90; Sand Draw, 1948-77; and South Pass City, 1915-81. Data are missing for 25 days or more for 4 years at Boysen Dam, 15 years at Dubois, 8 years at Muddy Gap and South Pass City, and 5 years at Sand Draw.

TABLE 2.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
100	Absher-Elkol complex, 0 to 4 percent slopes	6,950	0.3
101	Absher-Poposhia-Sinkson complex, 1 to 10 percent slopes	2,425	0.1
102	Absher Variant-Absher complex, 0 to 6 percent slopes	2,260	0.1
103	Abston-Diamondville complex, 1 to 12 percent slopes	6,530	0.3
104	Almy loam, 0 to 6 percent slopes	3,990	0.2
105	Almy-Monbutte-Rallod complex, 1 to 10 percent slopes	27,110	1.0
106	Ansel-Ansel Variant complex, steep	2,935	0.1
107	Ansel-Rock outcrop complex, hilly	3,935	0.2
108	Apron-Lostwells complex, 0 to 10 percent slopes	11,695	0.5
109	Apron-Wallson-Worland association, 1 to 15 percent slopes	22,600	0.9
110	Aquic Cryofluvents-Ansel complex, 1 to 10 percent slopes	2,120	0.1
111	Badland	23,305	0.9
112	Badland-Birdsley complex, steep	19,100	0.7
113	Badland-Seaverson-Blazon complex, steep	7,195	0.3
114	Binton-Youngston clay loams, 0 to 3 percent slopes	4,025	0.2
115	Birdsley-Mudray complex, 3 to 15 percent slopes	16,160	0.6
116	Blackhall-Rock outcrop complex, steep	10,580	0.4
117	Blackhall-Carmody association, hilly	59,010	2.3
118	Blazon-Rock outcrop-Carmody complex, hilly	51,235	2.0
119	Bluerim-Onason complex, hilly	27,670	1.1
120	Bosler-Rock River sandy loams, 1 to 8 percent slopes	111,665	4.3
121	Bosler-Ryan Park fine sandy loams, 1 to 8 percent slopes	41,980	1.6
122	Bowbac-Hiland complex, rolling	28,310	1.1
123	Brownsto loam, 0 to 6 percent slopes	6,575	0.3
124	Brownsto sandy clay loam, 1 to 10 percent slopes	325	*
125	Brownsto very bouldery-Decross Variant-Brownsto complex, hilly	18,660	0.7
126	Burnette loam, 3 to 10 percent slopes	2,335	0.1
127	Chittum-Bachus-Rock outcrop association, hilly	9,210	0.4
128	Cific-Hoodle complex, sloping	15,670	0.6
129	Clifsand-Persayo complex, hilly	11,265	0.4
130	Cloud Peak-Farlow complex, 10 to 30 percent slopes	6,385	0.2
131	Coalmont-Milren-Cragosen complex, rolling	35,575	1.4
132	Conpeak-Rock outcrop-Cryluha complex, hilly	32,140	1.2
133	Countryman-Absher complex, 0 to 3 percent slopes	11,645	0.4
134	Coutis fine sandy loam, rolling	9,325	0.4
135	Crago-Pensore association, undulating	11,925	0.5
136	Cragosen-Carmody-Blazon complex, hilly	58,510	2.3
137	Cragosen-Rock outcrop-Carmody complex, hilly	39,605	1.5
138	Cragosen-Bosler-Cushool association, rolling	46,630	1.8
139	Cryluha-Conpeak association, 1 to 15 percent slopes	10,305	0.4
140	Cushool-Rock River association, 1 to 15 percent slopes	86,820	3.3
141	Dahlquist-Rock River complex, 1 to 12 percent slopes	26,055	1.0
142	Diamondville-Forelle association, rolling	46,735	1.8
143	Effington-Mudray complex, 0 to 8 percent slopes	5,015	0.2
144	Emblem-Clifsand-Rairdent complex, 1 to 25 percent slopes	24,130	0.9
145	Fluvaquents	1,625	0.1
146	Fluvaquents-Youngston complex, 0 to 3 percent slopes	13,140	0.5
147	Forelle-Luhon loams, 1 to 10 percent slopes	4,505	0.2
148	Forelle-Poposhia association, 2 to 12 percent slopes	45,640	1.8
149	Fornor-Decross complex, hilly	19,920	0.8
150	Frisite-Emblem loams, 1 to 8 percent slopes	5,830	0.2
151	Frisite-Youngston complex, 1 to 8 percent slopes	29,615	1.1
152	Gelkie Variant-Barrett Variant association, undulating	3,580	0.1
153	Granile-Ansel complex, hilly	11,295	0.4
154	Griffy-Saddle-Wallson association, undulating	110,520	4.3
155	Haplaquolls-Aquic Ustifluvents complex, nearly level	1,190	*
156	Haverdad-Clarkelen complex, 0 to 3 percent slopes	5,120	0.2
157	Havre-Absher-Forelle loams, 0 to 6 percent slopes	52,655	2.0
158	Havre-Forelle-Glendive complex, 0 to 3 percent slopes	45,580	1.8
159	Havre-Havre Variant-Elkol complex, 0 to 3 percent slopes	6,320	0.2
160	Highpoint-Rock outcrop complex, steep	2,120	0.1
161	Hiland sandy loam, 1 to 15 percent slopes	19,455	0.7

See footnote at end of table.

TABLE 2.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
162	Hoodle-Rock outcrop complex, 1 to 8 percent slopes	6,860	0.3
163	Hoodle-Gelkie association, 2 to 15 percent slopes	85,540	3.3
164	Iceslew-Countryman complex, 0 to 3 percent slopes	13,865	0.5
165	Inchau-Youga loams, 10 to 30 percent slopes	805	*
166	Irigul-Midelight-Rock outcrop association, rolling	42,835	1.7
167	Irigul-Rock outcrop complex, steep	14,085	0.5
168	Lander-Lander Variant loams, 0 to 3 percent slopes	5,695	0.2
169	Luhon-Rock River-Forelle complex, undulating	18,555	0.7
170	Lupinto loam, 1 to 6 percent slopes	1,990	0.1
171	Lymanson-Abston-Gelkie association, hilly	8,015	0.3
172	Lymanson-Conpeak association, rolling	12,420	0.5
173	Midelight Variant-Winada Variant-Starman gravelly loams, steep	3,945	0.2
174	Milren-Bosler-Rock River sandy loams, 1 to 12 percent slopes	63,545	2.4
175	Milvar-Milren complex, 1 to 6 percent slopes	11,035	0.4
176	Mosroc-Lymanson association, hilly	16,195	0.6
177	Oceanet-Rock outcrop-Persayo complex, hilly	38,345	1.5
178	Orpha-Vonalee complex, hilly	26,125	1.0
179	Owen Creek very stony clay loam, 2 to 15 percent slopes	5,410	0.2
180	Pensore-Rock outcrop complex, hilly	41,235	1.6
181	Persayo-Rock outcrop complex, hilly	66,705	2.6
182	Pesmore-Rock outcrop-Asholler complex, steep	34,255	1.3
183	Peyton sandy loam, 1 to 10 percent slopes	4,410	0.2
184	Pishkun Variant-Hoodle complex, hilly	5,160	0.2
185	Poposhia loam, 1 to 6 percent slopes	865	*
186	Poposhia-Blazon-Carmody complex, hilly	45,890	1.8
187	Poposhia, sodic-Blazon complex, rolling	9,800	0.4
188	Quander-Youga-Onason complex, steep	18,555	0.7
189	Rallod-Rock outcrop-Seaverson complex, hilly	38,190	1.5
190	Relsob-Bluerim sandy loams, 1 to 10 percent slopes	10,900	0.4
191	Rentsac-Carmody complex, hilly	10,740	0.4
192	Riverwash-Aquic Ustifluvents complex, nearly level	1,320	0.1
193	Rockinchair-Rock outcrop-Sinkson complex, hilly	25,110	1.0
194	Rockinchair-Sinkson loams, 1 to 15 percent slopes	9,795	0.4
195	Rock outcrop-Asholler complex, steep	31,040	1.2
196	Rock outcrop-Blackhall complex, hilly	12,580	0.5
197	Rock outcrop-Blazon complex, hilly	5,235	0.2
198	Rock outcrop-Mosroc complex, hilly	16,270	0.6
199	Rock outcrop-Oceanet complex, hilly	2,370	0.1
200	Roxal-Rock outcrop complex, steep	2,375	0.1
201	Roxal-Tongue River complex, hilly	2,145	0.1
202	Ryan Park loamy fine sand, undulating	23,080	0.9
203	Ryan Park-Carmody association, 1 to 15 percent slopes	28,815	1.1
204	Ryark sandy loam, 1 to 6 percent slopes	18,655	0.7
205	Ryark-Zeomont loamy sands, rolling	3,800	0.1
206	Sandbranch-Ryan Park Variant-Poposhia complex, 1 to 8 percent slopes	4,285	0.2
207	Sinkson-Almy sandy clay loams, 0 to 6 percent slopes	3,300	0.1
208	Sinkson-Almy-Thermopolis association, rolling	11,320	0.4
209	Starman-Rock outcrop-Woosley complex, steep	12,665	0.5
210	Taluce-Bowbac sandy loams, hilly	5,890	0.2
211	Thermopolis-Sinkson association, hilly	11,660	0.4
212	Tisworth-Absher-Forelle complex, 0 to 6 percent slopes	5,105	0.2
213	Tisworth-Poposhia complex, undulating	2,470	0.1
214	Tisworth-Ryan Park-Countryman complex, gently undulating	12,785	0.5
215	Tongue River-Inchau-Farlow Variant complex, 10 to 30 percent slopes	6,455	0.2
216	Uffens-Muff-Frisite loams, 1 to 12 percent slopes	31,745	1.2
217	Uhl-Gelkie loams, 1 to 8 percent slopes	21,815	0.8
218	Venapass-Uhl-Absher loams, 1 to 6 percent slopes	5,825	0.2
219	Venapass-Silas loams, 0 to 6 percent slopes	13,810	0.5
220	Vonalee-Hiland complex, undulating	37,580	1.4
221	Woosley-Decross-Starman association, rolling	8,345	0.3
222	Worland-Oceanet-Persayo association, rolling	76,545	3.0

See footnote at end of table.

TABLE 2.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
223	Youga-Quander complex, 2 to 25 percent slopes	12,395	0.5
224	Youngston-Effington loams, 0 to 6 percent slopes	30,355	1.2
225	Youngston-Lostwells-Apron complex, 0 to 3 percent slopes	9,225	0.4
226	Youngston-Lostwells complex, 1 to 3 percent slopes	13,810	0.5
227	Youngston-Persayo loams, rolling	8,675	0.3
228	Zeomont loamy sand, hilly	8,175	0.3
229	Dumps, mine	7,765	0.3
230	Pits, gravel	30	*
	Water	1,950	0.1
	Total	2,594,275	100.0

* Less than 0.05 percent.

TABLE 3.--LAND CAPABILITY AND YIELDS PER ACRE OF HAY AND PASTURE

(Yields 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		Grass hay	Pasture
	N	I	I	I
			Tons	AUM*
100**: Absher-Elkol	VIs	---	---	---
101**:				
Absher	VIs	VIs	---	---
Poposhia	IVe	IVe	2.5	4
Sinkson	IVe	IVe	2.5	4
102**: Absher Variant-Absher	VIs	---	---	---
103**:				
Abston	VIs	---	---	---
Diamondville	IVe	---	---	---
104: Almy	IVe	IIIe	3.5	5
105**:				
Almy	IVe	---	---	---
Monbutte	VIe	---	---	---
Rallod	VIIe	---	---	---
106**: Ansel-Ansel Variant	VIe	---	---	---
107**:				
Ansel	VIe	---	---	---
Rock outcrop	VIII	---	---	---
108**: Apron-Lostwells	VIe	---	---	---
109**: Apron-Wallson-Worland	VIe	---	---	---
110**: Aquic Cryofluvents-Ansel	VIe	---	---	---

See footnotes at end of table.

TABLE 3.--LAND CAPABILITY AND YIELDS PER ACRE OF HAY AND PASTURE--Continued

Soil name and map symbol	Land capability		Grass hay	Pasture
	N	I	I	I
			Tons	AUM*
111**----------- Badland	VIII	---	---	---
112**:				
Badland--------	VIII	---	---	---
Birdsley-------	VIIe	---	---	---
113**:				
Badland--------	VIII	---	---	---
Seaverson------	VIIe	---	---	---
Blazon---------	VIIe	---	---	---
114**:				
Binton---------	VIs	---	---	---
Youngston------	VIe	---	---	---
115**:				
Birdsley-------	VIIe	---	---	---
Mudray---------	VIIs	---	---	---
116**:				
Blackhall------	VIIe	---	---	---
Rock outcrop---	VIII	---	---	---
117**:				
Blackhall------	VIIe	---	---	---
Carmody--------	VIe	---	---	---
118**:				
Blazon---------	VIIe	---	---	---
Rock outcrop---	VIII	---	---	---
Carmody--------	VIe	---	---	---
119**:				
Bluerim--------	VIe	---	---	---
Onason---------	VIIe	---	---	---
120**----------- Bosler-Rock River	IVe	---	---	---
121**:				
Bosler---------	IVe	IVe	2.5	6
Ryan Park------	IVe	IVe	3.0	6
122**----------- Bowbac-Hiland	IVe	---	---	---

See footnotes at end of table.

TABLE 3.--LAND CAPABILITY AND YIELDS PER ACRE OF HAY AND PASTURE--Continued

Soil name and map symbol	Land capability N	Land capability I	Grass hay I	Pasture I
			Tons	AUM*
123------------- Brownsto	IVe	IVe	3.0	4
124------------- Brownsto	IVe	---	---	---
125**:				
Brownsto, very bouldery------	VIs	---	---	---
Decross Variant	IVe	---	---	---
Brownsto--------	IVe	---	---	---
126------------- Burnette	VIe	---	---	---
127**:				
Chittum---------	VIIe	---	---	---
Bachus----------	VIe	---	---	---
Rock outcrop---	VIII	---	---	---
128**:				
Cific-----------	VIe	---	---	---
Hoodle----------	VIs	---	---	---
129**:				
Clifsand--------	VIs	---	---	---
Persayo---------	VIIe	---	---	---
130**:				
Cloud Peak------	VIIs	---	---	---
Farlow----------	VIe	---	---	---
131**:				
Coalmont--------	VIe	---	---	---
Milren----------	IVe	---	---	---
Cragosen--------	VIIs	---	---	---
132**:				
Conpeak---------	VIIe	---	---	---
Rock outcrop---	VIII	---	---	---
Cryluha---------	VIe	---	---	---
133**:				
Countryman------	VIw	IVw	2.0	5
Absher----------	VIs	VIs	---	---

See footnotes at end of table.

TABLE 3.--LAND CAPABILITY AND YIELDS PER ACRE OF HAY AND PASTURE--Continued

Soil name and map symbol	Land capability N	Land capability I	Grass hay I	Pasture I
			Tons	AUM*
134------------- Coutis	VIe	---	---	---
135**:				
Crago----------	VIs	---	---	---
Pensore--------	VIIs	---	---	---
136**:				
Cragosen-------	VIIs	---	---	---
Carmody--------	VIe	---	---	---
Blazon---------	VIIe	---	---	---
137**:				
Cragosen-------	VIIs	---	---	---
Rock outcrop---	VIII	---	---	---
Carmody--------	VIe	---	---	---
138**:				
Cragosen-------	VIIs	---	---	---
Bosler---------	IVe	---	---	---
Cushool--------	IVe	---	---	---
139**:				
Cryluha--------	VIe	---	---	---
Conpeak--------	VIIe	---	---	---
140**----------- Cushool-Rock River	IVe	---	---	---
141**:				
Dahlquist------	VIs	---	---	---
Rock River-----	IVe	---	---	---
142**----------- Diamondville-Forelle	IVe	---	---	---
143**:				
Effington------	VIs	---	---	---
Mudray---------	VIIs	---	---	---
144**:				
Emblem---------	VIe	---	---	---
Clifsand-------	VIs	---	---	---
Rairdent-------	VIe	---	---	---

See footnotes at end of table.

TABLE 3.--LAND CAPABILITY AND YIELDS PER ACRE OF HAY AND PASTURE--Continued

Soil name and map symbol	Land capability		Grass hay	Pasture
	N	I	I	I
			Tons	AUM*
145------------- Fluvaquents	VIw	---	---	---
146**:				
Fluvaquents----	VIw	---	---	---
Youngston------	VIe	---	---	---
147**----------- Forelle-Luhon	IVe	---	---	---
148**----------- Forelle-Poposhia	IVe	---	---	---
149**----------- Fornor-Decross	VIe	---	---	---
150**----------- Frisite-Emblem	VIe	IIIe	2.5	8
151**:				
Frisite--------	VIe	IIIe	2.5	8
Youngston------	VIe	IIIe	3.0	8
152**:				
Gelkie Variant-	IVe	---	---	---
Barrett Variant	VIIe	---	---	---
153**:				
Granile--------	VIs	---	---	---
Ansel----------	VIe	---	---	---
154**----------- Griffy-Saddle-Wallson	VIe	---	---	---
155**:				
Haplaquolls----	Vw	Vw	3.0	8
Aquic Ustifluvents--	IVc	IIIc	3.0	8
156**----------- Haverdad-Clarkelen	VIe	---	---	---
157**:				
Havre----------	IVc	IIIc	3.0	8
Absher---------	VIs	VIs	---	---
Forelle--------	IVe	IIIe	2.5	6

See footnotes at end of table.

TABLE 3.--LAND CAPABILITY AND YIELDS PER ACRE OF HAY AND PASTURE--Continued

Soil name and map symbol	Land capability N	Land capability I	Grass hay I	Pasture I
			Tons	AUM*
158**-----------Havre-Forelle-Glendive	IVc	---	---	---
159**:				
Havre----------	IVc	---	---	---
Havre Variant--	VIw	---	---	---
Elkol----------	VIs	---	---	---
160**:				
Highpoint------	VIIe	---	---	---
Rock outcrop---	VIII	---	---	---
161-------------Hiland	IVe	---	---	---
162**:				
Hoodle---------	VIs	---	---	---
Rock outcrop---	VIII	---	---	---
163**:				
Hoodle---------	VIs	---	---	---
Gelkie---------	VIe	---	---	---
164**:				
Iceslew--------	VIw	---	---	---
Countryman-----	IVw	---	---	---
165**-----------Inchau-Youga	VIe	---	---	---
166**:				
Irigul---------	VIIe	---	---	---
Midelight------	VIe	---	---	---
Rock outcrop---	VIII	---	---	---
167**:				
Irigul---------	VIIe	---	---	---
Rock outcrop---	VIII	---	---	---
168**:				
Lander---------	IVw	IIIw	3.5	5
Lander Variant-	IVw	IIIw	3.0	4
169**-----------Luhon-Rock River-Forelle	IVe	---	---	---

See footnotes at end of table.

TABLE 3.--LAND CAPABILITY AND YIELDS PER ACRE OF HAY AND PASTURE--Continued

Soil name and map symbol	Land capability N	Land capability I	Grass hay I	Pasture I
			Tons	AUM*
170 Lupinto	IVc	IIIe	3.0	6
171**:				
Lymanson	VIe	---	---	---
Abston	VIs	---	---	---
Gelkie	VIe	---	---	---
172**:				
Lymanson	VIe	---	---	---
Conpeak	VIIe	---	---	---
173** Midelight Variant-Winada Variant-Starman	VIIs	---	---	---
174** Milren-Bosler-Rock River	IVe	---	---	---
175**:				
Milvar	VIs	---	---	---
Milren	IVe	---	---	---
176**:				
Mosroc	VIIe	---	---	---
Lymanson	VIe	---	---	---
177**:				
Oceanet	VIIe	---	---	---
Rock outcrop	VIII	---	---	---
Persayo	VIIe	---	---	---
178**:				
Orpha	VIe	---	---	---
Vonalee	IVe	---	---	---
179 Owen Creek	VIs	---	---	---
180**:				
Pensore	VIIs	---	---	---
Rock outcrop	VIII	---	---	---
181**:				
Persayo	VIIe	---	---	---

See footnotes at end of table.

TABLE 3.--LAND CAPABILITY AND YIELDS PER ACRE OF HAY AND PASTURE--Continued

Soil name and map symbol	Land capability N	Land capability I	Grass hay I	Pasture I
			Tons	AUM*
181**:				
Rock outcrop	VIII	---	---	---
182**:				
Pesmore	VIIs	---	---	---
Rock outcrop	VIII	---	---	---
Asholler	VIIs	---	---	---
183 Peyton	IVe	---	---	---
184** Pishkum Variant-Hoodle	VIIs	---	---	---
185 Poposhia	IVe	IIIe	3.0	4
186**:				
Poposhia	VIe	---	---	---
Blazon	VIIe	---	---	---
Carmody	VIe	---	---	---
187**:				
Poposhia, sodic	VIs	---	---	---
Blazon	VIIe	---	---	---
188**:				
Quander	VIe	---	---	---
Youga	VIe	---	---	---
Onason	VIIe	---	---	---
189**				
Rallod	VIIe	---	---	---
Rock outcrop	VIII	---	---	---
Seaverson	VIIe	---	---	---
190** Relsob-Bluerim	IVe	---	---	---
191**:				
Rentsac	VIIs	---	---	---
Carmody	VIe	---	---	---
192**:				
Riverwash	VIw	---	---	---

See footnotes at end of table.

TABLE 3.--LAND CAPABILITY AND YIELDS
PER ACRE OF HAY AND PASTURE--Continued

Soil name and map symbol	Land capability N	Land capability I	Grass hay I	Pasture I
			Tons	AUM*
192**:				
Aquic Ustifluvents	IVw	---	---	---
193**:				
Rockinchair	VIe	---	---	---
Rock outcrop	VIII	---	---	---
Sinkson	IVe	---	---	---
194** Rockinchair-Sinkson	IVe	---	---	---
195**:				
Rock outcrop	VIII	---	---	---
Asholler	VIIs	---	---	---
196**:				
Rock outcrop	VIII	---	---	---
Blackhall	VIIe	---	---	---
197**:				
Rock outcrop	VIII	---	---	---
Blazon	VIIe	---	---	---
198**:				
Rock outcrop	VIII	---	---	---
Mosroc	VIIe	---	---	---
199**:				
Rock outcrop	VIII	---	---	---
Oceanet	VIIe	---	---	---
200**:				
Roxal	VIIe	---	---	---
Rock outcrop	VIII	---	---	---
201**:				
Roxal	VIIe	---	---	---
Tongue River	VIe	---	---	---
202 Ryan Park	IVe	---	---	---
203** Ryan Park-Carmody	IVe	---	---	---

See footnotes at end of table.

TABLE 3.--LAND CAPABILITY AND YIELDS PER ACRE OF HAY AND PASTURE--Continued

Soil name and map symbol	Land capability N	Land capability I	Grass hay I	Pasture I
			Tons	AUM*
204------------- Ryark	IVe	---	---	---
205**----------- Ryark-Zeomont	VIe	---	---	---
206**:				
Sandbranch-----	VIs	---	---	---
Ryan Park Variant-------	VIe	---	---	---
Poposhia-------	VIe	---	---	---
207**:				
Sinkson--------	IVe	IIIe	3.0	4
Almy-----------	IVe	IIIe	3.5	5
208**:				
Sinkson--------	IVe	---	---	---
Almy-----------	IVe	---	---	---
Thermopolis----	VIIe	---	---	---
209**:				
Starman--------	VIIe	---	---	---
Rock outcrop---	VIII	---	---	---
Woosley--------	VIe	---	---	---
210**:				
Taluce---------	VIIe	---	---	---
Bowbac---------	IVe	---	---	---
211**:				
Thermopolis----	VIIe	---	---	---
Sinkson--------	VIe	---	---	---
212**:				
Tisworth-------	VIs	---	---	---
Absher---------	VIs	---	---	---
Forelle--------	IVe	---	---	---
213**:				
Tisworth-------	VIs	---	---	---
Poposhia-------	IVe	---	---	---
214**:				
Tisworth-------	VIs	IVs	---	---

See footnotes at end of table.

TABLE 3.--LAND CAPABILITY AND YIELDS PER ACRE OF HAY AND PASTURE--Continued

Soil name and map symbol	Land capability		Grass hay	Pasture
	N	I	I	I
			Tons	AUM*
214**:				
Ryan Park	IVe	IIIe	3.0	6
Countryman	VIw	IVw	2.0	5
215** Tongue River-Inchau-Farlow Variant	VIe	---	---	---
216**:				
Uffens	VIs	---	---	---
Muff	VIe	---	---	---
Frisite	VIe	---	---	---
217** Uhl-Gelkie	VIe	---	---	---
218**:				
Venapass	Vw	IVw	2.5	6
Uhl	VIe	IVc	2.5	6
Absher	VIs	VIs	---	---
219**:				
Venapass	Vw	IVw	2.5	6
Silas	VIe	IVc	2.5	6
220** Vonalee-Hiland	IVe	---	---	---
221**:				
Woosley	VIe	---	---	---
Decross	VIe	---	---	---
Starman	VIIe	---	---	---
222**:				
Worland	VIe	---	---	---
Oceanet	VIIe	---	---	---
Persayo	VIIe	---	---	---
223** Youga-Quander	VIe	---	---	---
224**:				
Youngston	VIe	---	---	---
Effington	VIs	---	---	---

See footnotes at end of table.

TABLE 3.--LAND CAPABILITY AND YIELDS
PER ACRE OF HAY AND PASTURE--Continued

Soil name and map symbol	Land capability		Grass hay	Pasture
	N	I	I	I
			Tons	AUM*
225**: Youngston-Lostwells-Apron	VIe	IIIe	3.0	8
226**: Youngston-Lostwells	VIe	IIIe	3.0	8
227**: Youngston-Persayo	VIe	---	---	---
228: Zeomont	VIe	---	---	---
229**: Dumps, mine	VIII	---	---	---
230**: Pits, gravel	VIII	---	---	---

* 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 4.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONES I, II, AND III

(Dashes indicate that the species is not suited to the soils in the group)

Woody species	Planting zone I														
	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	---	---	22	---	---	---	---	---	22	---	---	22	---	---	22
Black Hills spruce	---	---	21	---	**15	22	---	---	22	---	---	20	---	---	20
Blue spruce	---	**12	22	---	---	22	---	---	22	---	---	20	---	---	19
Eastern redcedar	---	15	23	---	15	22	---	10	21	---	10	20	---	11	20
Ponderosa pine	---	**16	23	---	**16	23	---	**14	22	---	**12	22	---	12	21
Rocky Mountain juniper	---	10	21	---	10	21	---	8	18	---	8	18	---	10	18
Scotch pine	---	---	21	---	---	---	---	---	20	---	---	20	---	---	20
Deciduous trees:															
Boxelder	---	---	21	---	---	---	---	---	20	---	---	19	---	---	19
Golden willow	---	**20	31	---	**20	31	---	---	29	---	---	29	---	---	29
Green ash	---	**14	28	---	**14	27	---	**13	28	---	**13	28	---	12	25
Hackberry	---	**14	26	---	**14	26	---	**14	24	---	**14	24	---	16	23
Honeylocust	---	15	28	---	15	28	---	14	26	---	13	26	---	14	24
Plains cottonwood	---	**29	41	---	**29	41	---	---	41	---	---	41	---	---	41
Russian-olive	**12	15	24	**12	16	24	---	13	23	---	11	22	---	11	22
Siberian crabapple	---	**11	19	---	---	---	---	---	19	---	---	19	---	11	19
Siberian elm	---	**20	33	---	**20	33	---	**18	33	---	**17	33	---	19	31
Shrubs:															
American plum	---	---	10	---	---	10	---	---	10	---	---	10	---	**7	10
Basin big sagebrush	---	---	---	---	---	---	2	4	---	---	---	---	---	---	---
Common chokecherry	---	**7	11	---	**7	11	---	**7	11	---	**7	11	---	8	11
Fourwing saltbush	2	2	---	2	2	---	2	2	---	2	2	3	2	---	---
Golden currant	---	---	6	---	---	---	---	---	6	---	---	6	---	---	6
Greasewood	4	---	---	3	3	---	---	---	---	---	---	---	---	---	---
Lilac	---	**5	10	---	**5	10	---	**5	10	---	**5	10	---	5	9
Nanking cherry	---	**3	8	---	---	---	---	**3	8	---	**3	8	---	5	8
Peking cotoneaster	---	**3	9	---	---	---	---	**3	8	---	**3	8	---	4	8
Redosier dogwood	---	---	8	---	---	---	---	---	8	---	---	8	---	---	7
Rubber rabbitbrush	3	---	---	2	3	---	---	---	---	---	---	---	2	---	---
Rugosa rose	---	2	6	---	---	---	---	3	6	---	3	6	---	3	5
Saskatoon serviceberry	---	---	7	---	---	---	---	---	5	---	---	5	---	---	5
Siberian peashrub	---	7	14	---	6	14	---	7	12	---	6	12	---	5	12
Silver buffaloberry	---	---	12	---	---	12	---	---	11	---	---	10	---	---	10
Skunkbush sumac	---	3	9	---	3	9	---	3	9	---	3	9	---	4	8
Tatarian honeysuckle	---	6	11	---	6	11	---	5	11	---	5	11	---	6	11
Western sandcherry	---	2	3	---	---	---	---	2	3	---	2	3	---	---	3

See footnotes at end of table.

TABLE 4.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONES I, II, and III--Continued

Woody species	Planting zone I											
	Group 5			Group 5K			Group 6			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	---	---	22	---	---	---	---	---	16	---	---	22
Black Hills spruce	---	---	20	---	---	20	---	---	20	---	---	20
Blue spruce	---	---	21	---	---	21	---	---	21	---	---	21
Eastern redcedar	---	10	20	---	10	20	---	10	20	---	8	20
Ponderosa pine	---	**13	22	---	13	22	---	13	22	---	**11	22
Rocky Mountain juniper	---	8	17	---	10	17	---	10	18	---	8	18
Scotch pine	---	---	20	---	---	---	---	13	20	---	---	20
Deciduous trees:												
Boxelder	---	---	20	---	---	---	---	---	20	---	---	20
Golden willow	---	---	29	---	---	---	---	---	---	---	---	29
Green ash	---	**12	27	---	13	28	---	28	---	**11	14	28
Hackberry	---	---	24	---	---	25	---	---	24	---	---	25
Honeylocust	---	12	26	---	14	28	---	13	26	---	14	27
Plains cottonwood	---	---	41	---	---	41	---	---	35	---	---	35
Russian-olive	---	11	23	---	11	23	---	13	23	---	11	24
Siberian crabapple	---	---	19	---	---	---	---	---	19	---	---	19
Siberian elm	---	**17	33	---	20	33	---	20	33	---	17	33
Shrubs:												
American plum	---	---	10	---	---	10	---	---	10	---	---	10
Basin big sagebrush	2	4	---	3	---	---	2	4	---	2	3	---
Common chokecherry	---	**6	11	---	7	11	---	**7	11	---	---	11
Fourwing saltbush	---	2	---	2	2	---	2	2	---	2	2	---
Golden currant	---	---	6	---	---	---	---	---	6	---	---	6
Greasewood	---	---	---	---	---	---	---	---	---	---	---	---
Lilac	---	**5	10	---	5	10	---	**5	9	---	---	9
Nanking cherry	---	---	8	---	---	---	---	---	7	---	---	8
Peking cotoneaster	---	---	8	---	---	---	---	**4	8	---	---	8
Redosier dogwood	---	---	8	---	---	---	---	---	7	---	---	7
Rubber rabbitbrush	---	---	---	2	---	---	2	3	---	2	3	---
Rugosa rose	---	2	6	---	---	---	---	3	6	---	2	6
Saskatoon serviceberry	---	---	5	---	---	5	---	---	5	---	---	5
Siberian peashrub	---	5	12	---	6	12	---	6	12	---	5	12
Silver buffaloberry	---	---	11	---	**6	11	---	**5	11	---	---	11
Skunkbush sumac	---	3	8	---	5	8	---	3	8	---	**3	8
Tatarian honeysuckle	---	5	11	---	6	11	---	6	11	---	5	11
Western sandcherry	---	2	3	---	---	---	---	2	3	---	---	3

See footnotes at end of table.

TABLE 4.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONES I, II, and III--Continued

Woody species	Planting zone I											
	Group 7			Group 8			Group 9G			Group 9N		
	Precipitation		Irrigated	Precipitation		Irrigated	Precipitation		Irrigated	Precipitation		Irrigated
	5-9"	10-14"		5-9"	10-14"		5-9"	10-14"		5-9"	10-14"	
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers*:												
Austrian pine	---	---	22	---	---	---	---	---	---	---	---	---
Black Hills spruce	---	---	20	---	---	21	---	---	---	---	---	---
Blue spruce	---	---	21	---	---	21	---	---	---	---	---	---
Eastern redcedar	---	**7	20	---	8	20	---	---	20	---	---	17
Ponderosa pine	---	---	22	---	**11	22	---	---	---	---	**9	21
Rocky Mountain juniper	---	**6	18	---	8	17	---	**7	18	---	**5	16
Scotch pine	---	---	20	---	---	---	---	---	---	---	---	---
Deciduous trees:												
Boxelder	---	---	20	---	---	---	---	---	---	---	---	---
Golden willow	---	---	---	---	---	---	---	---	---	---	---	---
Green ash	---	---	28	---	11	30	---	---	27	---	---	24
Hackberry	---	---	24	---	---	26	---	---	---	---	---	---
Honeylocust	---	---	26	---	11	29	---	14	27	---	---	---
Plains cottonwood	---	---	30	---	---	41	---	---	41	---	---	35
Russian-olive	---	---	23	---	9	22	---	13	23	---	8	22
Siberian crabapple	---	---	19	---	---	---	---	---	---	---	8	---
Siberian elm	---	---	29	---	17	33	---	**16	32	---	**10	30
Shrubs:												
American plum	---	---	10	---	---	10	---	---	---	---	---	---
Basin big sagebrush	---	---	---	2	3	---	---	---	---	---	4	---
Common chokecherry	---	---	11	---	---	11	---	---	---	---	---	---
Fourwing saltbush	---	---	---	2	2	---	2	2	---	2	3	---
Golden currant	---	---	6	---	---	---	---	3	---	---	---	---
Greasewood	---	---	---	---	---	---	2	3	---	2	3	---
Lilac	---	---	9	---	4	10	---	**5	10	---	---	10
Nanking cherry	---	---	7	---	---	---	---	---	---	---	---	---
Peking cotoneaster	---	---	8	---	---	---	---	---	---	---	---	---
Redosier dogwood	---	---	7	---	---	---	---	---	---	---	---	---
Rubber rabbitbrush	---	**2	---	2	2	---	2	2	---	---	3	---
Rugosa rose	---	**2	6	---	---	---	---	---	---	---	---	---
Saskatoon serviceberry	---	---	5	---	---	---	---	---	---	---	---	---
Siberian peashrub	---	**4	12	---	5	12	---	5	12	---	4	10
Silver buffaloberry	---	---	11	---	---	12	---	---	11	---	---	11
Skunkbush sumac	---	---	---	---	3	8	---	3	9	---	3	9
Tatarian honeysuckle	---	---	11	---	5	11	---	6	11	---	4	11
Western sandcherry	---	---	3	---	---	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 4.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONES I, II, and III--Continued

Woody species	Planting zone II														
	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	---	---	22	---	---	---	---	---	22	---	---	22	---	---	---
Blue spruce	---	12	22	---	---	22	---	---	22	---	---	20	---	---	19
Eastern redcedar	---	15	23	---	15	22	---	10	21	---	10	20	---	8	20
Ponderosa pine	---	**16	22	---	**16	23	---	**14	22	---	12	22	---	**9	21
Rocky Mountain juniper	---	10	21	---	10	21	---	8	18	---	8	18	---	8	18
Scotch pine	---	---	21	---	---	---	---	---	20	---	---	20	---	---	---
Deciduous trees:															
Boxelder	---	---	21	---	---	---	---	---	20	---	---	19	---	---	19
Golden willow	---	**20	31	---	**20	31	---	---	30	---	---	29	---	---	29
Green ash	---	**14	28	---	**14	27	---	13	28	---	**13	28	---	**10	25
Honeylocust	---	15	28	---	15	28	---	14	27	---	13	26	---	12	24
Plains cottonwood	---	**28	41	---	**28	41	---	---	41	---	---	41	---	---	41
Russian-olive	**12	15	24	**11	16	24	---	13	23	---	11	23	---	9	22
Siberian crabapple	---	**11	19	---	---	---	---	---	19	---	---	19	---	---	19
Siberian elm	---	**20	33	---	**20	33	---	**18	33	---	**16	33	---	**15	31
Shrubs:															
American plum	---	**7	10	---	**7	10	---	---	11	---	---	10	---	---	10
Basin big sagebrush	2	---	---	---	---	---	2	---	---	2	---	---	---	---	---
Common chokecherry	---	**7	11	---	**7	11	---	**6	11	---	**7	11	---	**7	11
Fourwing saltbush	2	2	3	2	2	3	2	2	---	2	2	3	2	2	3
Golden currant	---	---	6	---	---	---	---	---	6	---	---	6	---	---	6
Greasewood	3	---	---	3	3	---	---	---	---	---	---	---	---	---	---
Lilac	---	**5	10	---	**5	10	---	**5	10	---	**5	10	---	**4	9
Nanking cherry	---	**3	9	---	---	---	---	**3	8	---	**3	8	---	**3	8
Peking cotoneaster	---	**3	---	---	---	---	---	**3	8	---	**3	8	---	---	8
Redosier dogwood	---	---	8	---	---	---	---	---	8	---	---	8	---	---	7
Rubber rabbitbrush	2	---	---	2	2	---	2	---	---	2	2	---	2	2	---
Rugosa rose	---	2	6	---	---	---	---	3	6	---	3	6	---	---	5
Saskatoon serviceberry	---	---	7	---	---	---	---	---	5	---	---	5	---	---	5
Siberian peashrub	---	7	13	---	5	13	---	7	12	---	6	12	---	4	9
Silver buffaloberry	---	---	12	---	---	12	---	---	11	---	---	10	---	---	10
Skunkbush sumac	---	3	9	---	4	9	---	3	9	---	3	9	---	---	8
Tatarian honeysuckle	---	6	11	---	5	11	---	5	11	---	5	11	---	4	11
Western sandcherry	---	2	3	---	---	---	---	2	3	---	2	3	---	---	3

See footnotes at end of table.

TABLE 4.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONES I, II, and III--Continued

Woody species	Planting zone II											
	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	---	---	22	---	---	---	---	---	22	---	---	22
Blue spruce	---	---	21	---	---	21	---	---	21	---	---	21
Eastern redcedar	---	10	20	---	8	20	---	8	20	---	9	20
Ponderosa pine	---	**13	22	---	**11	22	---	**10	22	---	**11	22
Rocky Mountain juniper	---	8	17	---	8	17	---	7	18	---	8	18
Scotch pine	---	---	22	---	---	---	---	---	---	---	---	---
Deciduous trees:												
Boxelder	---	---	20	---	---	---	---	---	20	---	---	20
Golden willow	---	---	29	---	---	---	---	---	---	---	---	29
Green ash	---	**12	26	---	**11	27	---	---	28	---	**11	28
Honeylocust	---	12	26	---	11	28	---	---	26	---	12	27
Plains cottonwood	---	---	41	---	---	41	---	---	35	---	---	35
Russian-olive	---	11	23	---	9	23	---	10	23	---	11	24
Siberian crabapple	---	---	19	---	---	---	---	---	19	---	---	19
Siberian elm	---	**17	33	---	**16	33	---	**15	32	---	**17	32
Shrubs:												
American plum	---	---	10	---	---	10	---	---	10	---	---	10
Basin big sagebrush	2	3	---	2	3	---	2	3	---	2	3	---
Common chokecherry	---	**6	11	---	---	11	---	---	11	---	---	11
Fourwing saltbush	2	2	---	2	2	---	2	2	---	2	2	---
Golden currant	---	---	6	---	---	---	---	---	6	---	---	6
Greasewood	---	---	---	---	3	---	---	---	---	---	---	---
Lilac	---	**5	10	---	**4	10	---	---	9	---	---	9
Nanking cherry	---	---	8	---	---	---	---	---	7	---	---	8
Peking cotoneaster	---	---	8	---	---	---	---	---	8	---	---	7
Redosier dogwood	---	---	8	---	---	---	---	---	7	---	---	7
Rubber rabbitbrush	3	3	---	2	2	---	2	3	---	2	3	---
Rugosa rose	---	2	6	---	---	---	---	2	6	---	2	6
Saskatoon serviceberry	---	---	5	---	---	---	---	---	5	---	---	5
Siberian peashrub	---	5	12	---	4	12	---	5	12	---	6	12
Silver buffaloberry	---	---	12	---	---	11	---	---	11	---	---	11
Skunkbush sumac	---	3	8	---	3	8	---	4	8	---	**3	8
Tatarian honeysuckle	---	5	11	---	4	11	---	---	11	---	**6	11
Western sandcherry	---	2	3	---	---	---	---	---	3	---	---	3

See footnotes at end of table.

TABLE 4.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONES I, II, and III--Continued

Woody species	Planting zone II											
	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	---	---	22	---	---	---	---	---	---	---	---	---
Blue spruce	---	---	21	---	---	21	---	---	---	---	---	---
Eastern redcedar	---	**8	20	---	8	20	---	---	19	---	---	17
Ponderosa pine	---	---	22	---	**11	22	---	---	---	---	**10	21
Rocky Mountain juniper	---	**6	18	---	8	17	---	**7	17	---	**5	16
Scotch pine	---	---	---	---	---	---	---	---	---	---	---	---
Deciduous trees:												
Boxelder	---	---	20	---	---	---	---	---	---	---	---	---
Golden willow	---	---	---	---	---	---	---	---	---	---	---	---
Green ash	---	---	28	---	11	30	---	---	27	---	---	23
Honeylocust	---	---	26	---	11	29	---	14	27	---	---	---
Plains cottonwood	---	---	30	---	---	41	---	---	41	---	---	35
Russian-olive	---	---	23	---	9	23	---	13	23	---	8	22
Siberian crabapple	---	---	19	---	---	---	---	---	---	---	---	---
Siberian elm	---	---	32	---	17	33	---	17	32	---	**10	30
Shrubs:												
American plum	---	---	10	---	---	10	---	---	---	---	---	---
Basin big sagebrush	---	---	---	2	3	---	---	---	---	2	3	---
Common chokecherry	---	---	11	---	---	11	---	---	---	---	---	---
Fourwing saltbush	---	---	---	2	2	---	2	2	---	2	2	---
Golden currant	---	---	6	---	---	---	---	---	---	---	---	---
Greasewood	---	---	---	---	---	---	2	4	---	---	2	---
Lilac	---	---	9	---	4	10	---	**5	10	---	---	10
Nanking cherry	---	---	7	---	---	---	---	---	---	---	---	---
Peking cotoneaster	---	---	8	---	---	---	---	---	---	---	---	---
Redosier dogwood	---	---	7	---	---	---	---	---	---	---	---	---
Rubber rabbitbrush	2	3	---	2	3	---	2	3	---	2	2	---
Rugosa rose	---	---	6	---	---	---	---	---	---	---	---	---
Saskatoon serviceberry	---	---	5	---	---	---	---	---	---	---	---	---
Siberian peashrub	---	---	12	---	5	12	---	6	12	---	4	10
Silver buffaloberry	---	---	11	---	---	12	---	---	11	---	---	11
Skunkbush sumac	---	---	8	---	3	8	---	3	9	---	3	9
Tatarian honeysuckle	---	---	11	---	5	11	---	6	11	---	4	11
Western sandcherry	---	---	3	---	---	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 4.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONES I, II, and III--Continued

Woody species	Planting zone III															
	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:																
Blue spruce	**14	16	20	22	**13	16	20	22	---	16	18	22	---	14	16	22
Douglas fir	---	---	---	---	---	---	---	---	---	20	25	26	---	16	20	26
Engelmann spruce	**14	16	25	26	---	---	---	---	---	16	18	22	---	14	16	22
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	22
Subalpine fir	---	**12	15	15	---	---	---	---	---	---	13	13	---	---	12	12
White fir	**14	17	22	26	---	---	---	---	---	---	---	---	---	---	12	12
Deciduous trees:																
Boxelder	---	16	18	22	---	---	---	---	---	14	16	22	---	**13	15	22
Golden willow	**21	24	26	32	**19	23	26	32	---	---	---	32	---	---	---	32
Green ash	14	18	22	30	14	18	22	30	12	16	18	30	13	15	17	30
Narrowleaf cottonwood	**22	27	36	42	---	---	---	---	---	---	---	38	---	---	---	35
Plains cottonwood	**22	27	36	42	**20	25	36	42	---	---	---	---	---	---	---	36
Russian-olive	15	18	22	25	15	18	20	25	13	15	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
White willow	**21	24	26	32	**19	23	26	32	---	---	---	32	---	---	---	32
Shrubs:																
American plum	---	**6	6	11	---	**6	7	11	---	**6	7	11	---	**6	7	11
Basin big sagebrush	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Common chokecherry	**7	8	8	12	**7	8	8	12	**7	8	9	12	**7	8	8	12
Common snowberry	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
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
Redosier dogwood	---	---	6	8	---	---	---	---	---	---	5	6	---	---	6	7
Rocky Mountain maple	---	7	9	10	---	---	---	---	---	---	---	---	---	---	---	---
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
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
Woods rose	3	4	4	4	3	4	4	4	---	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 4.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONES I, II, and III--Continued

Woody species	Planting zone III															
	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:																
Blue spruce	---	---	17	20	---	16	20	22	---	---	16	20	---	---	14	18
Douglas fir	---	---	---	---	---	---	18	24	---	---	---	---	---	---	---	---
Engelmann spruce	---	---	17	20	---	17	21	24	---	---	---	---	---	---	14	18
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	22	---	---	---	---	---	---	---	21
Subalpine fir	---	---	---	---	---	---	13	13	---	---	---	---	---	---	---	---
White fir	---	---	---	---	---	---	18	24	---	---	---	---	---	---	---	22
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
Narrowleaf cottonwood	---	---	---	32	---	---	---	33	---	---	---	31	---	---	---	---
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	---	12	15	19	---	---	---	---	---	---	---	---
Siberian elm	**19	21	24	32	**20	24	26	33	**17	21	24	31	**16	20	24	29
White willow	---	---	---	27	---	---	---	27	---	---	---	27	---	---	---	---
Shrubs:																
American plum	---	**6	6	9	---	6	7	10	---	---	---	11	---	---	7	9
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
Common snowberry	---	---	---	---	---	3	3	3	---	3	3	3	---	---	---	---
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
Redosier dogwood	---	---	---	7	---	---	6	6	---	---	---	---	---	---	---	---
Rocky Mountain maple	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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
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
Woods rose	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 4.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONES I, II, and III--Continued

Woody species	Planting zone III											
	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:												
Blue spruce	---	---	16	20	---	---	16	21	---	---	---	---
Douglas fir	---	---	18	20	---	---	---	---	---	---	---	---
Engelmann spruce	---	---	16	20	---	---	---	---	---	---	---	---
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	---	---	---	---	---	---	---	---
Subalpine fir	---	---	---	---	---	---	---	---	---	---	---	---
White fir	---	---	17	21	---	---	---	---	---	---	---	---
Deciduous trees:												
Boxelder	---	---	---	20	---	---	---	---	---	---	---	---
Golden willow	---	---	---	---	---	---	---	25	---	---	28	34
Green ash	11	13	15	24	11	13	16	29	13	16	19	28
Narrowleaf cottonwood	---	---	---	33	---	---	---	32	---	---	---	---
Plains cottonwood	---	---	---	---	---	---	---	---	---	---	32	42
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
White willow	---	---	---	27	---	---	---	25	---	---	27	34
Shrubs:												
American plum	---	---	6	8	---	---	---	---	---	---	---	---
Basin big sagebrush	3	3	---	---	3	3	---	---	---	---	---	---
Common chokecherry	---	7	8	11	---	---	---	---	---	---	---	---
Common snowberry	---	2	3	3	---	3	3	3	---	---	---	---
Fourwing saltbush	---	---	---	---	2	2	---	---	2	2	---	---
Golden currant	---	3	3	4	---	---	---	---	---	---	---	---
Greasewood	---	---	---	---	---	---	---	---	2	4	---	---
Lilac	---	5	6	8	**4	6	7	10	**5	6	7	10
Redosier dogwood	---	---	6	8	---	---	---	---	---	---	---	---
Rocky Mountain maple	---	---	---	---	---	---	---	---	---	---	---	---
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
Skunkbush sumac	3	4	5	8	3	5	7	9	---	5	6	7
Tatarian honeysuckle	5	7	8	11	5	6	8	11	5	6	7	11
Woods rose	---	---	---	---	---	---	---	---	---	---	---	---

* New plantings in areas that are subject to high winds require protection from the winds during the 3- to 5-year establishment period. A midwinter watering is recommended to prevent foliar desiccation.

** Supplemental water is needed during the 3- to 5-year establishment period.

TABLE 5.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES

Soil name and map symbol	Suitability group	Planting zone
100*: Absher-Elkol	9N	II
101*:		
Absher	9N	II
Poposhia	8	II
Sinkson	8	II
102*:		
Absher Variant	6R	II
Absher	9N	II
103*:		
Abston	9N	II
Diamondville	6R	II
104: Almy	9N	II
105*:		
Almy	9N	II
Monbutte	8	II
Rallod	10	II
106:		
Ansel	3	III
Ansel Variant	6R	III
107*:		
Ansel	3	III
Rock outcrop	---	III
108*:		
Apron	5K	I
Lostwells	8	I
109*:		
Apron	5K	I
Wallson	5K	I
Worland	6R	I
110*:		
Aquic Cryofluvents	1	III
Ansel	3	III
111*: Badland	---	III
112*:		
Badland	---	I
Birdsley	10	I
113*:		
Badland	---	II
Seaverson	10	II
Blazon	10	II

See footnote at end of table.

TABLE 5.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
114*:		
Blinton	9N	I
Youngston	8	I
115* Birdsley-Mudray	10	I
116*:		
Blackhall	10	II
Rock outcrop	---	II
117*:		
Blackhall	10	II
Carmody	6R	II
118*:		
Blazon	10	II
Rock outcrop	---	II
Carmody	6R	II
119*:		
Bluerim	6R	II
Onason	10	II
120*:		
Bosler	6G	II
Rock River	5	II
121*:		
Bosler	6G	II
Ryan Park	5K	II
122*:		
Bowbac	6R	I
Hiland	5K	I
123 Bronsto	6G	II
124 Bronsto	6G	II
125*:		
Brownsto, very bouldery	6G	II
Decross Variant	8	II
Brownsto	6G	II
126 Burnette	3	III
127*:		
Chittum	10	III
Bachus	6R	III
Rock outcrop	---	III
128*:		
Cific	6R	III
Hoodle	6G	III

See footnote at end of table.

TABLE 5.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
129*:		
Clifsand	6G	I
Persayo	10	I
130*:		
Cloud Peak	6R	III
Farlow	6G	III
131*:		
Coalmont	6R	II
Milren	8	II
Cragosen	10	II
132*:		
Conpeak	10	III
Rock outcrop	---	III
Cryluha	6R	III
133*:		
Countryman	1K	II
Absher	9N	II
134 Coutis	5	III
135*:		
Crago	6G	II
Pensore	10	II
136*:		
Cragosen	10	II
Carmody	6R	II
Blazon	10	II
137*:		
Cragosen	10	II
Rock outcrop	---	II
Carmody	6R	II
138*:		
Cragosen	10	II
Bosler	6G	II
Cushool	3	II
139*:		
Cryluha	6R	III
Conpeak	10	III
140*:		
Cushool	6R	II
Rock River	5	II
141*:		
Dahlquist	6G	II
Rock River	5	II
142*:		
Diamondville	6R	II
Forelle	8	II

See footnote at end of table.

TABLE 5.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
143*:		
Effington	9N	I
Mudray	10	I
144*:		
Emblem	6G	I
Clifsand	6G	I
Rairdent	9N	I
145 Fluvaquents	10	I
146*:		
Fluvaquents	10	I
Youngston	8	I
147* Forelle-Luhon	8	II
148* Forelle-Poposhia	8	II
149*:		
Fornor	6G	III
Decross	3	III
150*:		
Frisite	8	I
Emblem	6G	I
151* Frisite-Youngston	8	I
152*:		
Gelkie Variant	3	III
Barrett Variant	10	III
153*:		
Granile	6G	III
Ansel	3	III
154*:		
Griffy	6G	I
Saddle	6R	I
Wallson	5K	I
155* Haplaquolls-Aquic Ustifluvents	1K	---
156*:		
Haverdad	8	I
Clarkelen	5K	I
157*:		
Havre	8	II
Absher	9N	II
Forelle	8	II

See footnote at end of table.

TABLE 5.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
158*:		
Havre	8	II
Forelle	8	II
Glendive	5K	II
159*:		
Havre	8	II
Havre Variant	1K	II
Elkol	9N	II
160*:		
Highpoint	10	II
Rock outcrop	---	II
161 Hiland	5K	I
162*:		
Hoodle	6G	III
Rock outcrop	---	III
163* Hoodle-Gelkie	6G	III
164*:		
Iceslew	10	II
Countryman	1K	II
165*:		
Inchau	6R	III
Youga	3	III
166*:		
Irigul	10	III
Midelight	6G	III
Rock outcrop	---	III
167*:		
Irigul	10	III
Rock outcrop	---	III
168* Lander-Lander Variant	1K	II
169*:		
Luhon	8	II
Rock River	5	II
Forelle	8	II
170 Lupinto	6G	II
171*:		
Lymanson	6R	III
Abston	9N	III
Gelkie	6G	III
172*:		
Lymanson	6R	III
Conpeak	10	III

See footnote at end of table.

TABLE 5.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
173*:		
Midelight Variant	6R	III
Winada Variant	6R	III
Starman	10	III
174*:		
Milren	8	II
Bosler	6G	II
Rock River	5	II
175*:		
Milvar	6G	II
Milren	8	II
176*:		
Mosroc	10	III
Lymanson	6R	III
177*:		
Oceanet	10	I
Rock outcrop	---	I
Persayo	10	I
178*:		
Orpha	7	I
Vonalee	5	I
179 Owen Creek	6R	III
180*:		
Pensore	10	II
Rock outcrop	---	II
181*:		
Persayo	10	I
Rock outcrop	---	I
182*:		
Pesmore	6R	II
Rock outcrop	---	II
Asholler	10	II
183 Peyton	5	II
184* Pishkun Variant-Hoodle	6G	III
185 Poposhia	8	II
186*:		
Poposhia	8	II
Blazon	10	II
Carmody	6R	II
187*:		
Poposhia, sodic	9N	II
Blazon	10	II

See footnote at end of table.

TABLE 5.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
188*:		
Quander	6G	III
Youga	3	III
Onason	10	III
189*:		
Rallod	10	II
Rock outcrop	---	II
Seaverson	10	II
190*:		
Relsob	5	II
Bluerim	6R	II
191*:		
Rentsac	6G	II
Carmody	6R	II
192*:		
Riverwash	10	---
Aquic Ustifluvents	1	---
193*:		
Rockinchair	6R	II
Rock outcrop	---	II
Sinkson	8	II
194*:		
Rockinchair	6R	II
Sinkson	8	II
195*:		
Rock outcrop	---	II
Asholler	10	II
196*:		
Rock outcrop	---	II
Blackhall	10	II
197*:		
Rock outcrop	---	II
Blazon	10	II
198*:		
Rock outcrop	---	III
Mosroc	10	III
199*:		
Rock outcrop	---	I
Oceanet	10	I
200*:		
Roxal	10	III
Rock outcrop	---	III
201*:		
Roxal	10	III
Tongue River	6R	III

See footnote at end of table.

TABLE 5.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
202	5K	II
Ryan Park		
203*:		
Ryan Park	5K	II
Carmody	6R	II
204	7	II
Ryark		
205*	7	II
Ryark-Zeomont		
206*:		
Sandbranch	8	II
Ryan Park Variant	7	II
Poposhia	8	II
207*:		
Sinkson	8	II
Almy	9N	II
208*:		
Sinkson	8	II
Almy	9N	II
Thermopolis	10	II
209*:		
Starman	10	III
Rock outcrop	---	III
Woosley	6R	III
210*:		
Taluce	10	I
Bowbac	6R	I
211*:		
Thermopolis	10	II
Sinkson	8	II
212*:		
Tisworth	9N	II
Absher	9N	II
Forelle	8	II
213*:		
Tisworth	9N	II
Poposhia	8	II
214*:		
Tisworth	9N	II
Ryan Park	5K	II
Countryman	1K	II
215*	6R	III
Tongue River-Inchau-Farlow Variant		

See footnote at end of table.

TABLE 5.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
216*:		
Uffens	9N	I
Muff	9N	I
Frisite	8	I
217*:		
Uhl	3	III
Gelkie	6G	III
218*:		
Venapass	10	III
Uhl	3	III
Absher	9N	III
219*:		
Venapass	10	III
Silas	3	III
220*:		
Vonalee	5	I
Hiland	5K	I
221*:		
Woosley	6R	III
Decross	3	III
Starman	10	III
222*:		
Worland	6R	I
Oceanet	10	I
Persayo	10	I
223*:		
Youga	3	III
Quander	6G	III
224*:		
Youngston	8	I
Effington	9N	I
225*:		
Youngston	8	I
Lostwells	8	I
Apron	5K	I
226* Youngston-Lostwells	8	I
227*:		
Youngston	8	I
Persayo	10	I
228 Zeomont	7	II
229*. Dumps, mine		
230*. Pits, gravel		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
100*:				
Absher	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
Elkol	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
101*:				
Absher	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
Poposhia	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
Sinkson	Slight	Slight	Moderate: slope, small stones.	Slight.
102*:				
Absher Variant	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
Absher	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
103*:				
Abston	Severe: excess sodium.	Severe: excess sodium.	Severe: slope, excess sodium.	Slight.
Diamondville	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
104 Almy	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
105*:				
Almy	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
Monbutte	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
Rallod	Severe: depth to rock, excess sodium.	Severe: excess sodium, depth to rock.	Severe: slope, depth to rock, excess sodium.	Severe: erodes easily.
106*:				
Ansel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
106*:				
Ansel Variant	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.
107*:				
Ansel	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Rock outcrop.				
108*:				
Apron	Slight	Slight	Moderate: slope, small stones.	Slight.
Lostwells	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
109*:				
Apron	Slight	Slight	Moderate: slope, small stones.	Slight.
Wallson	Slight	Slight	Moderate: slope, small stones.	Slight.
Worland	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
110*:				
Aquic Cryofluvents	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ansel	Slight	Slight	Severe: slope.	Slight.
111* Badland	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.
112*:				
Badland	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.
Birdsley	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
113*:				
Badland	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
113*:				
Seaverson	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
Blazon	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
114*:				
Binton	Moderate: excess salt.	Moderate: excess salt.	Moderate: excess salt.	Slight.
Youngston	Slight	Slight	Moderate: slope.	Slight.
115*:				
Birdsley	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
Mudray	Severe: depth to rock, excess sodium.	Severe: excess sodium, depth to rock.	Severe: depth to rock, excess sodium.	Slight.
116*:				
Blackhall	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Rock outcrop.				
117*:				
Blackhall	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Carmody	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.
118*:				
Blazon	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
Rock outcrop.				
Carmody	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
119*:				
Bluerim	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Onason	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
120*:				
Bosler	Slight	Slight	Moderate: slope, small stones.	Slight.
Rock River	Slight	Slight	Moderate: slope, small stones.	Slight.
121*:				
Bosler	Slight	Slight	Moderate: slope, small stones.	Slight.
Ryan Park	Slight	Slight	Moderate: slope.	Slight.
122*:				
Bowbac	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Hiland	Slight	Slight	Moderate: slope.	Slight.
123 Brownsto	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
124 Brownsto	Slight	Slight	Moderate: slope, small stones.	Slight.
125*:				
Brownsto, very bouldery	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.
Decross Variant	Severe: flooding.	Slight	Moderate: slope, small stones.	Slight.
Brownsto	Slight	Slight	Moderate: slope, small stones.	Slight.
126 Burnette	Slight	Slight	Severe: slope.	Slight.
127*:				
Chittum	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
127*:				
Bachus	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Rock outcrop.				
128*:				
Cific	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Severe: small stones.
Hoodle	Moderate: small stones.	Moderate: small stones.	Severe: slope, small stones.	Slight.
129*:				
Clifsand	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, dusty.
Persayo	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.
130*:				
Cloud Peak	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
Farlow	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
131*:				
Coalmont	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Milren	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Cragosen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope, dusty.
132*:				
Conpeak	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Rock outcrop.				
Cryluha	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
133*:				
Countryman	Severe: flooding.	Moderate: flooding, wetness, excess salt.	Severe: flooding.	Moderate: wetness, flooding.
Absher	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
134 Coutis	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
135*:				
Crago	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Moderate: dusty.
Pensore	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Slight.
136*:				
Cragosen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope, dusty.
Carmody	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
Blazon	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.
137*:				
Cragosen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
Rock outcrop.				
Carmody	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.
138*:				
Cragosen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope, dusty.
Bosler	Slight	Slight	Moderate: slope, small stones.	Slight.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
138*:				
Cushool	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
139*:				
Cryluha	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight.
Conpeak	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
140*:				
Cushool	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Rock River	Slight	Slight	Moderate: slope, small stones.	Slight.
141*:				
Dahlquist	Severe: large stones.	Severe: large stones.	Severe: large stones, slope, small stones.	Moderate: large stones, dusty.
Rock River	Slight	Slight	Moderate: slope, small stones.	Slight.
142*:				
Diamondville	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Forelle	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
143*:				
Effington	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Moderate: dusty.
Mudray	Severe: depth to rock, excess sodium.	Severe: excess sodium, depth to rock.	Severe: depth to rock, excess sodium.	Slight.
144*:				
Emblem	Slight	Slight	Moderate: slope, small stones.	Slight.
Clifsand	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope, small stones.	Moderate: dusty.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
144*:				
Rairdent	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
145 Fluvaquents	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness.	Severe: wetness.
146*:				
Fluvaquents	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Youngston	Slight	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.
147*:				
Forelle	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
Luhon	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
148*:				
Forelle	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Poposhia	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
149*:				
Fornor	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Moderate: large stones, slope.
Decross	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
150*:				
Frisite	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Emblem	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
151*:				
Frisite	Slight	Slight	Moderate: slope.	Slight.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
151*:				
Youngston	Slight	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
152*:				
Gelkie Variant	Slight	Slight	Moderate: slope.	Slight.
Barrett Variant	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.
153*:				
Granile	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
Ansel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
154*:				
Griffy	Slight	Slight	Moderate: slope.	Slight.
Saddle	Slight	Slight	Severe: slope.	Slight.
Wallson	Slight	Slight	Moderate: slope, small stones.	Slight.
155*:				
Haplaquolls	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.
Aquic Ustifluvents	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Slight.
156*:				
Haverdad	Severe: flooding.	Moderate: excess salt, dusty.	Moderate: small stones, dusty.	Moderate: dusty.
Clarkelen	Severe: flooding.	Slight	Slight	Slight.
157*:				
Havre	Severe: flooding.	Slight	Slight	Slight.
Absher	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
157*:				
Forelle	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
158*:				
Havre	Severe: flooding.	Slight	Slight	Slight.
Forelle	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Glendive	Severe: flooding.	Slight	Slight	Slight.
159*:				
Havre	Severe: flooding.	Slight	Moderate: slope.	Slight.
Havre Variant	Severe: flooding, wetness, excess salt.	Severe: excess salt.	Severe: wetness, excess salt.	Moderate: wetness.
Elkol	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: too clayey.
160*:				
Highpoint	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
Rock outcrop.				
161 Hiland	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
162*:				
Hoodle	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight.
Rock outcrop.				
163*:				
Hoodle	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight.
Gelkie	Slight	Slight	Severe: slope.	Slight.
164*:				
Iceslew	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
164*:				
Countryman	Severe: flooding.	Moderate: flooding, wetness, excess salt.	Moderate: flooding, excess salt.	Moderate: wetness, flooding.
165*:				
Inchau	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Youga	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
166*:				
Irigul	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Slight.
Midelight	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight.
Rock outcrop.				
167*:				
Irigul	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.
Rock outcrop.				
168*:				
Lander	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.
Lander Variant	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.
169*:				
Luhon	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
Rock River	Slight	Slight	Moderate: slope, small stones.	Slight.
Forelle	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
170------------------- Lupinto	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
171*:				
Lymanson-------------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
Abston---------------	Severe: excess sodium.	Severe: excess sodium.	Severe: small stones, excess sodium.	Slight.
Gelkie---------------	Slight---------------	Slight---------------	Moderate: slope, small stones.	Slight.
172*:				
Lymanson-------------	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Conpeak--------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
173*:				
Midelight Variant----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Winada Variant-------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Starman--------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones.	Severe: slope.
174*:				
Milren---------------	Slight---------------	Slight---------------	Moderate: slope.	Slight.
Bosler---------------	Slight---------------	Slight---------------	Moderate: slope, small stones.	Slight.
Rock River-----------	Slight---------------	Slight---------------	Severe: slope.	Slight.
175*:				
Milvar---------------	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: large stones, slope, small stones.	Moderate: dusty.
Milren---------------	Slight---------------	Slight---------------	Moderate: slope.	Slight.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
176*:				
Mosroc	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.
Lymanson	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
177*:				
Oceanet	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Rock outcrop.				
Persayo	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.
178*:				
Orpha	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.
Vonalee	Slight	Slight	Severe: slope.	Slight.
179 Owen Creek	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Moderate: large stones.
180*:				
Pensore	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
Rock outcrop.				
181*:				
Persayo	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.
Rock outcrop.				
182*:				
Pesmore	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Rock outcrop.				
Asholler	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones.	Moderate: slope, dusty.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
183 Peyton	Slight	Slight	Moderate: slope, small stones.	Slight.
184*:				
Pishkun Variant	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Slight.
Hoodle	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Slight.
185 Poposhia	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
186*:				
Poposhia	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Blazon	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.
Carmody	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.
187*:				
Poposhia, sodic	Severe: excess sodium.	Severe: excess sodium.	Severe: slope, excess sodium.	Moderate: dusty.
Blazon	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
188*:				
Quander	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.
Youga	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Onason	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
189*:				
Rallod	Severe: depth to rock, excess sodium.	Severe: excess sodium, depth to rock.	Severe: slope, depth to rock, excess sodium.	Severe: erodes easily.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
189*:				
Rock outcrop.				
Seaverson	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.
190*:				
Relsob	Slight	Slight	Moderate: slope.	Slight.
Bluerim	Slight	Slight	Severe: slope.	Slight.
191*:				
Rentsac	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.
Carmody	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.
192*:				
Riverwash	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.
Aquic Ustifluvents	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Slight.
193*:				
Rockinchair	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Rock outcrop.				
Sinkson	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.
194*:				
Rockinchair	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: dusty.
Sinkson	Slight	Slight	Moderate: slope.	Moderate: dusty.
195*:				
Rock outcrop.				
Asholler	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: slope.
196*:				
Rock outcrop.				

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
196*:				
Blackhall	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
197*:				
Rock outcrop.				
Blazon	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.
198*:				
Rock outcrop.				
Mosroc	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Slight.
199*:				
Rock outcrop.				
Oceanet	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
200*:				
Roxal	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Rock outcrop.				
201*:				
Roxal	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Tongue River	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.
202 Ryan Park	Slight	Slight	Moderate: slope.	Slight.
203*:				
Ryan Park	Slight	Slight	Moderate: slope.	Slight.
Carmody	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
204 Ryark	Slight	Slight	Moderate: slope, small stones.	Slight.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
205*:				
Ryark	Slight	Slight	Moderate: slope, small stones.	Slight.
Zeomont	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: too sandy, slope.
206*:				
Sandbranch	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
Ryan Park Variant	Slight	Slight	Moderate: slope.	Slight.
Poposhia	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
207*:				
Sinkson	Slight	Slight	Moderate: slope, small stones.	Slight.
Almy	Slight	Slight	Moderate: slope, small stones.	Slight.
208*:				
Sinkson	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: dusty.
Almy	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
Thermopolis	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
209*:				
Starman	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: slope.
Rock outcrop.				
Woosley	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.
210*:				
Taluce	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Bowbac	Slight	Slight	Severe: slope.	Slight.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
211*:				
Thermopolis	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
Sinkson	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.
212*:				
Tisworth	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
Absher	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
Forelle	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
213*:				
Tisworth	Severe: flooding, excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
Poposhia	Slight	Slight	Moderate: slope, small stones.	Slight.
214*:				
Tisworth	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
Ryan Park	Slight	Slight	Moderate: slope.	Slight.
Countryman	Severe: flooding.	Moderate: flooding, wetness, excess salt.	Severe: flooding.	Moderate: wetness, flooding.
215*:				
Tongue River	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.
Inchau	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Farlow Variant	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
216*:				
Uffens	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
Muff	Severe: excess sodium.	Severe: excess sodium.	Severe: slope, excess sodium.	Moderate: dusty.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
216*:				
Frisite	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
217*:				
Uhl	Slight	Slight	Moderate: slope.	Slight.
Gelkie	Slight	Slight	Moderate: slope, small stones.	Slight.
218*:				
Venapass	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Uhl	Slight	Slight	Moderate: slope.	Slight.
Absher	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
219*:				
Venapass	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Silas	Slight	Slight	Moderate: slope.	Slight.
220*:				
Vonalee	Slight	Slight	Severe: slope.	Slight.
Hiland	Slight	Slight	Moderate: slope.	Slight.
221*:				
Woosley	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.
Decross	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Starman	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones.	Slight.
222*:				
Worland	Slight	Slight	Moderate: slope, small stones, depth to rock.	Slight.
Oceanet	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
222*:				
Persayo	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
223*:				
Youga	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Quander	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Moderate: large stones, slope.
224*:				
Youngston	Slight	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Effington	Severe: flooding, excess sodium, excess sodium.	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Moderate: dusty.
225*:				
Youngston	Severe: flooding.	Moderate: excess salt, dusty.	Moderate: flooding, dusty.	Moderate:
Lostwells	Moderate: dusty.	Moderate: dusty.	Moderate: small stones, dusty.	Moderate: dusty.
Apron	Slight	Slight	Moderate: small stones.	Slight.
226*:				
Youngston	Slight	Slight	Moderate: slope.	Slight.
Lostwells	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
227*:				
Youngston	Slight	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Persayo	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
228 Zeomont	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: too sandy, slope.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
229*: Dumps, mine	Variable	Variable	Variable	Variable.
230*: Pits, gravel	Variable	Variable	Variable	Variable.

* See description of the map unit for composition and behavior characteristics of the map unit.

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*:						
Absher	Moderate: too clayey.	Severe: shrink-swell.	Moderate: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
Elkol	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Severe: excess sodium, excess salt.
101*:						
Absher	Moderate: too clayey.	Severe: shrink-swell.	Moderate: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
Poposhia	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
Sinkson	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
102*:						
Absher Variant	Moderate: depth to rock, too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
Absher	Moderate: too clayey.	Severe: shrink-swell.	Moderate: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
103*:						
Abston	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Severe: frost action.	Severe: excess sodium.
Diamondville	Moderate: depth to rock.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Moderate: depth to rock.
104 Almy	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
105*:						
Almy	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
Monbutte	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Severe: excess sodium.
Rallod	Severe: depth to rock.	Moderate: shrink-swell, depth to rock.	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Moderate: depth to rock, shrink-swell.	Severe: excess sodium, 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
106*:						
Ansel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ansel Variant	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
107*:						
Ansel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
108*:						
Apron	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
Lostwells	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
109*:						
Apron	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
Wallson	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
Worland	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope, depth to rock.
110*:						
Aquic Cryofluvents	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Ansel	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: frost action, shrink-swell.	Slight.
111* Badland	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
112*:						
Badland	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
Birdsley	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Severe: 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
113*:						
Badland----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Seaverson--------	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: low strength, slope.	Severe: slope, depth to rock.
114*:						
Binton-----------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Moderate: excess salt.
Youngston--------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
115*:						
Birdsley---------	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Severe: low strength.	Severe: depth to rock.
Mudray-----------	Severe: depth to rock.	Moderate: shrink-swell, depth to rock.	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Moderate: depth to rock, shrink-swell.	Severe: excess sodium, depth to rock.
116*:						
Blackhall--------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Rock outcrop.						
117*:						
Blackhall--------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Carmody----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
118*:						
Blazon-----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope, depth to rock.
Rock outcrop.						
Carmody----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
119*:						
Bluerim----------	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: 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
119*:						
Onason-----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
120*:						
Bosler-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
Rock River-------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
121*:						
Bosler-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
Ryan Park--------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
122*:						
Bowbac-----------	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: slope, depth to rock.
Hiland-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
123--------------- Brownsto	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
124--------------- Brownsto	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
125*:						
Brownsto, very bouldery--------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: large stones, droughty, slope.
Decross Variant--	Slight---------	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, shrink-swell.	Slight.
Brownsto---------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
126--------------- Burnette	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
127*:						
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.

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
127*:						
Bachus-----------	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Moderate: slope, depth to rock.
Rock outcrop.						
128*:						
Cific------------	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Severe: small stones.
Hoodle-----------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Moderate: small stones, large stones, droughty.
129*:						
Clifsand---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: small stones, droughty.
Persayo----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
130*:						
Cloud Peak-------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
Farlow-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
131*:						
Coalmont---------	Moderate: depth to rock, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: slope.	Severe: shrink-swell, low strength.	Moderate: slope, depth to rock.
Milren-----------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, frost action.	Slight.
Cragosen---------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
132*:						
Conpeak----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Rock outcrop.						
Cryluha----------	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, 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
133*:						
Countryman	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Absher	Moderate: too clayey.	Severe: shrink-swell.	Moderate: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
134 Coutis	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
135*:						
Crago	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: frost action.	Moderate: small stones, large stones.
Pensore	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.
136*:						
Cragosen	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Carmody	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Blazon	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope, depth to rock.
137*:						
Cragosen	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Rock outcrop.						
Carmody	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
138*:						
Cragosen	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Bosler	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Cushool	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, slope.	Moderate: 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
139*:						
Cryluha	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Slight	Moderate: small stones, droughty.
Conpeak	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Severe: depth to rock.
140*:						
Cushool	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, slope.	Moderate: slope, depth to rock.
Rock River	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
141*:						
Dahlquist	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: large stones.	Severe: droughty.
Rock River	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
142*:						
Diamondville	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.
Forelle	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
143*:						
Effington	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Severe: excess salt, excess sodium.
Mudray	Severe: depth to rock.	Moderate: shrink-swell, depth to rock.	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Moderate: depth to rock, shrink-swell.	Severe: excess sodium, depth to rock.
144*:						
Emblem	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Clifsand	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: small stones.
Rairdent	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.	Moderate: droughty.
145 Fluvaquents	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	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
146*:						
Fluvaquents	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness.
Youngston	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
147*:						
Forelle	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
Luhon	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
148*:						
Forelle	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
Poposhia	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
149*:						
Fornor	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Decross	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
150*:						
Frisite	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
Emblem	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
151*:						
Frisite	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
Youngston	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
152*:						
Gelkie Variant	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
Barrett Variant	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Severe: small stones, 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
153*:						
Granile	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ansel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
154*:						
Griffy	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
Saddle	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Slight	Moderate: depth to rock.
Wallson	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
155*:						
Haplaquolls	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: frost action, wetness, flooding.	Moderate: wetness, flooding.
Aquic Ustifluvents	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding.
156*:						
Haverdad	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: excess salt.
Clarkelen	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Slight.
157*:						
Havre	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: low strength, flooding, frost action.	Slight.
Absher	Moderate: too clayey.	Severe: shrink-swell.	Moderate: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
Forelle	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
158*:						
Havre	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: low strength, flooding, frost action.	Slight.
Forelle	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	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
158*:						
Glendive	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Slight.
159*:						
Havre	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: low strength, flooding, frost action.	Slight.
Havre Variant	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: frost action.	Severe: excess salt.
Elkol	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Severe: too clayey, excess sodium, excess salt.
160*:						
Highpoint	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Rock outcrop.						
161 Hiland	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
162*:						
Hoodle	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Moderate: small stones, large stones, droughty.
Rock outcrop.						
163*:						
Hoodle	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, large stones, droughty.
Gelkie	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, frost action.	Slight.
164*:						
Iceslew	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding, frost action.	Severe: ponding.
Countryman	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: flooding, excess salt.

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
165*:						
Inchau----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Youga----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
166*:						
Irigul----------	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.
Midelight--------	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, slope.
Rock outcrop.						
167*:						
Irigul----------	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.
Rock outcrop.						
168*:						
Lander----------	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Moderate: wetness, flooding.
Lander Variant---	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Moderate: large stones, wetness, droughty.
169*:						
Luhon----------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
Rock River-------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
Forelle----------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
170-------------- Lupinto	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
171*:						
Lymanson---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Abston-----------	Moderate: depth to rock.	Slight---------	Moderate: depth to rock.	Moderate: slope.	Severe: frost action.	Severe: excess sodium.

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
171*:						
Gelkie	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, frost action.	Slight.
172*:						
Lymanson	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: slope, depth to rock.
Conpeak	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
173*:						
Midelight Variant	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Winada Variant	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Starman	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.
174*:						
Milren	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
Bosler	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Rock River	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
175*:						
Milvar	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: large stones, droughty.
Milren	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Slight.
176*:						
Mosroc	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.
Lymanson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
177*:						
Oceanet	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Rock outcrop.						

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
177*:						
Persayo----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
178*:						
Orpha------------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Vonalee----------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
179--------------- Owen Creek	Moderate: depth to rock, too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Severe: large stones.
180*:						
Pensore----------	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.
Rock outcrop.						
181*:						
Persayo----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Rock outcrop.						
182*:						
Pesmore----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
Rock outcrop.						
Asholler---------	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.
183--------------- Peyton	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Slight.
184*:						
Pishkun Variant--	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: small stones.
Hoodle-----------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Severe: small stones.
185--------------- Poposhia	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	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
186*:						
Poposhia	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
Blazon	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope, depth to rock.
Carmody	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
187*:						
Poposhia, sodic	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength, frost action.	Severe: excess sodium.
Blazon	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Severe: low strength.	Severe: depth to rock.
188*:						
Quander	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.
Youga	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Onason	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
189*:						
Rallod	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Severe: excess sodium, depth to rock.
Rock outcrop.						
Seaverson	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
190*:						
Relsob	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
Bluerim	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Slight	Moderate: 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
191*:						
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.
Carmody----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
192*:						
Riverwash--------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
Aquic Ustifluvents----	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding.
193*:						
Rockinchair------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
Sinkson----------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
194*:						
Rockinchair------	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope, depth to rock.
Sinkson----------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
195*:						
Rock outcrop.						
Asholler---------	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.
196*:						
Rock outcrop.						
Blackhall--------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
197*:						
Rock outcrop.						
Blazon-----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, 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
198*:						
Rock outcrop.						
Mosroc	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.
199*:						
Rock outcrop.						
Oceanet	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
200*:						
Roxal	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Rock outcrop.						
201*:						
Roxal	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Tongue River	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
202 Ryan Park	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
203*:						
Ryan Park	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
Carmody	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
204 Ryark	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
205*:						
Ryark	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Zeomont	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
206*:						
Sandbranch	Slight	Slight	Moderate: shrink-swell.	Slight	Slight	Severe: excess sodium.
Ryan Park Variant	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
206*:						
Poposhia	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
207*:						
Sinkson	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
Almy	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
208*:						
Sinkson	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, slope.	Moderate: slope.
Almy	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
Thermopolis	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
209*:						
Starman	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.
Rock outcrop.						
Woosley	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
210*:						
Taluce	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Bowbac	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Slight	Moderate: depth to rock.
211*:						
Thermopolis	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, slope.	Moderate: slope.
212*:						
Tisworth	Slight	Slight	Slight	Slight	Slight	Severe: excess sodium.

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
212*:						
Absher-----------	Moderate: too clayey.	Severe: shrink-swell.	Moderate: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
Forelle----------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
213*:						
Tisworth---------	Slight---------	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Severe: excess sodium.
Poposhia---------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
214*:						
Tisworth---------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Severe: excess sodium.
Ryan Park--------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
Countryman-------	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.
215*:						
Tongue River-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Inchau-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Farlow Variant---	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
216*:						
Uffens-----------	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Severe: excess sodium.
Muff-------------	Moderate: depth to rock.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Severe: excess sodium.
Frisite----------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
217*:						
Uhl--------------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	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
217*:						
Gelkie	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, frost action.	Slight.
218*:						
Venapass	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness.
Uhl	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
Absher	Moderate: too clayey.	Severe: shrink-swell.	Moderate: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
219*:						
Venapass	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness.
Silas	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness.	Moderate: shrink-swell.	Severe: low strength.	Moderate: large stones.
220*:						
Vonalee	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Hiland	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
221*:						
Woosley	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Moderate: slope, depth to rock.
Decross	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
Starman	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.
222*:						
Worland	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Slight	Moderate: droughty, depth to rock.
Oceanet	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	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
222*:						
Persayo----------	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Severe: depth to rock.
223*:						
Youga------------	Moderate: slope.	Moderate: slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
Quander----------	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.
224*:						
Youngston--------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
Effington--------	Slight---------	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength.	Severe: excess salt, excess sodium.
225*:						
Youngston--------	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Moderate: excess salt, flooding.
Lostwells--------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
Apron------------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
226*:						
Youngston--------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
Lostwells--------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
227*:						
Youngston--------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
Persayo----------	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Severe: depth to rock.
228--------------- Zeomont	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
229*-------------- Dumps, mine	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
230*-------------- Pits, gravel	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.

* 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	Area sanitary landfill	Daily cover for landfill
100*:					
Absher	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight	Good.
Elkol	Severe: percs slowly.	Slight	Severe: excess sodium.	Slight	Poor: hard to pack, excess sodium.
101*:					
Absher	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight	Good.
Poposhia	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Sinkson	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
102*:					
Absher Variant	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock, hard to pack.
Absher	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight	Good.
103*:					
Abston	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
Diamondville	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
104 Almy	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
105*:					
Almy	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Monbutte	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Rallod	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
106*:					
Ansel	Severe: slope.	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Poor: 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	Area sanitary landfill	Daily cover for landfill
106*:					
Ansel Variant------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
107*:					
Ansel--------------	Severe: slope.	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
Rock outcrop.					
108*:					
Apron--------------	Slight-----------	Severe: seepage.	Slight-----------	Slight-----------	Good.
Lostwells----------	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
109*:					
Apron--------------	Slight-----------	Severe: seepage.	Slight-----------	Slight-----------	Good.
Wallson------------	Slight-----------	Severe: seepage.	Slight-----------	Slight-----------	Good.
Worland------------	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
110*:					
Aquic Cryofluvents-	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Ansel--------------	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: seepage.	Slight-----------	Good.
111*---------------- Badland	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
112*:					
Badland------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Birdsley-----------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
113*:					
Badland------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: 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	Area sanitary landfill	Daily cover for landfill
113*:					
Seaverson	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Blazon	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
114*:					
Binton	Severe: percs slowly.	Slight	Slight	Slight	Good.
Youngston	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
115*:					
Birdsley	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Mudray	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
116*:					
Blackhall	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Rock outcrop.					
117*:					
Blackhall	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Carmody	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
118*:					
Blazon	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Rock outcrop.					
Carmody	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
119*:					
Bluerim	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.

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	Area sanitary landfill	Daily cover for landfill
119*:					
Onason	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
120*:					
Bosler	Severe: poor filter.	Severe: seepage.	Moderate: too sandy.	Slight	Poor: seepage, small stones.
Rock River	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
121*:					
Bosler	Severe: poor filter.	Severe: seepage.	Moderate: too sandy.	Slight	Poor: seepage, small stones.
Ryan Park	Slight	Severe: seepage.	Moderate: too sandy.	Slight	Fair: too sandy.
122*:					
Bowbac	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Hiland	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight	Poor: seepage, too sandy.
123, 124 Brownsto	Slight	Severe: seepage.	Severe: too sandy.	Slight	Poor: too sandy, small stones.
125*:					
Brownsto, very bouldery	Severe: slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
Decross Variant	Moderate: flooding, percs slowly.	Severe: flooding.	Moderate: flooding.	Moderate: flooding.	Good.
Brownsto	Slight	Severe: seepage.	Severe: too sandy.	Slight	Poor: too sandy, small stones.
126 Burnette	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
127*:					
Chittum	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.

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	Area sanitary landfill	Daily cover for landfill
127*:					
Bachus	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Rock outcrop.					
128*:					
Cific	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
Hoodle	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
129*:					
Clifsand	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: seepage, small stones, slope.
Persayo	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
130*:					
Cloud Peak	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Farlow	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: small stones, slope.
131*:					
Coalmont	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Milren	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Cragosen	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, seepage, small stones.
132*:					
Conpeak	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Rock outcrop.					
Cryluha	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.

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	Area sanitary landfill	Daily cover for landfill
133*:					
Countryman	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, seepage, wetness.	Fair: too clayey, too sandy, wetness.
Absher	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight	Good.
134 Coutis	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: slope.
135*:					
Crago	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Poor: seepage, small stones.
Pensore	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock, small stones.
136*:					
Cragosen	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, seepage, small stones.
Carmody	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Blazon	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
137*:					
Cragosen	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, seepage, small stones.
Rock outcrop.					
Carmody	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
138*:					
Cragosen	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, seepage, small stones.
Bosler	Severe: poor filter.	Severe: seepage.	Moderate: too sandy.	Slight	Poor: seepage, small stones.

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	Area sanitary landfill	Daily cover for landfill
138*:					
Cushool	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
139*:					
Cryluha	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
Conpeak	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
140*:					
Cushool	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Rock River	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
141*:					
Dahlquist	Moderate: large stones.	Severe: seepage, slope.	Severe: large stones.	Slight	Poor: small stones.
Rock River	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
142*:					
Diamondville	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Forelle	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
143*:					
Effington	Severe: percs slowly.	Severe: seepage.	Severe: excess salt.	Slight	Good.
Mudray	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
144*:					
Emblem	Severe: poor filter.	Severe: seepage.	Moderate: too sandy.	Slight	Poor: seepage, small stones.
Clifsand	Moderate: slope.	Severe: seepage, slope.	Moderate: slope, large stones.	Moderate: slope.	Poor: seepage, small stones.
Rairdent	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Good.

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	Area sanitary landfill	Daily cover for landfill
145: Fluvaquents	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
146*:					
Fluvaquents	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Youngston	Severe: percs slowly.	Slight	Slight	Slight	Good.
147*:					
Forelle	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Luhon	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
148*:					
Forelle	Slight	Severe: seepage.	Slight	Slight	Good.
Poposhia	Moderate: percs slowly.	Severe: slope.	Slight	Slight	Good.
149*:					
Fornor	Severe: slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
Decross	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
150*:					
Frisite	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Emblem	Severe: poor filter.	Severe: seepage.	Moderate: too sandy.	Slight	Poor: seepage, small stones.
151*:					
Frisite	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Youngston	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
152*:					
Gelkie Variant	Severe: percs slowly.	Moderate: depth to rock, slope.	Severe: depth to rock.	Moderate: depth to rock.	Fair: depth to rock, too clayey.

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	Area sanitary landfill	Daily cover for landfill
152*:					
Barrett Variant	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
153*:					
Granile	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: small stones, slope.
Ansel	Severe: slope.	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
154*:					
Griffy	Slight	Severe: seepage.	Slight	Slight	Good:
Saddle	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
Wallson	Slight	Severe: seepage.	Slight	Slight	Good.
155*:					
Haplaquolls	Severe: flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Severe: flooding, seepage, wetness.	Fair: wetness.
Aquic Ustifluvents	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
156*:					
Haverdad	Moderate: flooding, percs slowly.	Moderate: seepage.	Moderate: flooding.	Moderate: flooding.	Good.
Clarkelen	Moderate: flooding.	Severe: seepage.	Moderate: flooding, too sandy.	Moderate: flooding.	Fair: too sandy.
157*:					
Havre	Moderate: flooding, percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey.
Absher	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight	Good.
Forelle	Slight	Moderate: seepage, slope.	Slight	Slight	Good.

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	Area sanitary landfill	Daily cover for landfill
158*:					
Havre	Moderate: flooding, percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey.
Forelle	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Good.
Glendive	Moderate: flooding.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
159*:					
Havre	Moderate: flooding, percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey.
Havre Variant	Severe: wetness.	Severe: wetness.	Severe: wetness, too sandy.	Severe: wetness.	Poor: too sandy, wetness.
Elkol	Severe: percs slowly.	Slight	Severe: excess sodium.	Slight	Poor: hard to pack, excess sodium.
160*:					
Highpoint	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Rock outcrop.					
161 Hiland	Severe: poor filter.	Severe: seepage, slope.	Severe: too sandy.	Moderate: slope.	Poor: seepage, too sandy.
162*:					
Hoodle	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
Rock outcrop.					
163*:					
Hoodle	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
Gelkie	Slight	Severe: seepage.	Slight	Severe: seepage.	Good.
164*:					
Iceslew	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
Countryman	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, seepage, wetness.	Fair: too clayey, too sandy, 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	Area sanitary landfill	Daily cover for landfill
165*:					
Inchau	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Youga	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
166*:					
Irigul	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
Midelight	Moderate: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock.	Moderate: depth to rock, slope.	Poor: small stones.
Rock outcrop.					
167*:					
Irigul	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
168*:					
Lander	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.
Lander Variant	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, small stones.
169*:					
Luhon	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Rock River	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Forelle	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
170 Lupinto	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Poor: small stones.

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	Area sanitary landfill	Daily cover for landfill
171*:					
Lymanson	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Abston	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
Gelkie	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
172*:					
Lymanson	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Conpeak	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
173*:					
Midelight Variant	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Winada Variant	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Starman	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
174*:					
Milren	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Good.
Bosler	Severe: poor filter.	Severe: seepage.	Moderate: too sandy.	Slight	Poor: seepage, small stones.
Rock River	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
175*:					
Milvar	Moderate: percs slowly.	Severe: seepage.	Moderate: too sandy.	Slight	Poor: small stones.
Milren	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Good.
176*:					
Mosroc	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.

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	Area sanitary landfill	Daily cover for landfill
176*:					
Lymanson	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
177*:					
Oceanet	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Rock outcrop.					
Persayo	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
178*:					
Orpha	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: slope.	Poor: too sandy, slope.
Vonalee	Severe: poor filter.	Severe: seepage.	Moderate: too sandy.	Slight	Fair: too sandy.
179 Owen Creek	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
180*:					
Pensore	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
181*:					
Persayo	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Rock outcrop.					
182*:					
Pesmore	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
Asholler	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, seepage, small stones.

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	Area sanitary landfill	Daily cover for landfill
183 Peyton	Severe: poor filter.	Severe: seepage.	Moderate: too sandy.	Slight	Poor: seepage, small stones.
184*:					
Pishkun Variant	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
Hoodle	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
185 Poposhia	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
186*:					
Poposhia	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Blazon	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Carmody	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
187*:					
Poposhia, sodic	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Blazon	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
188*:					
Quander	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: large stones, slope.
Youga	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Onason	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
189*:					
Rallod	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Rock outcrop.					

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	Area sanitary landfill	Daily cover for landfill
189*:					
Seaverson	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
190*:					
Relsob	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight	Poor: seepage, too sandy, small stones.
Bluerim	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
191*:					
Rentsac	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, small stones, slope.
Carmody	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
192*:					
Riverwash	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Aquic Ustifluvents	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
193*:					
Rockinchair	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Rock outcrop.					
Sinkson	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
194*:					
Rockinchair	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Sinkson	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
195*:					
Rock outcrop.					
Asholler	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, seepage, small stones.

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	Area sanitary landfill	Daily cover for landfill
196*:					
Rock outcrop.					
Blackhall	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
197*:					
Rock outcrop.					
Blazon	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
198*:					
Rock outcrop.					
Mosroc	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
199*:					
Rock outcrop.					
Oceanet	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
200*:					
Roxal	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Rock outcrop.					
201*:					
Roxal	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Tongue River	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
202 Ryan Park	Slight	Severe: seepage.	Slight	Slight	Good.
203*:					
Ryan Park	Slight	Severe: seepage.	Slight	Slight	Good.
Carmody	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.

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	Area sanitary landfill	Daily cover for landfill
204 Ryark	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight	Poor: seepage, too sandy.
205*:					
Ryark	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight	Poor: seepage, too sandy.
Zeomont	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: slope.	Poor: seepage, too sandy, slope.
206*:					
Sandbranch	Severe: percs slowly.	Severe: seepage.	Severe: excess salt.	Slight	Good.
Ryan Park Variant	Moderate: depth to rock.	Severe: seepage.	Severe: depth to rock.	Slight	Fair: depth to rock, thin layer.
Poposhia	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
207*:					
Sinkson	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Almy	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
208*:					
Sinkson	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Almy	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Thermopolis	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
209*:					
Starman	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Rock outcrop.					
Woosley	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.

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	Area sanitary landfill	Daily cover for landfill
210*:					
Taluce	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Bowbac	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Slight	Poor: depth to rock.
211*:					
Thermopolis	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Sinkson	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
212*:					
Tisworth	Severe: percs slowly.	Slight	Severe: excess salt.	Slight	Good.
Absher	Severe: percs slowly.	Slight	Severe: excess salt.	Slight	Good.
Forelle	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
213*:					
Tisworth	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Moderate: flooding.	Good.
Poposhia	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
214*:					
Tisworth	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight	Good.
Ryan Park	Slight	Severe: seepage.	Slight	Slight	Good.
Countryman	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, seepage, wetness.	Fair: too clayey, too sandy, wetness.
215*:					
Tongue River	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Inchau	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.

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	Area sanitary landfill	Daily cover for landfill
215*:					
Farlow Variant-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
216*:					
Uffens-------------	Severe: percs slowly.	Severe: seepage.	Slight-----------	Slight-----------	Good.
Muff---------------	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock, excess salt.	Slight-----------	Poor: depth to rock.
Frisite------------	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
217*:					
Uhl----------------	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
Gelkie-------------	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
218*:					
Venapass-----------	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.
Uhl----------------	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
Absher-------------	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight-----------	Good.
219*:					
Venapass-----------	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.
Silas--------------	Moderate: wetness, percs slowly.	Moderate: seepage, slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
220*:					
Vonalee------------	Severe: poor filter.	Severe: seepage.	Moderate: too sandy.	Slight-----------	Fair: too sandy.
Hiland-------------	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight-----------	Poor: seepage, too sandy.

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	Area sanitary landfill	Daily cover for landfill
221*:					
Woosley	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Decross	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
Starman	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
222*:					
Worland	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
Oceanet	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Persayo	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
223*:					
Youga	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
Quander	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: large stones, slope.
224*:					
Youngston	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Effington	Severe: percs slowly.	Severe: seepage.	Severe: excess salt.	Moderate: flooding.	Good.
225*:					
Youngston	Severe: flooding, percs slowly.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Good.
Lostwells	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Good.
Apron	Slight	Severe: seepage.	Slight	Slight	Good.
226*:					
Youngston	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.

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	Area sanitary landfill	Daily cover for landfill
226*:					
Lostwells	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
227*:					
Youngston	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Persayo	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
228 Zeomont	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: slope.	Poor: seepage, too sandy, slope.
229* Dumps, mine	Variable	Variable	Variable	Variable	Variable.
230* Pits, gravel	Variable	Variable	Variable	Variable	Variable.

* 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*:				
Absher	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
Elkol	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
101*:				
Absher	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
Poposhia	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Sinkson	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
102*:				
Absher Variant	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess sodium.
Absher	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
103*:				
Abston	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, excess sodium.
Diamondville	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, small stones.
104 Almy	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
105*:				
Almy	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Monbutte	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess sodium.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
105*:				
Rallod	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, excess sodium.
106*:				
Ansel	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Ansel Variant	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
107*:				
Ansel	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
108*:				
Apron	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Lostwells	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
109*:				
Apron	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Wallson	Good	Improbable: excess fines.	Improbable: too sandy.	Fair: small stones.
Worland	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones, slope.
110*:				
Aquic Cryofluvents	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ansel	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
111* Badland	Poor: depth to rock, slope.	Improbable: thin layer, excess fines.	Improbable: thin layer, excess fines.	Poor: depth to rock, slope.
112*:				
Badland	Poor: depth to rock, slope.	Improbable: thin layer, excess fines.	Improbable: thin layer, excess fines.	Poor: depth to rock, slope.
Birdsley	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
113*:				
Badland	Poor: depth to rock, slope.	Improbable: thin layer, excess fines.	Improbable: thin layer, excess fines.	Poor: depth to rock, slope.
Seaverson	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, excess salt, slope.
Blazon	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
114*:				
Binton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, excess salt.
Youngston	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, excess salt.
115*:				
Birdsley	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Mudray	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, excess sodium.
116*:				
Blackhall	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Rock outcrop.				
117*:				
Blackhall	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Carmody	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
118*:				
Blazon	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
118*:				
Carmody	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
119*:				
Bluerim	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, slope.
Onason	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
120*:				
Bosler	Good	Probable	Probable	Poor: small stones, area reclaim.
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
121*:				
Bosler	Good	Probable	Probable	Poor: small stones, area reclaim.
Ryan Park	Good	Improbable: excess fines.	Improbable: excess fines.	Moderate: too sandy.
122*:				
Bowbac	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones, thin layer.
Hiland	Good	Improbable: excess fines.	Improbable: too sandy.	Good.
123, 124 Brownsto	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
125*:				
Brownsto, very bouldery	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Decross Variant	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Brownsto	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
126: Burnette	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
127*:				
Chittum	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Bachus	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Rock outcrop.				
128*:				
Cific	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Hoodle	Good	Probable	Probable	Poor: small stones, area reclaim.
129*:				
Clifsand	Fair: slope.	Improbable: small stones.	Probable	Poor: small stones, area reclaim, slope.
Persayo	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
130*:				
Cloud Peak	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Farlow	Fair: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
131*:				
Coalmont	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Milren	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
Cragosen	Poor: depth to rock.	Improbable: thin layer.	Improbable: thin layer.	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
132*:				
Conpeak	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Rock outcrop.				
Cryluha	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
133*:				
Countryman	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: excess salt, small stones.
Absher	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
134 Coutis	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
135*:				
Crago	Good	Probable	Probable	Poor: small stones, area reclaim.
Pensore	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
136*:				
Cragosen	Poor: depth to rock.	Improbable: thin layer.	Improbable: thin layer.	Poor: depth to rock, small stones, slope.
Carmody	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Blazon	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
137*:				
Cragosen	Poor: depth to rock, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
Carmody	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
138*:				
Cragosen	Poor: depth to rock.	Improbable: thin layer.	Improbable: thin layer.	Poor: depth to rock, small stones, slope.
Bosler	Good	Probable	Probable	Poor: small stones, area reclaim.
Cushool	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, slope.
139*:				
Cryluha	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Conpeak	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
140*:				
Cushool	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, slope.
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
141*:				
Dahlquist	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
142*:				
Diamondville	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, small stones.
Forelle	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
143*:				
Effington	Poor: low strength.	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
143*:				
Mudray	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, excess sodium.
144*:				
Emblem	Good	Probable	Probable	Poor: small stones, area reclaim.
Clifsand	Good	Improbable: small stones.	Probable	Poor: small stones, area reclaim.
Rairdent	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: excess salt, area reclaim.
145 Fluvaquents	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
146*:				
Fluvaquents	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Youngston	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, excess salt.
147*:				
Forelle	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Luhon	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
148*:				
Forelle	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Poposhia	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
149*:				
Fornor	Fair: large stones, slope, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Decross	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
150*:				
Frisite	Fair: shrink-swell, low strength, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Emblem	Good	Probable	Probable	Poor: small stones, area reclaim.
151*:				
Frisite	Fair: shrink-swell, low strength, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Youngston	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, excess salt.
152*:				
Gelkie Variant	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Barrett Variant	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
153*:				
Granile	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Ansel	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
154*:				
Griffy	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Saddle	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey.
Wallson	Good	Improbable: excess fines.	Improbable: too sandy.	Fair: small stones.
155*:				
Haplaquolls	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Aquic Ustifluvents	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
156*:				
Haverdad	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, excess salt.
Clarkelen	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: excess salt.
157*:				
Havre	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Absher	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
Forelle	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
158*:				
Havre	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Forelle	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Glendive	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
159*:				
Havre	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Havre Variant	Fair: shrink-swell, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
Elkol	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess sodium, excess salt.
160*:				
Highpoint	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
161 Hiland	Good	Probable	Improbable: too sandy.	Good.
162*:				
Hoodle	Good	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
162*:				
Rock outcrop.				
163*:				
Hoodle	Good	Probable	Probable	Poor: small stones, area reclaim.
Gelkie	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, area reclaim.
164*:				
Iceslew	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Countryman	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: excess salt, small stones.
165*:				
Inchau	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Youga	Fair: shrink-swell, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
166*:				
Irigul	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Midelight	Fair: depth to rock, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop.				
167*:				
Irigul	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
168*:				
Lander	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Lander Variant	Fair: wetness.	Probable	Probable	Poor: too sandy, small stones, area reclaim.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
169*:				
Luhon	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Forelle	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
170 Lupinto	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
171*:				
Lymanson	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Abston	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, excess sodium.
Gelkie	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, area reclaim.
172*:				
Lymanson	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones.
Conpeak	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
173*:				
Midelight Variant	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Winada Variant	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Starman	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
174*:				
Milren	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
174*:				
Bosler	Good	Probable	Probable	Poor: small stones, area reclaim.
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
175*:				
Milvar	Good	Probable	Probable	Poor: small stones, area reclaim.
Milren	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
176*:				
Mosroc	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Lymanson	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
177*:				
Oceanet	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Rock outcrop.				
Persayo	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
178*:				
Orpha	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, slope.
Vonalee	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
179 Owen Creek	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
180*:				
Pensore	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
181*:				
Persayo	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
182*:				
Pesmore	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
Asholler	Poor: depth to rock.	Improbable: thin layer.	Improbable: thin layer.	Poor: depth to rock, small stones, slope.
183 Peyton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
184*:				
Pishkun Variant	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Hoodle	Good	Probable	Probable	Poor: small stones, area reclaim.
185 Poposhia	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
186*:				
Poposhia	Fair: low strengh, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
Blazon	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Carmody	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
187*:				
Poposhia, sodic	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
Blazon	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
188*:				
Quander	Poor: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
Youga	Fair: shrink-swell, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Onason	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
189*:				
Rallod	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, excess sodium.
Rock outcrop.				
Seaverson	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, excess salt, slope.
190*:				
Relsob	Good	Probable	Improbable: too sandy.	Poor: too sandy, small stones, area reclaim.
Bluerim	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey.
191*:				
Rentsac	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Carmody	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
192*:				
Riverwash	Poor: wetness.	Probable	Probable	Poor: wetness.
Aquic Ustifluvents	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
193*:				
Rockinchair	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Rock outcrop.				

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
193*:				
Sinkson	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
194*:				
Rockinchair	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Sinkson	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
195*:				
Rock outcrop.				
Asholler	Poor: depth to rock, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: depth to rock, small stones, slope.
196*:				
Rock outcrop.				
Blackhall	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
197*:				
Rock outcrop.				
Blazon	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
198*:				
Rock outcrop.				
Mosroc	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
199*:				
Rock outcrop.				
Oceanet	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
200*:				
Roxal	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Rock outcrop.				

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
201*:				
Roxal	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Tongue River	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
202 Ryan Park	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
203*:				
Ryan Park	Good	Improbable: excess fines.	Improbable: excess fines.	Good:
Carmody	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
204 Ryark	Good	Probable	Probable	Poor: small stones.
205*:				
Ryark	Good	Probable	Improbable: excess fines.	Poor: small stones.
Zeomont	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
206*:				
Sandbranch	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, excess sodium.
Ryan Park Variant	Fair: depth to rock, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Poposhia	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
207*:				
Sinkson	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Almy	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
208*:				
Sinkson	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
208*:				
Almy	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Thermopolis	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
209*:				
Starman	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
Woosley	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
210*:				
Taluce	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Bowbac	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones, thin layer.
211*:				
Thermopolis	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Sinkson	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
212*:				
Tisworth	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
Absher	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
Forelle	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
213*:				
Tisworth	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
Poposhia	Fair: low strength, shrink-swell.	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
214*:				
Tisworth	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
Ryan Park	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Countryman	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: excess salt, small stones.
215*:				
Tongue River	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Inchau	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Farlow Variant	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
216*:				
Uffens	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
Muff	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, excess sodium.
Frisite	Fair: shrink-swell, low strength, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
217*:				
Uhl	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, large stones.
Gelkie	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, area reclaim.
218*:				
Venapass	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
Uhl	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, large stones.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
218*:				
Absher	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
219*:				
Venapass	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
Silas	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, large stones, area reclaim.
220*:				
Vonalee	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Hiland	Good	Probable	Improbable: too sandy.	Poor: too sandy.
221*:				
Woosley	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Decross	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
Starman	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
222*:				
Worland	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones.
Oceanet	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Persayo	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
223*:				
Youga	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Quander	Poor: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
224*:				
Youngston	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, excess salt.
Effington	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
225*:				
Youngston	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, excess salt.
Lostwells	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Apron	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
226*:				
Youngston	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, excess salt.
Lostwells	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
227*:				
Youngston	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, excess salt.
Persayo	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
228 Zeomont	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
229* Dumps, mine	Variable	Variable	Variable	Variable.
230* Pits, gravel	Variable	Variable	Variable	Variable.

* 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-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
100*:					
Absher	Slight	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water	Droughty, percs slowly, excess sodium.
Elkol	Slight	Severe: excess sodium.	Severe: no water.	Deep to water	Excess sodium, droughty, excess salt, percs slowly.
101*:					
Absher	Moderate: slope.	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water	Slope, droughty, percs slowly.
Poposhia	Moderate: seepage, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, excess salt.
Sinkson	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.
102*:					
Absher Variant	Moderate: depth to rock, slope.	Severe: excess sodium.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.
Absher	Moderate: slope.	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water	Slope, droughty, percs slowly.
103*:					
Abston	Moderate: seepage, depth to rock, slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, soil blowing, percs slowly.
Diamondville	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.
104 Almy	Moderate: seepage. slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, excess salt.
105*:					
Almy	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, excess salt.
Monbutte	Moderate: slope.	Severe: excess sodium.	Severe: no water.	Deep to water	Slope, soil blowing, percs slowly.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
105*:					
Rallod	Severe: depth to rock.	Severe: excess sodium.	Severe: no water.	Deep to water	Slope, percs slowly.
106*:					
Ansel	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Soil blowing, slope.
Ansel Variant	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
107*:					
Ansel	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Soil blowing, slope.
Rock outcrop.					
108*:					
Apron	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.
Lostwells	Moderate: seepage, slope.	Slight	Severe: no water.	Deep to water	Slope.
109*:					
Apron	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, fast intake, soil blowing.
Wallson	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.
Worland	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.
110*:					
Aquic Cryofluvents	Moderate: slope.	Severe: wetness.	Slight	Frost action, slope.	Slope, wetness.
Ansel	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope.
111* Badland	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Depth to rock, slope.
112*:					
Badland	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Depth to rock, slope.
Birdsley	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, percs slowly.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
113*:					
Badland----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water----	Depth to rock, slope.
Seaverson--------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water----	Slope, droughty, percs slowly.
Blazon-----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water----	Slope, depth to rock, erodes easily.
114*:					
Binton-----------	Slight-----------	Moderate: piping.	Severe: no water.	Deep to water----	Percs slowly, excess salt.
Youngston--------	Slight-----------	Moderate: piping.	Severe: no water.	Deep to water----	Erodes easily, excess salt.
115*:					
Birdsley---------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water----	Slope, droughty, percs slowly.
Mudray-----------	Severe: depth to rock.	Severe: excess sodium.	Severe: no water.	Deep to water----	Slope, soil blowing.
116*:					
Blackhall--------	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water----	Slope, depth to rock.
Rock outcrop.					
117*:					
Blackhall--------	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water----	Slope, soil blowing, depth to rock.
Carmody----------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water----	Slope, soil blowing, depth to rock.
118*:					
Blazon-----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water----	Slope, depth to rock, erodes easily.
Rock outcrop.					
Carmody----------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water----	Slope, depth to rock.
119*:					
Bluerim----------	Severe: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water----	Slope, soil blowing, depth to rock.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
119*:					
Onason	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.
120*:					
Bosler	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.
Rock River	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope.
121*:					
Bosler	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.
Ryan Park	Severe: seepage.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.
122*:					
Bowbac	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
Hiland	Severe: seepage.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.
123, 124 Brownsto	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.
125*:					
Brownsto, very bouldery	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.
Decross Variant	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Soil blowing, slope.
Brownsto	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.
126 Burnette	Moderate: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.
127*:					
Chittum	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	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-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
127*:					
Bachus	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.
Rock outcrop.					
128*:					
Cific	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
Hoodle	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.
129*:					
Clifsand	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.
Persayo	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.
130*:					
Cloud Peak	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
Farlow	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, droughty.
131*:					
Coalmont	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Percs slowly, slope.
Milren	Moderate: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, percs slowly.
Cragosen	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
132*:					
Conpeak	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
Rock outcrop.					
Cryluha	Severe: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
133*:					
Countryman	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, soil blowing, flooding.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
133*:					
Absher	Slight	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water	Droughty, percs slowly.
134 Coutis	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.
135*:					
Crago	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, slope.
Pensore	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
136*:					
Cragosen	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
Carmody	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.
Blazon	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.
137*:					
Cragosen	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
Rock outcrop.					
Carmody	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
138*:					
Cragosen	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
Bosler	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.
Cushool	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
139*:					
Cryluha	Severe: seepage.	Severe: thin layer.	Severe: no water.	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-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
139*:					
Conpeak	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
140*:					
Cushool	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
Rock River	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope.
141*:					
Dahlquist	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.
Rock River	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope.
142*:					
Diamondville	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.
Forelle	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.
143*:					
Effington	Severe: seepage.	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water	Slope, droughty, percs slowly.
Mudray	Severe: depth to rock.	Severe: excess sodium.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.
144*:					
Emblem	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.
Clifsand	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.
Rairdent	Severe: seepage.	Moderate: excess salt.	Severe: no water.	Deep to water	Slope, droughty.
145 Fluvaquents	Variable	Severe: wetness.	Slight	Variable	Wetness, flooding.
146*:					
Fluvaquents	Variable	Severe: wetness.	Slight	Variable	Wetness, flooding.
Youngston	Slight	Moderate: piping.	Severe: no water.	Deep to water	Excess salt.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
147*:					
Forelle----------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water----	Slope, erodes easily.
Luhon------------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water----	Slope.
148*:					
Forelle----------	Severe: seepage.	Moderate: piping.	Severe: no water.	Deep to water----	Slope, erodes easily.
Poposhia---------	Moderate: seepage, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water----	Slope, excess salt.
149*:					
Fornor-----------	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water----	Large stones, droughty, slope.
Decross----------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water----	Slope.
150*:					
Frisite----------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water----	Slope.
Emblem-----------	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water----	Slope, droughty.
151*:					
Frisite----------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water----	Slope, soil blowing.
Youngston--------	Moderate: slope.	Moderate: piping.	Severe: no water.	Deep to water----	Slope, excess salt.
152*:					
Gelkie Variant---	Moderate: depth to rock, slope.	Moderate: thin layer.	Severe: no water.	Deep to water----	Slope, erodes easily.
Barrett Variant--	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water----	Slope, droughty, depth to rock.
153*:					
Granile----------	Severe: seepage, slope.	Moderate: thin layer.	Severe: no water.	Deep to water----	Slope, droughty.
Ansel------------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water----	Soil blowing, slope.
154*:					
Griffy-----------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water----	Slope, soil blowing.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
154*:					
Saddle-----------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water----	Slope, soil blowing, depth to rock.
Wallson----------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water----	Slope, fast intake, soil blowing.
155*:					
Haplaquolls------	Severe: wetness.	Severe: wetness.	Slight-----------	Variable---------	Wetness, flooding.
Aquic Ustifluvents----	Variable---------	Variable---------	Moderate: deep to water.	Variable---------	Wetness, flooding.
156*:					
Haverdad---------	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water----	Excess salt.
Clarkelen--------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water----	Soil blowing.
157*:					
Havre------------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water----	Erodes easily.
Absher-----------	Moderate: slope.	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water----	Slope, droughty, percs slowly.
Forelle----------	Severe: seepage.	Moderate: piping.	Severe: no water.	Deep to water----	Slope, erodes easily.
158*:					
Havre------------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water----	Erodes easily.
Forelle----------	Severe: seepage.	Moderate: piping.	Severe: no water.	Deep to water----	Erodes easily.
Glendive---------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water----	Soil blowing.
159*:					
Havre------------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water----	Erodes easily.
Havre Variant----	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave, excess salt.	Wetness, excess salt.
Elkol------------	Slight-----------	Severe: excess sodium.	Severe: no water.	Deep to water----	Droughty, excess salt, percs slowly, excess sodium.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
160*:					
Highpoint	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Droughty, depth to rock, slope.
Rock outcrop.					
161 Hiland	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.
162*:					
Hoodle	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.
Rock outcrop.					
163*:					
Hoodle	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.
Gelkie	Severe: seepage.	Severe: thin layer.	Severe: no water.	Deep to water	Slope.
164*:					
Iceslew	Moderate: seepage.	Severe: ponding.	Moderate: slow refill.	Ponding, flooding, frost action.	Ponding, soil blowing, erodes easily.
Countryman	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, flooding.
165*:					
Inchau	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Depth to rock, slope.
Youga	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope.
166*:					
Irigul	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
Midelight	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, droughty.
Rock outcrop.					
167*:					
Irigul	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
Rock outcrop.					

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
168*:					
Lander	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, flooding.
Lander Variant	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Flooding, frost action, cutbanks cave.	Wetness, droughty, flooding.
169*:					
Luhon	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope.
Rock River	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope.
Forelle	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.
170 Lupinto	Moderate: seepage, slope.	Slight	Severe: no water.	Deep to water	Favorable.
171*:					
Lymanson	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.
Abston	Moderate: seepage, depth to rock, slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, percs slowly.
Gelkie	Moderate: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.
172*:					
Lymanson	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
Conpeak	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
173*:					
Midelight Variant	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
Winada Variant	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Droughty, depth to rock, slope.
Starman	Severe: depth to rock, slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, droughty.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
174*:					
Milren-----------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water----	Slope, soil blowing, percs slowly.
Bosler-----------	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water----	Slope, droughty, soil blowing.
Rock River-------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water----	Slope.
175*:					
Milvar-----------	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water----	Slope, droughty, percs slowly.
Milren-----------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water----	Slope, soil blowing, percs slowly.
176*:					
Mosroc-----------	Severe: depth to rock.	Severe: thin layer.	Severe: no water.	Deep to water----	Slope, large stones, droughty.
Lymanson---------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water----	Slope, depth to rock.
177*:					
Oceanet----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water----	Droughty, soil blowing, depth to rock.
Rock outcrop.					
Persayo----------	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water----	Slope, depth to rock, erodes easily.
178*:					
Orpha------------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water----	Slope, droughty, fast intake.
Vonalee----------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water----	Slope, droughty, soil blowing.
179--------------- Owen Creek	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water----	Percs slowly, depth to rock, slope.
180*:					
Pensore----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water----	Slope, droughty, depth to rock.
Rock outcrop.					

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
181*:					
Persayo----------	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water----	Slope, depth to rock, erodes easily.
Rock outcrop.					
182*:					
Pesmore----------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water----	Slope, droughty, depth to rock.
Rock outcrop.					
Asholler---------	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water----	Slope, droughty, depth to rock.
183--------------- Peyton	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water----	Slope, soil blowing.
184*:					
Pishkun Variant--	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water----	Slope, droughty.
Hoodle-----------	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water----	Slope, droughty.
185--------------- Poposhia	Moderate: seepage, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water----	Slope, excess salt.
186*:					
Poposhia---------	Severe: slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water----	Slope, excess salt.
Blazon-----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water----	Slope, depth to rock, erodes easily.
Carmody----------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water----	Slope, soil blowing, depth to rock.
187*:					
Poposhia, sodic--	Moderate: slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water----	Slope, excess sodium, excess salt.
Blazon-----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water----	Slope, depth to rock, erodes easily.
188*:					
Quander----------	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water----	Slope, large stones, droughty.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
188*:					
Youga	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope.
Onason	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.
189*:					
Rallod	Severe: depth to rock, slope.	Severe: excess sodium.	Severe: no water.	Deep to water	Slope, percs slowly.
Rock outcrop.					
Seaverson	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, percs slowly.
190*:					
Relsob	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.
Bluerim	Severe: seepage.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
191*:					
Rentsac	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
Carmody	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
192*:					
Riverwash	Variable	Variable	Variable	Variable	Wetness, flooding.
Aquic Ustifluvents	Variable	Variable	Moderate: deep to water.	Variable	Wetness, flooding.
193*:					
Rockinchair	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
Rock outcrop.					
Sinkson	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.
194*:					
Rockinchair	Severe: slope.	Severe: thin layer.	Severe: no water.	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-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
194*:					
Sinkson	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.
195*: Rock outcrop.					
Asholler	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
196*: Rock outcrop.					
Blackhall	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
197*: Rock outcrop.					
Blazon	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.
198*: Rock outcrop.					
Mosroc	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.
199*: Rock outcrop.					
Oceanet	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Droughty, soil blowing, depth to rock.
200*:					
Roxal	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, excess salt.
Rock outcrop.					
201*:					
Roxal	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, excess salt.
Tongue River	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
202 Ryan Park	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, fast intake.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
203*:					
Ryan Park	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.
Carmody	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
204 Ryark	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.
205*:					
Ryark	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.
Zeomont	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.
206*:					
Sandbranch	Severe: seepage.	Severe: piping, excess sodium, excess salt.	Severe: no water.	Deep to water	Excess sodium, excess salt.
Ryan Park Variant	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, fast intake, soil blowing.
Poposhia	Moderate: seepage, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, excess salt.
207*:					
Sinkson	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.
Almy	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, excess salt.
208*:					
Sinkson	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.
Almy	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, excess salt.
Thermopolis	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.
209*:					
Starman	Severe: depth to rock, slope.	Moderate: large stones.	Severe: no water.	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-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
209*: Rock outcrop.					
Woosley	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.
210*: Taluce	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.
Bowbac	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.
211*: Thermopolis	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.
Sinkson	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.
212*: Tisworth	Slight	Severe: piping, excess sodium, excess salt.	Severe: no water.	Deep to water	Droughty.
Absher	Slight	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water	Droughty, percs slowly.
Forelle	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.
213*: Tisworth	Moderate: slope.	Severe: piping, excess sodium, excess salt.	Severe: no water.	Deep to water	Slope, droughty.
Poposhia	Moderate: seepage, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, excess salt.
214*: Tisworth	Moderate: slope.	Severe: piping, excess sodium, excess salt.	Severe: no water.	Deep to water	Slope, droughty, fast intake.
Ryan Park	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
214*:					
Countryman	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, soil blowing, flooding.
215*:					
Tongue River	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.
Inchau	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
Farlow Variant	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.
216*:					
Uffens	Severe: seepage.	Severe: excess sodium.	Severe: no water.	Deep to water	Slope, droughty, erodes easily.
Muff	Moderate: depth to rock, slope.	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water	Slope, droughty.
Frisite	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope.
217*:					
Uhl	Moderate: seepage, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope.
Gelkie	Moderate: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope.
218*:					
Venapass	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action.	Wetness, flooding.
Uhl	Moderate: seepage, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope.
Absher	Moderate: slope.	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water	Slope, droughty, percs slowly.
219*:					
Venapass	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action.	Wetness, flooding.
Silas	Moderate: seepage, slope.	Moderage: wetness.	Moderate: deep to water, slow refill.	Deep to water	Slope.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
220*:					
Vonalee	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.
Hiland	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.
221*:					
Woosley	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.
Decross	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope.
Starman	Severe: depth to rock, slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, droughty.
222*:					
Worland	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty.
Oceanet	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Droughty, soil blowing, depth to rock.
Persayo	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.
223*:					
Youga	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope.
Quander	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.
224*:					
Youngston	Moderate: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, excess salt.
Effington	Severe: seepage.	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water	Droughty, percs slowly.
225*:					
Youngston	Slight	Slight	Severe: no water.	Deep to water	Flooding, excess salt.
Lostwells	Moderate: seepage.	Slight	Severe: no water.	Deep to water	Favorable.
Apron	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Soil blowing.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
226*:					
Youngston	Slight	Moderate: piping.	Severe: no water.	Deep to water	Erodes easily, excess salt.
Lostwells	Moderate: seepage.	Slight	Severe: no water.	Deep to water	Favorable.
227*:					
Youngston	Moderate: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, excess salt.
Persayo	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.
228 Zeomont	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.
229* Dumps, mine	Variable	Variable	Severe: no water.	Deep to water	Variable.
230* Pits, gravel	Variable	Variable	Variable	Variable	Variable.

* See description of the map unit for composition and behavior characteristics of the map unit.

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: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
100*:											
Absher----------	0-1	Loam-------------	CL	A-6	0	95-100	75-100	65-90	60-75	30-35	10-15
	1-16	Silty clay, clay	CL, CH	A-7	0	95-100	75-100	70-100	60-80	45-60	20-30
	16-60	Silty clay loam, silty clay.	CL	A-6, A-7	0	95-100	85-100	80-90	80-90	35-45	15-25
Elkol-----------	0-2	Silty clay loam	CL, ML	A-7	0-5	95-100	95-100	90-100	70-90	40-50	15-20
	2-56	Silty clay, clay, clay loam.	CL, CH	A-7	0-5	95-100	95-100	90-100	70-90	40-65	15-35
	56-60	Very fine sandy loam, loam.	ML, CL-ML, CL	A-4	0-5	95-100	95-100	80-100	60-75	20-30	NP-10
101*:											
Absher----------	0-4	Loam-------------	CL	A-6	0	95-100	75-100	65-90	60-75	30-35	10-15
	4-9	Silty clay, clay	CL, CH	A-7	0	95-100	75-100	70-100	60-80	45-60	20-30
	9-60	Clay loam--------	CL	A-6, A-7	0	95-100	85-100	70-90	65-80	35-45	15-25
Poposhia--------	0-4	Loam-------------	CL-ML, CL	A-4, A-6	0	85-100	75-100	70-100	60-70	25-40	5-15
	4-60	Loam, clay loam, sandy clay loam.	CL	A-6	0	85-100	75-100	70-90	50-85	25-40	10-20
Sinkson---------	0-9	Sandy clay loam	CL	A-6	0	90-100	80-100	70-90	50-75	25-40	10-20
	9-60	Sandy clay loam, loam.	CL	A-6	0	90-100	80-100	70-90	50-75	25-40	10-20
102*:											
Absher Variant--	0-2	Silty clay loam	CL	A-7	0	90-100	90-100	85-100	75-90	40-45	15-20
	2-24	Clay-------------	CL, CH	A-7	0	90-100	90-100	85-100	85-100	45-65	20-35
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Absher----------	0-4	Sandy clay loam	CL	A-6	0	95-100	75-100	55-75	50-60	30-35	10-15
	4-13	Silty clay loam, silty clay.	CL	A-6, A-7	0	95-100	85-100	80-90	80-90	35-45	15-25
	13-60	Clay loam--------	CL	A-6, A-7	0	95-100	85-100	70-90	65-80	35-45	15-25
103*:											
Abston----------	0-3	Sandy loam-------	SM	A-2	0	90-100	90-100	50-70	25-35	---	NP
	3-6	Clay loam--------	CH	A-7	0	80-100	75-100	75-95	70-90	50-55	25-30
	6-13	Sandy clay-------	CL	A-6	0	80-100	75-100	70-85	50-70	25-35	10-20
	13-34	Sandy clay loam, clay loam.	ML, CL-ML, SC-SM, SM	A-4	0	80-100	75-100	75-90	40-60	15-25	NP-5
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Diamondville----	0-3	Loam-------------	CL-ML, CL	A-4	0-5	95-100	90-100	85-95	60-75	25-30	5-10
	3-12	Clay loam, sandy clay loam.	CL	A-6	0-5	95-100	90-100	85-95	70-80	30-40	10-20
	12-36	Loam, sandy clay loam.	CL-ML, ML, CL	A-4	0-5	95-100	90-100	85-95	60-75	20-30	NP-10
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
104--------------- Almy	0-1	Loam--------------	CL	A-6	0	80-100	75-100	65-80	50-65	30-35	10-15
	1-17	Clay loam, sandy clay loam, loam.	CL, CL-ML	A-6, A-4	0	80-100	75-100	55-80	50-70	25-40	5-15
	17-60	Loam, sandy clay loam.	SC-SM, SM, CL-ML, ML	A-4	0	80-100	75-100	55-80	40-60	20-30	NP-10
105*:											
Almy-------------	0-2	Loam--------------	CL	A-6	0	80-100	75-100	65-80	50-65	30-35	10-15
	2-18	Clay loam, sandy clay loam, loam.	CL, CL-ML	A-6, A-4	0	80-100	75-100	55-80	50-70	25-40	5-15
	18-60	Loam, sandy clay loam.	SC-SM, SM, CL-ML, ML	A-4	0	80-100	75-100	55-80	40-60	20-30	NP-10
Monbutte---------	0-4	Fine sandy loam	ML, SM, CL-ML, SC-SM	A-4	0	90-100	90-100	85-95	45-55	20-25	NP-5
	4-23	Clay, clay loam,	CL, CH	A-7	0	90-100	90-100	80-95	75-90	40-65	20-35
	23-60	Sandy clay loam, clay loam.	CL, SC	A-6	0	90-100	90-100	60-85	45-75	30-35	10-15
Rallod-----------	0-4	Very fine sandy loam.	SM, SC-SM, CL-ML	A-4	0	100	100	80-90	40-60	20-25	NP-5
	4-7	Loam--------------	CL	A-6	0	100	100	65-85	60-75	30-35	10-15
	7-14	Sandy clay, clay loam.	CL	A-7	0	100	100	85-100	60-90	40-50	20-30
	14-18	Sandy clay loam, clay loam.	CL	A-6	0	100	100	55-75	50-65	30-35	10-15
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
106*:											
Ansel------------	0-10	Sandy loam--------	GM-GC, SC-SM, SM, GM	A-2, A-4	0-5	90-100	90-100	65-85	30-50	20-30	NP-10
	10-33	Clay loam, sandy clay loam, gravelly sandy clay loam.	CL, GC, SC	A-6, A-2	0-5	55-100	50-100	40-95	25-75	30-40	10-20
	33-60	Gravelly sandy clay loam, gravelly sandy loam.	SC-SM, SM, GM	A-1, A-2, A-4	0-5	55-80	50-75	30-65	20-50	20-30	NP-10
Ansel Variant----	0-2	Loam--------------	CL-ML, CL	A-4	0-5	90-100	90-100	80-90	70-85	25-30	5-10
	2-8	Channery sandy loam.	SM, GM	A-2	0-10	55-75	50-75	40-55	25-35	25-30	NP-5
	8-22	Channery clay loam.	CL	A-6	0-10	55-75	50-75	50-65	50-60	35-40	15-20
	22-30	Very channery loam.	GC	A-2	0-10	30-55	25-50	20-40	15-35	30-35	10-15
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
107*:											
Ansel	0-4	Sandy loam	SM, SC-SM, SC	A-2, A-4	0-5	90-100	90-100	65-85	30-50	20-30	NP-10
	4-21	Clay loam, sandy clay loam, gravelly sandy clay loam.	CL, GC, SC	A-6, A-2	0-5	55-100	50-100	40-95	25-75	30-40	10-20
	21-60	Gravelly sandy clay loam, gravelly sandy loam.	GM-GC, SC-SM, SM, GM	A-1, A-2, A-4	0-5	55-80	50-75	30-65	20-50	20-30	NP-10
Rock outcrop.											
108*:											
Apron	0-4	Sandy loam	SM, SC-SM	A-2, A-4	0	75-100	75-100	65-75	30-45	15-25	NP-5
	4-60	Fine sandy loam, sandy loam.	SM, SC-SM	A-2, A-4	0	75-100	75-100	65-75	30-45	15-25	NP-5
Lostwells	0-5	Loam	ML	A-4	0-5	80-100	80-100	70-90	50-75	30-35	5-10
	5-60	Stratified loamy sand to clay loam.	SC, SM	A-6, A-4	0-5	80-100	80-100	70-100	35-50	30-40	5-15
109*:											
Apron	0-8	Loamy sand	SM	A-2	0	75-100	75-100	50-70	15-25	---	NP
	8-60	Fine sandy loam, sandy loam.	SM, SC-SM	A-2, A-4	0	75-100	75-100	65-75	30-45	15-25	NP-5
Wallson	0-3	Sandy loam	SM	A-2, A-4	0	75-100	75-100	50-75	30-45	---	NP
	3-22	Sandy loam, fine sandy loam.	SM, SC-SM	A-2, A-4	0	75-100	75-100	50-75	30-45	20-25	NP-5
	22-60	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	75-100	75-100	50-75	30-45	---	NP
Worland	0-5	Loamy sand	SM	A-2, A-1	0	75-100	75-100	40-60	15-30	---	NP
	5-25	Sandy loam, fine sandy loam.	SM, SC-SM	A-2, A-4	0	75-100	75-100	50-75	25-45	20-25	NP-5
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
110*:											
Aquic Cryofluvents	0-2	Variable	---	---	---	---	---	---	---	---	---
	2-60	Variable	---	---	---	---	---	---	---	---	---
Ansel	0-7	Loam	CL, CL-ML	A-4, A-6	0-5	90-100	90-100	65-95	50-70	25-35	5-15
	7-27	Clay loam, sandy clay loam, gravelly sandy clay loam.	CL, GC, SC	A-6, A-2	0-5	55-100	50-100	40-95	25-75	30-40	10-20
	27-60	Gravelly sandy clay loam, gravelly sandy loam.	GM-GC, SM, SC-SM, GM	A-1, A-2, A-4	0-5	55-80	50-75	30-65	20-50	20-30	NP-10
111*. Badland											

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
112*:											
Badland.											
Birdsley--------	0-2	Sandy clay loam	CL	A-6	0	95-100	95-100	80-95	50-65	30-35	10-15
	2-14	Clay loam, sandy clay loam.	CL	A-6	0	95-100	95-100	80-100	50-85	35-40	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
113*:											
Badland.											
Seaverson-------	0-2	Clay loam--------	CL	A-6	0	90-100	90-100	85-95	70-80	30-40	10-20
	2-10	Clay loam, loam	CL	A-6	0	90-100	90-100	85-95	50-80	30-40	10-20
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Blazon----------	0-2	Clay loam--------	CL	A-6	0-5	90-100	90-100	75-95	60-75	35-40	15-20
	2-19	Clay loam--------	CL	A-6	5-10	80-100	80-100	75-95	60-75	35-40	15-20
	19	Weathered bedrock	---	---	---	---	---	---	---	---	---
114*:											
Binton----------	0-3	Clay loam--------	CL	A-6	0-5	95-100	95-100	80-95	80-90	35-40	15-20
	3-60	Stratified very fine sandy loam to silty clay.	CL	A-6	0	75-100	75-100	70-100	55-80	30-40	10-20
Youngston-------	0-2	Clay loam--------	CL	A-6	0	100	100	90-100	70-80	30-40	10-20
	2-60	Stratified very fine sandy loam to clay loam.	CL	A-6	0	100	100	80-100	60-80	30-40	10-20
115*:											
Birdsley--------	0-2	Sandy clay loam	CL	A-6	0	95-100	95-100	80-95	50-65	30-35	10-15
	2-13	Clay loam, sandy clay loam.	CL	A-6	0	95-100	95-100	80-100	50-85	35-40	15-20
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Mudray----------	0-2	Sandy loam-------	SM, SC-SM	A-2	0	75-100	75-100	50-70	25-35	20-25	NP-5
	2-12	Clay, sandy clay, clay loam.	CL, CH	A-7	0	75-100	75-100	70-100	50-90	45-55	20-30
	12-19	Clay loam, silty clay loam.	CL	A-6	0	75-100	75-100	65-95	65-85	30-40	15-20
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
116*:											
Blackhall-------	0-2	Loam-------------	ML, CL-ML	A-4	0-5	90-100	90-100	75-85	50-60	15-20	NP-5
	2-11	Sandy loam, fine sandy loam, very fine sandy loam.	SM, SC-SM	A-2, A-4	0-5	90-100	85-100	55-90	30-50	15-20	NP-5
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
117*:											
Blackhall-------	0-2	Fine sandy loam	SM	A-4	0-5	90-100	90-100	70-90	40-50	15-20	NP
	2-17	Sandy loam, fine sandy loam, very fine sandy loam.	SM, SC-SM	A-2, A-4	0-5	90-100	85-100	55-90	30-50	15-20	NP-5
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Carmody---------	0-4	Fine sandy loam	ML, SM, CL-ML, SC-SM	A-4	0-5	75-100	75-100	65-90	45-55	---	NP-5
	4-24	Fine sandy loam, very fine sandy loam, sandy loam.	ML, SM, CL-ML, SC-SM	A-4	0-5	75-100	75-100	65-85	45-55	---	NP-5
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
118*:											
Blazon----------	0-2	Clay loam--------	CL	A-6	0-5	90-100	90-100	75-95	60-75	35-40	15-20
	2-19	Clay loam--------	CL	A-6	5-10	80-100	80-100	75-95	60-75	35-40	15-20
	19	Weathered bedrock	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Carmody---------	0-5	Gravelly sandy loam.	GM, SM	A-2	0-5	50-75	50-75	30-50	25-35	---	NP
	5-20	Fine sandy loam, very fine sandy loam, sandy loam.	ML, SM, CL-ML, SC-SM	A-4	0-5	75-100	75-100	65-85	45-55	---	NP-5
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
119*:											
Bluerim---------	0-3	Sandy loam-------	SM	A-2	0	95-100	75-90	50-70	25-35	20-30	NP-5
	3-12	Sandy clay loam	SC-SM, SC	A-2, A-4	0	95-100	75-90	60-75	30-40	25-30	5-10
	12-36	Sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2, A-4	0	95-100	75-90	50-70	25-35	<25	NP-10
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Onason----------	0-2	Gravelly sandy loam.	SM, GM, GM-GC, SC-SM	A-1, A-2	0	60-85	50-75	30-55	15-30	20-25	NP-5
	2-17	Gravelly sandy loam.	SM, GM, GM-GC, SC-SM	A-1, A-2	0	60-75	50-75	35-50	15-30	20-25	NP-5
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
120*:											
Bosler----------	0-3	Sandy loam-------	SM	A-2	0	80-100	75-100	45-60	25-35	20-30	NP-5
	3-31	Sandy clay loam	CL	A-6	0	80-100	75-100	60-75	50-60	30-35	10-15
	31-60	Very gravelly loamy sand, very gravelly sand.	GP-GM, GP	A-1	0	25-40	25-40	5-25	0-10	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
120*:											
Rock River------	0-3	Sandy loam-------	SM, SC-SM	A-2-4	0	90-100	85-100	60-80	30-45	20-25	NP-10
	3-13	Sandy clay loam	SC, CL	A-6	0	90-100	85-100	75-85	45-60	25-35	10-15
	13-60	Fine sandy loam, sandy loam, sandy clay loam.	SC-SM, SC, CL, CL-ML	A-4	0	90-100	85-100	70-85	40-55	20-30	5-10
121*:											
Bosler----------	0-6	Fine sandy loam	SM	A-2	0	80-100	75-100	60-80	25-35	20-30	NP-5
	6-13	Sandy clay loam	CL	A-6	0	80-100	75-100	60-75	50-60	30-35	10-15
	13-20	Gravelly sandy clay loam.	SC, GC	A-6	0	70-85	60-75	40-55	35-45	30-35	10-15
	20-60	Very gravelly loamy sand, very gravelly sand.	GP-GM, GP	A-1	0	25-40	25-40	5-25	0-10	---	NP
Ryan Park-------	0-3	Fine sandy loam	SM, SC-SM	A-2-4, A-4	0	95-100	90-100	65-80	25-40	<25	NP-5
	3-12	Fine sandy loam, sandy loam.	SM, SC-SM, SC	A-2-4, A-4	0	95-100	90-100	65-80	30-50	20-30	NP-10
	12-60	Loamy fine sand, loamy sand.	SM	A-2-4	0	95-100	90-100	60-75	20-35	<20	NP
122*:											
Bowbac----------	0-3	Fine sandy loam	SM, SC-SM	A-4	0	90-100	90-100	65-80	35-50	15-25	NP-5
	3-15	Sandy clay loam	CL	A-6	0	90-100	90-100	70-85	50-60	25-40	10-20
	15-26	Sandy loam, fine sandy loam, sandy clay loam.	SC, CL, SC-SM, CL-ML	A-4, A-6	0	90-100	90-100	60-80	45-55	25-35	5-15
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hiland----------	0-2	Sandy loam-------	SM, SC-SM	A-2	0	95-100	90-100	65-75	25-35	15-25	NP-5
	2-16	Sandy clay loam	CL	A-6	0	95-100	90-100	60-80	50-60	30-40	10-15
	16-60	Sandy loam-------	SM, SC-SM	A-2	0	95-100	90-100	65-75	25-35	15-25	NP-5
123-------------- Brownsto	0-2	Loam-------------	CL-ML, CL	A-4, A-6	0-5	85-95	85-95	75-90	50-60	25-35	5-15
	2-9	Loam, sandy clay loam, gravelly sandy clay loam.	CL-ML, CL, SC-SM, SC	A-4, A-6	0-5	70-90	65-90	50-80	35-70	25-35	5-15
	9-60	Very gravelly sandy loam, very gravelly loam, very gravelly sandy clay loam.	GM-GC, GC, GM, GP-GM	A-1, A-2	0-5	50-60	45-50	25-45	10-35	15-30	NP-15
124-------------- Brownsto	0-6	Sandy clay loam	CL-ML, CL	A-4, A-6	0-5	85-95	85-95	75-90	50-60	25-35	5-15
	6-27	Loam, sandy clay loam, gravelly sandy clay loam.	CL-ML, CL, SC-SM, SC	A-4, A-6	0-5	70-90	65-90	50-80	35-70	25-35	5-15
	27-60	Very gravelly sandy loam, very gravelly loam, very gravelly sandy clay loam.	GM-GC, GC, GM, GP-GM	A-1, A-2	0-5	50-60	45-50	25-45	10-35	15-30	NP-15

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
125*:											
Brownsto, very bouldery-------	0-8	Very bouldery sandy clay loam.	GC, SC	A-2, A-6	15-30	50-80	50-75	35-60	25-45	30-40	10-20
	8-24	Very gravelly sandy loam, very gravelly sandy clay loam, extremely gravelly sandy loam.	GM-GC, GC, SC-SM, SC	A-2, A-1	15-40	30-65	25-65	15-50	10-35	25-35	5-15
	24-60	Very cobbly sandy loam, very cobbly sandy clay loam, extremely cobbly sandy loam.	GM-GC, GC, SC-SM, SC	A-2, A-1	25-55	40-70	35-70	25-55	15-35	25-35	5-15
Decross Variant-	0-2	Sandy loam-------	SM, SC-SM	A-2	0	80-100	75-100	50-70	15-25	20-25	NP-5
	2-14	Sandy clay loam	SC, CL	A-6	0	80-100	75-100	60-80	45-55	25-35	10-15
	14-60	Sandy clay loam	SC, CL	A-6	0	80-100	75-100	60-80	45-55	30-35	10-15
Brownsto--------	0-4	Sandy loam-------	SM, SC-SM, SC	A-4	0-5	85-95	85-95	65-85	35-50	15-25	NP-10
	4-22	Loam, sandy clay loam, gravelly sandy clay loam.	CL-ML, CL, SC-SM, SC	A-4, A-6	0-5	70-90	65-90	50-80	35-70	25-35	5-15
	22-60	Very gravelly sandy loam, very gravelly loam, very gravelly sandy clay loam.	GM-GC, GC, GM, GP-GM	A-1, A-2	0-5	50-60	45-50	25-45	10-35	15-30	NP-15
126-------------- Burnette	0-2	Loam-------------	CL, CL-ML	A-4	0-5	85-100	80-100	70-90	60-75	20-30	5-10
	2-18	Clay loam, clay	CL	A-6, A-7-6	0-5	85-100	80-100	75-95	70-90	35-45	10-20
	18-60	Clay, clay loam	CL, CH	A-7	0-5	90-100	85-100	70-95	65-90	40-55	15-30
127*:											
Chittum---------	0-3	Loam-------------	CL	A-6	0-5	90-100	80-100	65-85	50-75	25-30	10-15
	3-11	Gravelly loam, loam, sandy clay loam.	SC, CL, GC	A-6	0-5	70-95	55-90	55-70	35-55	25-40	10-20
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bachus----------	0-5	Loam-------------	ML, CL-ML	A-4	0-5	80-100	80-100	70-85	50-70	<25	NP-5
	5-24	Loam, clay loam	CL	A-6	0-10	80-100	80-100	75-90	60-75	25-40	10-20
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
128*:											
Cific	0-2	Very gravelly sandy loam.	GM, SM, GP-GM, SP-SM	A-1	0-10	40-60	25-50	20-35	10-20	---	NP
	2-7	Gravelly fine sandy loam.	SM, GM	A-2, A-1	0-10	60-75	50-70	40-60	20-35	---	NP
	7-14	Gravelly clay loam.	CL, GC, SC	A-6	0-10	60-80	50-75	40-65	40-55	35-40	15-20
	14-24	Gravelly loam	ML, GM, SM	A-4	0-10	60-80	50-75	45-65	40-55	30-35	5-10
	24-30	Channery loam	ML, GM, SM	A-4	0-10	60-80	50-75	45-65	40-55	30-35	5-10
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hoodle	0-3	Gravelly sandy loam.	GM, SM	A-4, A-2-4	0-15	70-80	65-75	50-60	25-40	25-30	NP-5
	3-13	Very gravelly sandy clay loam.	GC	A-2-6	0-15	40-50	35-45	20-30	15-25	30-35	10-15
	13-60	Very gravelly sandy loam, very gravelly sandy clay loam.	GM, GP-GM, GC	A-1-a, A-1-b	0-15	40-50	35-45	25-35	10-25	25-30	NP-10
129*:											
Clifsand	0-7	Gravelly loam	GM, GM-GC, ML, CL-ML	A-2, A-4	0-15	60-80	55-75	45-70	30-55	20-30	NP-10
	7-60	Very gravelly sandy loam, very gravelly loam.	GM, GP-GM, GM-GC	A-1, A-2	10-25	35-60	30-55	20-45	10-35	15-25	NP-5
Persayo	0-2	Loam	CL-ML, CL	A-4	0-10	80-100	75-100	75-95	50-80	25-30	5-10
	2-15	Silt loam, clay loam, loam.	CL-ML, CL	A-4, A-6	0-10	80-100	75-100	75-95	60-85	25-40	5-20
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
130*:											
Cloud Peak	0-1	Gravelly loam	CL-ML, CL	A-4	0-5	50-75	50-75	50-75	50-60	25-30	5-10
	1-15	Extremely channery clay loam, very channery clay loam.	GC	A-2-6	15-35	40-55	30-50	30-45	25-35	30-40	10-20
	15-30	Extremely channery loam.	GC	A-2-6	15-35	40-55	30-50	30-45	25-35	30-35	10-15
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Farlow	0-6	Gravelly clay loam.	CL, GC, SC	A-6	0-10	70-80	65-75	55-70	40-55	35-40	15-20
	6-55	Extremely channery clay loam, very gravelly sandy clay loam.	GC, GP-GC	A-2	0-10	20-40	10-35	5-20	5-20	35-40	15-20
	55	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
131*:											
Coalmont--------	0-2	Loam-------------	CL-ML, CL	A-4	0	90-100	90-100	85-100	65-80	25-30	5-10
	2-30	Clay loam, clay	CL	A-7	0	85-100	85-100	80-100	75-95	40-50	20-25
	30	Weathered bedrock	---	---	---	---	---	---	---	---	---
Milren----------	0-3	Loam-------------	CL-ML, CL	A-4	0	90-100	90-100	85-100	65-80	25-30	5-10
	3-23	Clay, sandy clay	CL, CH	A-7	0	100	100	85-100	60-90	40-60	20-35
	23-60	Sandy clay loam, loam, clay loam.	CL	A-6	0	100	100	80-90	50-60	30-40	10-15
Cragosen--------	0-2	Gravelly loam----	SM, GM, GM-GC, SC-SM	A-4	0-10	65-85	60-80	40-65	35-50	20-25	NP-5
	2-12	Very gravelly loam, very gravelly sandy loam.	GM-GC, GM, GC, GP-GM	A-2, A-4, A-1	10-30	30-55	25-55	20-50	10-40	20-30	NP-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
132*:											
Conpeak---------	0-2	Fine sandy loam	SM, SC-SM	A-2, A-4	0-5	80-100	80-100	80-95	25-40	20-25	NP-5
	2-13	Fine sandy loam, loam.	SM, ML, CL-ML, SC-SM	A-2, A-4	0-5	80-100	80-100	80-95	30-60	20-25	NP-5
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Cryluha---------	0-8	Gravelly sandy loam.	SM, GM, GM-GC, SC-SM	A-2	0	55-80	50-75	35-50	25-35	---	NP
	8-27	Gravelly loam----	SM, GM, SM-GC, SC-SM	A-4	0	55-80	50-75	40-55	35-45	20-25	NP-5
	27-30	Fine sandy loam	SM	A-2	0	80-100	75-100	60-80	20-30	---	NP
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
133*:											
Countryman------	0-2	Fine sandy loam	SM, SC-SM	A-2, A-4	0	90-100	85-100	75-85	30-40	15-25	NP-5
	2-25	Very fine sandy loam.	SM, ML, CL-ML, SC-SM	A-4	0	90-100	85-100	80-95	40-60	15-25	NP-5
	25-60	Stratified loamy fine sand to clay loam.	SM, SC-SM	A-4	0	90-100	85-100	65-85	35-50	15-25	NP-5
Absher----------	0-3	Loam-------------	CL	A-6	0	95-100	75-100	65-90	60-75	30-35	10-15
	3-18	Silty clay loam, silty clay.	CL	A-6, A-7	0	95-100	85-100	80-90	80-90	35-45	15-25
	18-60	Clay loam--------	CL	A-6, A-7	0	95-100	85-100	70-90	65-80	35-45	15-25
134-------------- Coutis	0-4	Fine sandy loam	SM, SC-SM	A-4	0-5	80-100	80-100	70-90	40-50	<30	NP-10
	4-60	Fine sandy loam	SM, SC-SM	A-4	0-5	80-100	80-100	70-90	40-50	<30	NP-10

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
135*:											
Crago	0-3	Gravelly loam	GM-GC, GM, CL-ML, SC-SM	A-4	0-10	60-75	55-70	50-65	35-55	20-30	NP-10
	3-60	Extremely gravelly loam, very gravelly clay loam, very gravelly loam.	GM, GM-GC, GP-GM	A-1, A-2	0-15	25-45	15-35	10-25	5-20	20-30	NP-10
Pensore	0-3	Very channery sandy clay loam.	GC, GM-GC	A-1-b, A-2	0-5	45-55	40-50	25-35	15-25	25-35	5-15
	3-13	Very channery loam, very channery sandy clay loam, very channery sandy loam.	GM-GC, GC, GP-GC	A-1-a, A-1-b, A-2	0-5	30-40	25-35	15-25	10-20	20-30	5-10
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
136*:											
Cragosen	0-6	Gravelly loam	SM, GM, GM-GC, SC-SM	A-4	0-10	65-85	60-80	40-65	35-50	20-25	NP-5
	6-12	Very gravelly loam, very gravelly sandy loam.	GM-GC, GM, GC, GP-GM	A-2, A-4, A-1	10-30	30-55	25-55	20-50	10-40	20-30	NP-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Carmody	0-1	Gravelly sandy loam.	GM, SM	A-2	0-5	50-75	50-75	30-50	25-35	---	NP
	1-22	Fine sandy loam, very fine sandy loam, sandy loam.	ML, SM, CL-ML, SC-SM	A-4	0-5	75-100	75-100	65-85	45-55	---	NP-5
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Blazon	0-3	Sandy clay loam	CL	A-6	0-5	90-100	90-100	75-95	60-75	35-40	15-20
	3-15	Clay loam	CL	A-6	5-10	80-100	80-100	75-95	60-75	35-40	15-20
	15	Weathered bedrock	---	---	---	---	---	---	---	---	---
137*:											
Cragosen	0-4	Gravelly loam	SM, GM, GM-GC, SC-SM	A-4	0-10	65-85	60-80	40-65	35-50	20-25	NP-5
	4-19	Very gravelly loam, very gravelly sandy loam.	GM-GC, GM, GC, GP-GM	A-2, A-4, A-1	10-30	30-55	25-55	20-50	10-40	20-30	NP-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
137*:											
Carmody	0-1	Sandy loam	ML, SM, CL-ML, SC-SM	A-4	0-5	75-100	75-100	65-90	45-55	---	NP-5
	1-35	Fine sandy loam, very fine sandy loam, sandy loam.	ML, SM, CL-ML, SC-SM	A-4	0-5	75-100	75-100	65-85	45-55	---	NP-5
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
138*:											
Cragosen	0-6	Gravelly loam	SM, GM, GM-GC, SC-SM	A-4	0-10	65-85	60-80	40-65	35-50	20-25	NP-5
	6-10	Very gravelly loam, very gravelly sandy loam.	GM-GC, GM, GC, GP-GM	A-2, A-4, A-1	10-30	30-55	25-55	20-50	10-40	20-30	NP-10
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bosler	0-2	Sandy loam	SM	A-2	0	80-100	75-100	45-60	25-35	20-30	NP-5
	2-20	Sandy clay loam	CL	A-6	0	80-100	75-100	60-75	50-60	30-35	10-15
	20-24	Loamy sand	SM	A-2, A-1	0	80-100	75-100	45-65	20-30	---	NP
	24-60	Very gravelly loamy sand, very gravelly sand.	GP-GM, GP	A-1	0	25-40	25-40	5-25	0-10	---	NP
Cushool	0-3	Sandy loam	SM	A-2	0	75-100	75-100	50-65	25-35	---	NP
	3-16	Sandy clay loam, gravelly sandy clay loam.	SC, CL	A-6	0	75-100	65-100	65-85	35-55	30-40	10-20
	16-36	Fine sandy loam, sandy loam, sandy clay loam.	SM, ML, SC-SM, CL-ML	A-4	0	75-100	75-100	65-90	35-55	20-30	NP-10
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
139*:											
Cryluha	0-5	Gravelly sandy loam.	SM, GM, GM-GC, SC-SM	A-2	0	55-80	50-75	35-50	25-35	---	NP
	5-13	Gravelly loam	SM, GM	A-4	0	55-80	50-75	40-55	35-45	20-25	NP-5
	13-19	Gravelly fine sandy loam.	SM, GM	A-2	0	55-80	50-75	45-60	25-35	---	NP
	19-27	Gravelly loam	SM, GM, GM-GC, SC-SM	A-4	0	55-80	50-75	40-55	35-45	20-25	NP-5
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Conpeak	0-2	Fine sandy loam	SM, SC-SM	A-2, A-4	0-5	80-100	80-100	80-95	25-40	20-25	NP-5
	2-14	Fine sandy loam, loam.	SM, ML, CL-ML, SC-SM	A-2, A-4	0-5	80-100	80-100	80-95	30-60	20-25	NP-5
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
140*:											
Cushool	0-3	Sandy loam	SM	A-2	0	75-100	75-100	50-65	25-35	---	NP
	3-17	Sandy clay loam	SC, CL	A-6	0	75-100	75-100	65-85	35-55	30-40	10-20
	17-35	Fine sandy loam, sandy loam, sandy clay loam.	SM, ML, SC-SM, CL-ML	A-4	0	75-100	75-100	65-90	35-55	20-30	NP-10
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock River	0-3	Fine sandy loam	SC, SC-SM, SM	A-4	0	90-100	85-100	70-90	35-50	20-25	NP-10
	3-18	Sandy clay loam	SC, CL	A-6	0	90-100	85-100	75-85	45-60	25-35	10-15
	18-34	Sandy clay loam	SC, CL	A-6	0	90-100	85-100	75-85	45-60	25-35	10-15
	34-60	Fine sandy loam, sandy loam, sandy clay loam.	SC-SM, SC, CL, CL-ML	A-4	0	90-100	85-100	70-85	40-55	20-30	5-10
141*:											
Dahlquist	0-3	Very cobbly loam	CL-ML, CL	A-4	30-45	70-85	60-75	60-70	50-60	20-30	5-10
	3-14	Very gravelly sandy clay loam.	GC	A-2	10-20	40-60	35-55	30-45	20-30	30-35	10-15
	14-60	Extremely cobbly sandy loam.	SM, GM, GP-GM, SP-SM	A-1	25-50	50-65	45-55	25-40	10-20	---	NP
Rock River	0-4	Sandy loam	SM, SC-SM	A-2-4	0	90-100	85-100	60-80	30-45	20-25	NP-10
	4-21	Sandy clay loam	SC, CL	A-6	0	90-100	85-100	75-85	45-60	25-35	10-15
	21-60	Fine sandy loam, sandy loam, sandy clay loam.	SC-SM, SC, CL, CL-ML	A-4	0	90-100	85-100	70-85	40-55	20-30	5-10
142*:											
Diamondville	0-2	Loam	CL-ML, CL	A-4	0-5	95-100	90-100	85-95	60-75	25-30	5-10
	2-13	Clay loam, sandy clay loam.	CL	A-6	0-5	95-100	90-100	85-95	70-80	30-40	10-20
	13-24	Loam, sandy loam	CL-ML, ML, CL	A-4	0-5	95-100	90-100	85-95	60-75	20-30	NP-10
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Forelle	0-6	Loam	CL	A-6	0-5	95-100	90-100	80-90	75-85	25-35	10-15
	6-18	Clay loam	CL	A-6, A-7	0-5	95-100	95-100	85-95	80-90	35-45	15-25
	18-60	Loam, clay loam	CL	A-6	0-5	95-100	90-100	80-90	75-85	25-35	10-15
143*:											
Effington	0-2	Loam	CL	A-6	0	90-100	85-100	70-85	55-65	30-35	10-15
	2-5	Clay loam	CL	A-7	0	90-100	85-100	75-95	65-75	40-45	20-25
	5-11	Clay, sandy clay	CL, CH	A-7	0	90-100	85-100	70-85	60-75	45-60	20-30
	11-60	Clay loam	CL	A-6, A-7	0	90-100	85-100	75-95	65-75	35-45	15-20
Mudray	0-2	Clay loam	CL	A-6	0	75-100	75-100	70-90	65-85	35-40	15-20
	2-14	Clay, sandy clay, clay loam.	CL, CH	A-7	0	75-100	75-100	70-100	50-90	45-55	20-30
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
144*:											
Emblem----------	0-2	Sandy loam-------	SM	A-2	0	80-95	75-95	50-70	25-35	---	NP
	2-20	Loam, sandy clay loam, gravelly loam.	ML	A-4	0-10	80-95	70-95	65-90	50-75	30-35	5-10
	20-30	Gravelly loamy sand.	SM, SP-SM	A-2, A-1	0-10	60-80	55-75	40-55	10-20	---	NP
	30-60	Very gravelly loamy sand.	GP-GM, GM	A-1	0-20	35-50	30-45	20-30	5-15	---	NP
Clifsand--------	0-4	Very gravelly loam.	GM, GM-GC, GC	A-2, A-4	10-15	50-60	45-55	40-50	30-40	20-30	NP-10
	4-60	Very gravelly sandy loam, very gravelly loam.	GM, GP-GM, GM-GC	A-1, A-2	10-25	35-60	30-55	20-45	10-35	15-25	NP-5
Rairdent--------	0-2	Loam-------------	CL-ML, CL	A-4	0-5	75-100	75-100	60-80	50-70	25-30	5-10
	2-7	Loam, sandy clay loam, clay loam.	CL-ML, GM-GC, SC-SM	A-4	0-5	50-100	50-100	45-65	45-55	25-30	5-10
	7-60	Clay loam, sandy clay loam, loam.	CL-ML, CL	A-6, A-4	0	80-100	75-100	65-80	55-70	20-35	5-15
145-------------- Fluvaquents	0-60	Variable---------	---	---	---	---	---	---	---	---	---
146*:											
Fluvaquents-----	0-60	Variable---------	---	---	---	---	---	---	---	---	---
Youngston-------	0-3	Loam-------------	CL-ML, CL	A-4	0	100	100	70-80	55-65	20-30	5-10
	3-60	Stratified very fine sandy loam to silty clay loam.	CL	A-6	0	100	100	80-100	60-80	30-40	10-20
147*:											
Forelle---------	0-2	Loam-------------	CL	A-6	0-5	95-100	90-100	80-90	75-85	25-35	10-15
	2-14	Clay loam--------	CL	A-6, A-7	0-5	95-100	95-100	85-95	80-90	35-45	15-25
	14-31	Sandy clay loam, loam.	CL	A-6	0-5	90-100	90-100	75-85	65-75	25-35	10-15
	31-60	Loam, clay loam	CL	A-6	0-5	95-100	90-100	80-90	75-85	25-35	10-15
Luhon-----------	0-7	Loam-------------	CL, SC, CL-ML	A-6, A-4	0-5	90-100	85-100	80-95	45-70	25-35	5-15
	7-60	Loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6	0-5	90-100	85-100	80-95	45-70	25-35	5-15
148*:											
Forelle---------	0-2	Loam-------------	CL	A-6	0-5	95-100	90-100	80-90	75-85	25-35	10-15
	2-16	Clay loam--------	CL	A-6, A-7	0-5	95-100	95-100	85-95	80-90	35-45	15-25
	16-24	Loam, clay loam	CL	A-6	0-5	95-100	90-100	80-90	75-85	25-35	10-15
	24-60	Stratified loamy sand to loam.	SC, SC-SM	A-4	0-5	95-100	85-95	65-75	40-50	20-25	5-10
Poposhia--------	0-3	Loam-------------	CL-ML, CL	A-4, A-6	0	85-100	75-100	70-100	60-70	25-40	5-15
	3-15	Clay loam, loam	CL	A-6	0	85-100	75-100	75-95	50-85	25-40	10-20
	15-60	Loam, clay loam, sandy clay loam.	CL	A-6	0	85-100	75-100	70-90	50-85	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: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
149*:											
Fornor----------	0-2	Very cobbly loam	GM-GC, CL-ML, GM, ML	A-4	25-45	60-85	50-75	45-70	40-55	20-30	NP-10
	2-13	Very gravelly sandy clay loam, very gravelly clay loam.	GC	A-2, A-6	10-30	40-65	35-60	25-55	15-45	30-40	10-20
	13-25	Extremely gravelly sandy clay loam, very gravelly loam.	GC, GP-GC	A-2	10-35	25-45	15-40	15-35	10-30	30-40	10-20
	25-60	Very gravelly loam, very gravelly sandy clay loam, very gravelly sandy loam.	GC, GM-GC, SC, GP-GC	A-2, A-1	10-35	30-65	25-60	20-40	10-35	25-35	5-15
Decross---------	0-8	Loam-------------	CL	A-6	0	75-100	75-100	65-90	50-75	30-35	10-15
	8-21	Clay loam, loam	CL	A-6	0	75-100	75-100	70-95	60-80	30-40	10-20
	21-60	Loam, clay loam	CL	A-6	0	75-100	75-100	65-85	50-70	30-35	10-15
150*:											
Frisite---------	0-3	Loam-------------	ML, CL-ML	A-4	0	100	100	65-85	60-75	20-30	NP-10
	3-23	Clay loam, loam	CL	A-6	0	100	100	80-95	70-85	30-40	10-15
	23-60	Clay loam, loam	CL	A-6	0	90-100	85-100	60-75	55-70	30-40	10-15
Emblem----------	0-3	Loam-------------	ML	A-4	0	80-95	75-95	65-90	50-75	30-35	5-10
	3-21	Loam-------------	ML	A-4	0	80-95	75-95	65-90	50-75	30-35	5-10
	21-60	Very gravelly loamy sand.	GP-GM, GM	A-1	0-20	35-50	30-45	20-30	5-15	---	NP
151*:											
Frisite---------	0-3	Fine sandy loam	SM, SC-SM	A-4	0	100	100	75-95	35-50	20-30	NP-10
	3-16	Clay loam, loam	CL	A-6	0	100	100	80-95	70-85	30-40	10-15
	16-60	Clay loam, loam	CL	A-6	0	90-100	85-100	60-75	55-70	30-40	10-15
Youngston-------	0-4	Loam-------------	CL-ML, CL	A-4	0	100	100	70-80	55-65	20-30	5-10
	4-60	Stratified very fine sandy loam to silt loam.	CL	A-6	0	100	100	80-100	60-80	30-40	10-20
152*:											
Gelkie Variant--	0-2	Loam-------------	CL	A-6	0	100	100	75-95	70-80	30-35	10-15
	2-9	Clay loam--------	CL	A-6	0	100	100	75-95	70-80	35-40	15-20
	9-42	Silty clay loam, clay loam.	CL	A-6	0	100	100	90-100	75-85	35-40	15-20
	42	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
152*:											
Barrett Variant	0-4	Very channery very fine sandy loam.	GM	A-1, A-2	0	45-60	25-50	20-50	15-30	25-30	NP-5
	4-11	Very gravelly loam, very channery loam.	GM, SM	A-2, A-1	0	40-65	25-50	20-50	20-35	30-35	5-10
	11-18	Very gravelly silty clay loam, very channery silty clay loam.	GC, SC	A-6, A-2	0	40-70	25-45	20-40	20-40	35-40	15-20
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
153*:											
Granile	0-7	Gravelly sandy loam.	SM	A-2, A-4	5-10	75-85	60-70	55-65	30-40	<25	NP
	7-46	Very gravelly sandy clay loam.	GC, SC	A-2-6, A-6	5-35	60-70	50-60	40-50	30-40	25-35	10-15
	46-60	Very gravelly sandy loam, very gravelly sandy clay loam.	GM, GM-GC, SM, SC-SM	A-1, A-2-4	0-5	55-65	40-50	30-40	15-30	<25	NP-5
Ansel	0-10	Sandy loam	SM, SC-SM, SC	A-2, A-4	0-5	90-100	90-100	65-85	30-50	20-30	NP-10
	10-60	Clay loam, sandy clay loam, gravelly sandy clay loam.	CL, GC, SC	A-6, A-2	0-5	55-100	50-100	40-95	25-75	30-40	10-20
154*:											
Griffy	0-6	Sandy loam	SM, SC-SM	A-2, A-4	0	80-100	80-100	60-70	30-40	15-20	NP-5
	6-13	Sandy clay loam, clay loam.	CL, SC, CL-ML, SC-SM	A-4, A-6	0	80-100	75-100	65-80	40-70	25-35	5-15
	13-60	Sandy loam, fine sandy loam.	SM, SM-SC	A-2-4, A-4	0	75-100	75-100	60-75	25-50	<25	NP-5
Saddle	0-2	Sandy loam	SM, SC-SM	A-2, A-4	0	75-100	75-100	50-70	30-40	20-25	NP-5
	2-13	Sandy clay loam	SC, CL	A-6	0	75-100	75-100	65-90	35-60	30-40	10-20
	13-33	Sandy loam, fine sandy loam, sandy clay loam.	SM, ML, SC-SM, CL-ML	A-4	0	75-100	75-100	55-75	35-65	20-30	NP-10
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Wallson	0-4	Loamy fine sand	SM	A-2	0	75-100	75-100	50-75	15-30	---	NP
	4-21	Sandy loam, fine sandy loam.	SM, SC-SM	A-2, A-4	0	75-100	75-100	50-75	30-45	20-25	NP-5
	21-60	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	75-100	75-100	50-75	30-45	---	NP
155*:											
Haplaquolls	0-60	Variable	---	---	---	---	---	---	---	---	---
Aquic Ustifluvents	0-60	Variable	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
156*:											
Haverdad	0-10	Loam	CL-ML, ML, CL	A-4	0	75-100	75-100	70-90	50-70	<30	NP-10
	10-60	Stratified loamy sand to clay loam.	CL-ML, CL	A-4, A-6	0	75-100	75-100	70-90	50-60	25-35	5-15
Clarkelen	0-2	Sandy loam	SM, SC-SM	A-4	0	100	95-100	60-70	40-50	---	NP-5
	2-5	Loam	CL-ML, CL	A-4	0	100	95-100	70-80	50-65	20-25	5-10
	5-60	Stratified loamy sand to loam.	SM, SC-SM, ML, CL-ML	A-4	0	100	95-100	50-60	35-55	---	NP-5
157*:											
Havre	0-3	Loam	CL, CL-ML	A-4, A-6	0	100	100	80-90	60-80	25-35	5-15
	3-60	Stratified fine sandy loam to clay loam.	CL, CL-ML	A-4, A-6	0	100	100	80-90	70-80	25-35	5-15
Absher	0-3	Loam	CL	A-6	0	95-100	75-100	65-90	60-75	30-35	10-15
	3-24	Silty clay loam, silty clay.	CL	A-6, A-7	0	95-100	85-100	80-90	80-90	35-45	15-25
	24-60	Stratified loam to clay.	CL	A-6	0	95-100	85-100	80-90	80-90	35-40	15-20
Forelle	0-8	Loam	CL	A-6	0-5	95-100	90-100	80-90	75-85	25-35	10-15
	8-24	Clay loam	CL	A-6, A-7	0-5	95-100	95-100	85-95	80-90	35-45	15-25
	24-60	Loam, clay loam	CL	A-6	0-5	95-100	90-100	80-90	75-85	25-35	10-15
158*:											
Havre	0-4	Loam	CL, CL-ML	A-4, A-6	0	100	100	80-90	60-80	25-35	5-15
	4-60	Stratified fine sandy loam to clay loam.	CL, CL-ML	A-4, A-6	0	100	100	80-90	70-80	25-35	5-15
Forelle	0-5	Loam	CL	A-6	0-5	95-100	90-100	80-90	75-85	25-35	10-15
	5-19	Clay loam	CL	A-6, A-7	0-5	95-100	95-100	85-95	80-90	35-45	15-25
	19-60	Sandy loam	SC, SC-SM	A-4	0-5	95-100	85-95	65-75	40-50	20-25	5-10
Glendive	0-4	Sandy loam	SM, ML	A-4	0	100	100	75-85	45-55	15-20	NP-5
	4-60	Stratified loamy sand to sandy clay loam.	SM, SC-SM, SC	A-2, A-4	0	100	100	65-75	25-40	15-25	NP-10
159*:											
Havre	0-2	Loam	CL, CL-ML	A-4, A-6	0	100	100	80-90	60-80	25-35	5-15
	2-60	Stratified fine sandy loam to clay loam.	CL, CL-ML	A-4, A-6	0	100	100	80-90	70-80	25-35	5-15
Havre Variant	0-1	Loam	CL-ML, CL	A-4	0	100	80-100	70-80	55-65	20-30	5-10
	1-60	Stratified sand to clay loam.	CL, CL-ML	A-4, A-6	0	100	80-100	75-95	60-75	25-35	5-15
Elkol	0-2	Clay	CH, MH	A-7	0-5	95-100	95-100	90-100	70-90	50-65	20-35
	2-60	Silty clay, clay, clay loam.	CL, CH	A-7	0-5	95-100	95-100	90-100	70-90	40-65	15-35

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
160*:											
Highpoint	0-1	Channery clay loam.	GC, CL, SC	A-6	0-5	50-80	50-80	45-75	35-70	30-40	10-20
	1-11	Very channery clay loam, very gravelly silty clay loam, very gravelly clay loam.	GC	A-2, A-6	0-10	25-50	25-50	20-50	20-45	30-40	10-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
161 Hiland	0-3	Sandy loam	SM, SC-SM	A-2	0	95-100	90-100	65-75	25-35	15-25	NP-5
	3-15	Sandy clay loam	CL	A-6	0	95-100	90-100	60-80	50-60	30-40	10-15
	15-33	Sandy loam	SM, SC-SM	A-2	0	95-100	90-100	65-75	25-35	15-25	NP-5
	33-60	Loamy sand	SM, SP-SM	A-1, A-2	0	95-100	90-100	40-60	10-20	---	NP
162*:											
Hoodle	0-3	Gravelly sandy loam.	GM, SM	A-4	0-15	70-80	65-75	50-60	40-50	25-30	NP-5
	3-16	Very gravelly sandy clay loam.	GC	A-2-6	0-15	40-50	35-45	20-30	15-25	30-35	10-15
	16-60	Very gravelly sandy loam, very gravelly sandy clay loam.	GM, GP-GM, GC	A-1-a, A-1-b	0-15	40-50	35-45	25-35	10-25	25-30	NP-10
Rock outcrop.											
163*:											
Hoodle	0-3	Gravelly loam	CL	A-6	0-15	75-85	65-75	55-70	50-60	30-35	10-15
	3-13	Very gravelly sandy clay loam.	GC	A-2-6	0-15	40-50	35-45	20-30	15-25	30-35	10-15
	13-60	Very gravelly sandy loam, very gravelly sandy clay loam.	GM, GP-GM, GC	A-1-a, A-1-b	0-15	40-50	35-45	25-35	10-25	25-30	NP-10
Gelkie	0-7	Loam	CL-ML, CL	A-4	0	90-100	85-95	75-85	50-60	25-30	5-10
	7-29	Sandy clay loam, loam.	CL, CL-ML	A-6, A-4	0	90-100	85-95	60-70	50-65	25-35	5-15
	29-60	Sandy loam	SM, SC-SM, SC	A-4	0	90-100	85-95	60-70	40-50	<25	NP-10
164*:											
Iceslew	0-2	Very fine sandy loam.	ML, CL-ML, CL	A-4	0	90-100	90-100	85-100	60-75	20-30	NP-10
	2-12	Loam, sandy loam	CL-ML, ML, CL	A-4	0	90-100	90-100	60-85	60-75	20-30	NP-10
	12-32	Loam	CL	A-6	0	90-100	90-100	70-85	60-85	25-35	10-15
	32-60	Stratified sandy loam to silty clay loam.	CL	A-6	0	80-100	80-100	75-95	50-75	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: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
164*:											
Countryman------	0-2	Loam-------------	CL-ML, CL	A-4	0	90-100	85-100	65-85	60-70	20-30	5-10
	2-15	Very fine sandy loam.	SM, ML, CL-ML, SC-SM	A-4	0	90-100	85-100	80-95	40-60	15-25	NP-5
	15-21	Sandy loam-------	SM, SC-SM	A-4	0	90-100	85-100	60-75	35-50	15-25	NP-5
	21-60	Stratified loamy sand to clay loam.	SM, SC-SM	A-4	0	90-100	85-100	45-65	35-50	15-25	NP-5
165*:											
Inchau----------	0-1	Loam-------------	CL-ML, CL	A-4, A-6	0	75-100	75-100	70-90	50-70	25-35	5-15
	1-28	Clay loam, sandy clay loam, channery sandy clay loam.	CL	A-6, A-7	0	75-100	70-100	60-100	50-80	30-45	10-25
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Youga-----------	0-2	Loam-------------	CL-ML, CL	A-4, A-6	0-10	75-95	75-90	70-80	50-60	20-30	5-15
	2-25	Sandy clay loam, loam.	CL, SC	A-6	0-25	80-90	75-90	60-75	45-65	25-35	10-20
	25-60	Sandy clay loam, sandy loam.	SC, CL, SC-SM, CL-ML	A-2, A-6, A-4	0-5	80-100	75-100	40-70	30-60	25-35	5-15
166*:											
Irigul----------	0-9	Channery loam----	GM-GC, CL-ML, SC-SM	A-4	0-10	55-80	50-75	45-60	35-55	20-30	5-10
	9-15	Very channery loam, extremely channery loam.	GM-GC, GC, SC-SM, SC	A-2, A-1	10-15	50-75	15-50	10-35	10-30	20-35	5-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Midelight-------	0-5	Channery loam----	GM-GC, GC	A-2, A-4, A-6	0-5	50-60	50-60	35-55	30-40	20-30	5-15
	5-41	Very channery loam, very gravelly loam.	GC, GM-GC	A-2	0-10	30-50	25-50	25-45	15-35	25-35	5-15
	41	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
167*:											
Irigul----------	0-7	Very channery loam.	GM-GC, GC	A-2, A-1	0-15	25-50	25-50	20-30	15-30	20-30	5-10
	7-11	Very channery loam, extremely channery loam.	GM-GC, GC, SC-SM, SC	A-2, A-1	10-15	50-75	15-50	10-35	10-30	20-35	5-15
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
168*:											
Lander----------	0-13	Loam-------------	ML	A-4	0	95-100	95-100	80-95	50-60	20-30	NP-5
	13-60	Loam, clay loam, sandy clay loam.	CL-ML, CL	A-4, A-6	0	95-100	95-100	80-95	60-70	20-30	5-15
Lander Variant--	0-15	Loam-------------	CL-ML, CL	A-4	0-10	100	100	75-95	60-85	25-30	5-10
	15-60	Stratified loam to very gravelly sand.	GP-GM, GM, SP-SM, SM	A-1	0-10	40-60	25-50	20-35	5-15	---	NP
169*:											
Luhon-----------	0-4	Loam-------------	CL, SC, CL-ML	A-6, A-4	0-5	90-100	85-100	80-95	45-70	25-35	5-15
	4-60	Loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6	0-5	90-100	85-100	80-95	45-70	25-35	5-15
Rock River------	0-3	Fine sandy loam	SC, SC-SM, SM	A-4	0	90-100	85-100	70-90	35-50	20-25	NP-10
	3-20	Sandy clay loam	SC, CL	A-6	0	90-100	85-100	75-85	45-60	25-35	10-15
	20-60	Fine sandy loam, sandy loam, sandy clay loam.	SC-SM, SC, CL, CL-ML	A-4	0	90-100	85-100	70-85	40-55	20-30	5-10
Forelle---------	0-6	Loam-------------	CL	A-6	0-5	95-100	90-100	80-90	75-85	25-35	10-15
	6-18	Clay loam--------	CL	A-6, A-7	0-5	95-100	95-100	85-95	80-90	35-45	15-25
	18-60	Loam, clay loam	CL	A-6	0-5	95-100	90-100	80-90	75-85	25-35	10-15
170-------------- Lupinto	0-2	Loam-------------	CL-ML, CL, SC-SM	A-4	0	85-100	75-100	65-85	40-70	20-30	5-10
	2-9	Sandy clay loam, gravelly sandy clay loam.	SC-SM, SC	A-2-4, A-4, A-6	0-10	70-90	60-80	50-75	30-50	25-40	5-15
	9-23	Sandy loam, gravelly sandy clay loam.	SC-SM, SC	A-2-4, A-4	5-15	70-90	60-80	45-70	25-45	20-30	5-10
	23-60	Very gravelly clay loam, very gravelly sandy clay loam.	GM-GC, GC	A-1, A-2-4, A-2-6	10-25	45-65	35-55	25-40	15-30	25-40	5-15
171*:											
Lymanson--------	0-3	Gravelly loam----	SC-SM, GM-GC, GC, SC	A-4	0-5	70-95	50-75	40-65	35-50	25-30	5-10
	3-13	Sandy clay loam, gravelly sandy clay loam.	CL, SC	A-6	0	75-100	70-100	65-95	45-65	25-35	10-15
	13-36	Loam, very fine sandy loam, sandy clay loam.	CL-ML, CL	A-4	0	85-100	80-100	70-90	50-70	25-30	5-10
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Abston----------	0-3	Gravelly sandy loam.	SM	A-2, A-1	0	65-80	55-75	40-55	15-25	---	NP
	3-14	Sandy clay-------	CL	A-6	0	80-100	75-100	70-85	50-70	25-35	10-20
	14-28	Sandy clay loam, clay loam.	ML, CL-ML, SC-SM, SM	A-4	0	80-100	75-100	75-90	40-60	15-25	NP-5
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
171*:											
Gelkie----------	0-4	Fine sandy loam	SC, SC-SM, SM	A-4	0	90-100	85-95	75-85	40-50	<25	NP-10
	4-30	Sandy clay loam	CL	A-6	0	90-100	85-95	60-70	50-65	25-35	10-15
	30-60	Gravelly sandy clay loam.	GC, SC	A-6	0-5	70-80	65-75	45-55	35-50	25-35	10-15
172*:											
Lymanson--------	0-2	Very fine sandy loam.	SM	A-4	0	85-100	85-100	60-80	35-50	20-30	NP-5
	2-23	Sandy clay loam, loam.	CL, SC	A-6	0	85-100	75-100	70-95	45-65	25-35	10-15
	23-30	Loam, very fine sandy loam, sandy clay loam.	CL-ML, CL	A-4	0	85-100	80-100	70-90	50-70	25-30	5-10
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Conpeak---------	0-2	Fine sandy loam	SM, SC-SM	A-2, A-4	0-5	80-100	80-100	80-95	25-40	20-25	NP-5
	2-15	Fine sandy loam, loam.	SM, ML, CL-ML, SC-SM	A-2, A-4	0-5	80-100	80-100	80-95	30-60	20-25	NP-5
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
173*:											
Midelight Variant--------	0-6	Gravelly loam----	SC, GC	A-6	0	60-85	55-75	40-60	35-50	30-35	10-15
	6-13	Very gravelly loam.	GC, SC	A-6, A-2	0-25	50-70	40-55	30-50	25-45	30-35	10-15
	13-22	Very gravelly sandy clay loam.	GC, SC	A-2	0-25	50-70	40-55	20-40	20-35	30-40	10-20
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Winada Variant--	0-2	Gravelly loam----	GM-GC, SC-SM, GM, GC	A-4	0-5	55-80	50-75	40-60	35-50	25-35	5-10
	2-8	Very gravelly sandy clay loam.	GC, GP-GC	A-2	0-5	30-55	25-50	15-30	10-25	30-40	10-15
	8-26	Very gravelly sandy clay loam.	GC, GP-GC	A-2	0-5	30-55	25-50	15-30	10-25	30-40	10-15
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Starman---------	0-3	Gravelly loam----	GM-GC, SC-SM, GC, SC	A-4	0-5	55-80	50-75	40-60	40-50	20-30	5-10
	3-12	Very gravelly loam.	GM-GC, GC	A-2, A-1	0-15	35-55	30-50	25-45	20-35	20-30	5-15
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
174*:											
Milren----------	0-3	Sandy loam-------	SM	A-2	0	100	100	70-90	25-35	---	NP
	3-11	Sandy clay-------	CH, CL	A-7	0	100	100	70-90	60-70	45-65	25-35
	11-16	Sandy clay loam	CL	A-6	0	100	100	60-80	50-60	30-35	10-15
	16-23	Loam-------------	CL	A-6	0	100	100	65-85	55-65	30-35	10-15
	23-56	Fine sandy loam	SM	A-2	0	100	100	75-90	25-35	---	NP
	56-60	Loamy fine sand	SM	A-2	0	100	100	75-85	15-25	---	NP
Bosler----------	0-2	Sandy loam-------	SM	A-2	0	80-100	75-100	45-60	25-35	20-30	NP-5
	2-20	Sandy clay loam	CL	A-6	0	80-100	75-100	60-75	50-60	30-35	10-15
	20-60	Very gravelly loamy sand, very gravelly sand.	GP-GM, GP	A-1	0	25-40	25-40	5-25	0-10	---	NP
Rock River------	0-3	Sandy loam-------	SM, SC-SM	A-2-4	0	90-100	85-100	60-80	30-45	20-25	NP-10
	3-15	Sandy clay loam	SC, CL	A-6	0	90-100	85-100	75-85	45-60	25-35	10-15
	15-34	Sandy clay loam	SC, CL	A-6	0	90-100	85-100	75-85	45-60	25-35	10-15
	34-60	Fine sandy loam, sandy loam, sandy clay loam.	SC-SM, SC, CL, CL-ML	A-4	0	90-100	85-100	70-85	40-55	20-30	5-10
175*:											
Milvar----------	0-3	Stony loam-------	CL-ML, SC-SM, SC, CL	A-4	15-25	75-90	75-90	60-80	45-65	25-30	5-10
	3-16	Gravelly clay loam, gravelly clay.	CL, GC, SC	A-7	0-5	55-80	50-75	50-70	35-60	40-50	20-30
	16-26	Very gravelly loam.	GM-GC, GC	A-2, A-1	0-5	40-60	30-50	25-40	20-35	25-30	5-10
	26-60	Very gravelly loamy sand.	GM, SM, GP-GM, SP-SM	A-1	0-5	35-60	30-50	20-35	10-15	---	NP
Milren----------	0-2	Fine sandy loam	SM	A-2	0	100	100	70-90	25-35	---	NP
	2-16	Sandy clay-------	CH, CL	A-7	0	100	100	70-90	60-70	45-65	25-35
	16-27	Loam-------------	CL	A-6	0	100	100	65-85	55-65	30-35	10-15
	27-60	Fine sandy loam	SM	A-2	0	100	100	75-90	25-35	---	NP
176*:											
Mosroc----------	0-2	Very gravelly fine sandy loam.	GM-GC, GC	A-2, A-1	0-15	35-60	30-55	25-50	15-30	25-30	5-10
	2-12	Very gravelly sandy clay loam, very gravelly clay loam, very gravelly loam.	GC	A-6, A-2	0-30	45-65	40-60	35-55	20-45	30-40	10-20
	12-18	Very gravelly sandy loam, very gravelly sandy clay loam, very gravelly loam.	GM-GC, GC, GP-GC	A-2, A-1	0-25	35-60	25-55	20-45	10-35	25-35	5-15
	18-22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
176*:											
Lymanson	0-4	Gravelly loam	SC-SM, GM-GC, GC, SC	A-4	0-5	70-95	50-75	40-65	35-50	25-30	5-10
	4-24	Sandy clay loam, gravelly sandy clay loam.	CL, SC	A-6	0	75-100	70-100	65-95	45-65	25-35	10-15
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
177*:											
Oceanet	0-4	Sandy loam	SM, SC-SM	A-2, A-1	0-5	75-100	75-100	45-65	20-35	15-20	NP-5
	4-18	Fine sandy loam, sandy loam.	SM, SC-SM	A-4, A-2-4	0-5	85-100	75-100	50-70	30-45	15-20	NP-5
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Persayo	0-2	Loam	CL-ML, CL	A-4	0-10	80-100	75-100	75-95	50-80	25-30	5-10
	2-13	Silt loam, clay loam.	CL-ML, CL	A-4, A-6	0-10	80-100	75-100	75-95	60-85	25-40	5-20
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
178*:											
Orpha	0-5	Sand	SP-SM, SM	A-2	0	100	95-100	60-70	10-20	---	NP
	5-60	Sand, fine sand	SM	A-2	0	100	95-100	60-80	15-30	---	NP
Vonalee	0-4	Loamy fine sand	SM	A-2	0	100	95-100	70-90	20-30	---	NP
	4-13	Sandy loam, fine sandy loam.	SC-SM, SM, SC	A-2, A-4	0	100	90-100	55-75	30-40	20-30	NP-10
	13-60	Loamy sand, loamy fine sand.	SM	A-2	0	100	90-100	70-90	20-30	---	NP
179 Owen Creek	0-2	Very stony clay loam.	CL	A-6	50-60	100	100	90-100	70-80	35-40	15-20
	2-16	Clay, clay loam	CH, CL	A-7	0	100	100	90-100	75-95	45-55	20-30
	16-39	Clay loam	CL	A-6	0	100	100	80-95	70-80	30-40	10-15
	39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
180*:											
Pensore	0-3	Very channery loam.	GC, GM-GC	A-1-b, A-2	0-5	45-55	40-50	25-35	20-30	25-35	5-15
	3-11	Very channery loam, very channery sandy clay loam.	GM-GC, GC, GP-GC	A-1-a, A-1-b, A-2	0-5	30-40	25-35	15-25	10-20	20-30	5-10
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
181*:											
Persayo	0-3	Clay loam	CL	A-6	0-10	80-100	75-100	75-95	60-85	25-40	10-20
	3-16	Silt loam, clay loam.	CL-ML, CL	A-4, A-6	0-10	80-100	75-100	75-95	60-85	25-40	5-20
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
182*:											
Pesmore	0-3	Very channery sandy loam.	GM-GC, GC, GP-GC	A-2, A-1	10-20	30-50	30-50	25-40	10-25	25-30	5-10
	3-10	Very channery loam, very channery sandy clay loam.	GM-GC, GC	A-1, A-2	0-5	30-50	30-50	25-50	20-35	20-30	5-10
	10-24	Very channery loam, very channery sandy clay loam.	GM-GC, GC	A-1, A-2	0-5	30-50	30-50	25-40	20-35	20-30	5-10
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Asholler	0-3	Channery loam	ML, GM, SM	A-4	0-15	55-80	50-75	40-60	35-55	25-35	NP-10
	3-17	Very channery loam, very channery sandy clay loam, very gravelly loam.	GM-GC, GM, GC	A-2	0-20	40-60	35-55	25-40	25-35	25-35	5-10
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
183 Peyton	0-2	Sandy loam	SM, SC-SM, SC	A-2, A-1	0	95-100	75-100	35-50	20-35	20-30	NP-10
	2-22	Sandy clay loam	SC, CL	A-2, A-6	0	95-100	75-100	55-70	30-60	30-40	10-20
	22-30	Coarse sandy loam	SM, SC-SM, SC	A-2, A-1	0	90-100	75-100	30-60	20-35	20-30	NP-10
	30-60	Loamy sand	SM, SC-SM	A-2, A-1	0-5	80-100	75-85	45-60	15-25	---	NP
184*:											
Pishkun Variant	0-9	Very gravelly loam.	GM, SM, GM-GC, SC-SM	A-2, A-4	0-20	50-70	35-50	30-40	25-40	20-25	NP-5
	9-60	Very gravelly sandy loam.	SM, GM, GM-GC, SC-SM	A-1	0-5	50-70	35-50	25-40	15-25	20-25	NP-5
Hoodle	0-3	Very gravelly sandy loam.	GM	A-1-b	0-15	40-50	35-45	25-35	15-25	25-30	NP-5
	3-14	Very gravelly sandy clay loam.	GC	A-2-6	0-15	40-50	35-45	20-30	15-25	30-35	10-15
	14-27	Very gravelly sandy loam.	GM, GP-GM	A-1-a, A-1-b	0-15	40-50	35-45	25-35	10-20	25-30	NP-5
	27-60	Very gravelly loamy sand, very gravelly sandy loam.	GW-GM, GM, GP-GM	A-1-a	0-15	40-50	35-45	20-30	5-15	<25	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
185	0-7	Loam	CL-ML, CL	A-4, A-6	0	85-100	75-100	70-100	60-70	25-40	5-15
Poposhia	7-18	Clay loam, loam	CL	A-6	0	85-100	75-100	75-95	50-85	25-40	10-20
	18-60	Loam, clay loam, sandy clay loam.	CL	A-6	0	85-100	75-100	70-90	50-85	25-40	10-20
186*:											
Poposhia	0-3	Loam	CL-ML, CL	A-4, A-6	0	85-100	75-100	70-100	60-70	25-40	5-15
	> 3	Clay loam, loam	CL	A-6	0	85-100	75-100	75-95	50-85	25-40	10-20
	10-60	Loam, clay loam, sandy clay loam.	CL	A-6	0	85-100	75-100	70-90	50-85	25-40	10-20
Blazon	0-4	Clay loam	CL	A-6	0-5	90-100	90-100	75-95	60-75	35-40	15-20
	4-17	Clay loam	CL	A-6	5-10	80-100	80-100	75-95	60-75	35-40	15-20
	17	Weathered bedrock	---	---	---	---	---	---	---	---	---
Carmody	0-5	Fine sandy loam	ML, SM, CL-ML, SC-SM	A-4	0-5	75-100	75-100	65-90	45-55	---	NP-5
	5-28	Fine sandy loam, very fine sandy loam, sandy loam.	ML, SM, CL-ML, SC-SM	A-4	0-5	75-100	75-100	65-85	45-55	---	NP-5
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
187*:											
Poposhia, sodic	0-2	Loam	CL-ML, ML, CL	A-4	0	95-100	75-100	50-90	50-85	25-35	5-10
	2-27	Loam, clay loam	CL-ML, CL	A-4, A-6	0	85-100	75-100	75-90	50-85	25-40	5-15
	27-60	Loam	CL-ML, ML, CL	A-4	0	85-100	75-100	70-80	50-75	25-35	5-10
Blazon	0-1	Clay loam	CL	A-6	0-5	90-100	90-100	75-95	60-75	35-40	15-20
	1-19	Clay loam	CL	A-6	5-10	80-100	80-100	75-95	60-75	35-40	15-20
	19	Weathered bedrock	---	---	---	---	---	---	---	---	---
188*:											
Quander	0-3	Cobbly loam	SM, GM, ML	A-4	15-35	70-85	70-80	60-70	40-60	25-40	NP-10
	3-16	Very cobbly sandy clay loam, very gravelly sandy clay loam.	SC, GC	A-2	35-55	50-75	45-60	40-50	20-35	30-40	10-20
	16-60	Very cobbly loam, very cobbly sandy clay loam.	SC, GC	A-2	35-55	50-75	45-60	40-50	20-35	25-35	10-20
Youga	0-7	Loam	CL-ML, CL	A-4, A-6	0-10	75-95	75-90	70-80	50-60	20-30	5-15
	7-28	Sandy clay loam, loam.	CL, SC	A-6	0-25	80-90	75-90	60-75	45-65	25-35	10-20
	28-60	Sandy clay loam, sandy loam.	SC, CL, SC-SM, CL-ML	A-2, A-6, A-4	0-5	80-100	75-100	40-70	30-60	25-35	5-15
Onason	0-11	Sandy loam	SM, SC-SM	A-2	0	80-100	75-100	50-70	25-35	20-25	NP-5
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
189*:											
Rallod----------	0-2	Loam-------------	ML, CL-ML, CL	A-4	0	100	100	85-95	55-65	20-30	NP-10
	2-18	Sandy clay, clay loam.	CL	A-7	0	100	100	85-100	60-90	40-50	20-30
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Seaverson-------	0-2	Loam-------------	CL	A-6	0	90-100	90-100	85-95	70-80	30-40	10-20
	2-11	Clay loam, loam	CL	A-6	0	90-100	90-100	85-95	50-80	30-40	10-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
190*:											
Relsob----------	0-3	Sandy loam-------	SM	A-2	0	100	95-100	60-80	25-35	---	NP
	3-12	Sandy clay loam	SC, CL	A-6	0	100	95-100	60-80	45-55	30-35	10-15
	12-15	Gravelly sandy clay loam.	SC	A-6	0	100	50-75	40-50	35-45	30-35	10-15
	15-60	Very gravelly sand, very gravelly loamy sand.	SP-SM, SM	A-1	0	100	25-50	20-40	5-15	---	NP
Bluerim---------	0-2	Sandy loam-------	SM	A-2	0	95-100	75-90	50-70	25-35	20-30	NP-5
	2-16	Sandy clay loam	SC-SM, SC	A-2, A-4	0	95-100	75-90	60-75	30-40	25-30	5-10
	16-35	Sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2, A-4	0	95-100	75-90	50-70	25-50	<25	NP-10
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
191*:											
Rentsac---------	0-5	Very gravelly loam.	GM-GC, GC, GM, GP-GM	A-1, A-2	0-10	35-45	30-40	15-30	10-20	25-35	5-10
	5-14	Very gravelly loam, very gravelly sandy loam.	GM-GC, GC, GM, GP-GM	A-1, A-2	0-10	30-40	25-35	15-30	10-20	25-35	5-10
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Carmody---------	0-4	Fine sandy loam	ML, SM, CL-ML, SC-SM	A-4	0-5	75-100	75-100	65-90	45-55	---	NP-5
	4-39	Fine sandy loam, very fine sandy loam, sandy loam.	ML, SM, CL-ML, SC-SM	A-4	0-5	75-100	75-100	65-85	45-55	---	NP-5
	39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
192*:											
Riverwash-------	0-60	Variable---------	---	---	---	---	---	---	---	---	---
Aquic Ustifluvents---	0-60	Variable---------	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
193*:											
Rockinchair-----	0-4	Fine sandy loam	SM	A-2	0-5	85-100	80-100	70-80	20-30	---	NP
	4-32	Sandy clay loam, clay loam, loam.	CL	A-6	0-15	80-100	80-100	60-90	50-70	30-40	10-20
	32	Weathered bedrock	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Sinkson---------	0-6	Loam-------------	CL	A-6	0	90-100	80-100	70-90	50-75	25-40	10-20
	6-60	Sandy clay loam, loam.	CL	A-6	0	90-100	80-100	70-90	50-75	25-40	10-20
194*:											
Rockinchair-----	0-3	Loam-------------	CL	A-6	0	80-100	80-100	75-90	65-80	30-40	10-20
	3-34	Sandy clay loam, clay loam, loam.	CL	A-6	0	80-100	80-100	60-90	50-70	30-40	10-20
	34	Weathered bedrock	---	---	---	---	---	---	---	---	---
Sinkson---------	0-5	Loam-------------	ML	A-4	0	95-100	95-100	90-95	70-85	---	NP
	5-60	Loam, clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	95-100	95-100	80-90	60-75	25-35	5-15
195*:											
Rock outcrop.											
Asholler--------	0-3	Very channery loam.	GM	A-2	0-30	40-60	35-55	25-40	25-35	25-35	NP-10
	3-14	Very channery loam, very channery sandy clay loam.	GM-GC, GM, GC	A-2	0-20	40-60	35-55	25-40	25-35	25-35	5-10
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
196*:											
Rock outcrop.											
Blackhall-------	0-2	Sandy loam-------	SM	A-4	0-5	90-100	90-100	70-90	40-50	15-20	NP
	2-18	Sandy loam, fine sandy loam, very fine sandy loam.	SM, SC-SM	A-2, A-4	0-5	90-100	85-100	55-90	30-50	15-20	NP-5
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
197*:											
Rock outcrop.											
Blazon----------	0-2	Clay loam--------	CL	A-6	0-5	90-100	90-100	75-95	60-75	35-40	15-20
	2-17	Clay loam--------	CL	A-6	5-10	80-100	80-100	75-95	60-75	35-40	15-20
	17	Weathered bedrock	---	---	---	---	---	---	---	---	---
198*:											
Rock outcrop.											

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
198*:											
Mosroc	0-3	Gravelly loam	GM-GC, SC-SM, GC, SC	A-4, A-6	0-15	65-80	50-75	40-65	35-50	25-35	5-15
	3-10	Very gravelly sandy clay loam, very gravelly clay loam, very gravelly loam.	GC	A-2, A-6	0-30	45-65	40-60	35-55	20-45	30-40	10-20
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
199*:											
Rock outcrop.											
Oceanet	0-5	Sandy loam	SM, SC-SM	A-2, A-1	0-5	75-100	75-100	45-65	20-35	15-20	NP-5
	5-16	Fine sandy loam, sandy loam.	SM, SC-SM,	A-4, A-2-4	0-5	85-100	75-100	50-70	30-45	15-20	NP-5
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
200*:											
Roxal	0-3	Loam	CL-ML, CL	A-4	0	75-100	75-100	70-90	50-70	25-30	5-10
	3-17	Clay loam, loam, sandy clay loam.	CL	A-6	0	80-100	75-100	70-95	50-65	25-35	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
201*:											
Roxal	0-4	Sandy clay loam	CL	A-6	0	75-100	75-100	70-90	50-60	30-35	10-15
	4-13	Clay loam, loam, sandy clay loam.	CL	A-6	0	80-100	75-100	70-95	50-65	25-35	10-15
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Tongue River	0-1	Fine sandy loam	SM, SC-SM	A-2	0-5	85-100	85-100	60-85	25-35	20-25	NP-5
	1-33	Channery sandy clay loam, sandy clay loam.	CL, GC, SC	A-6	5-25	60-85	60-85	40-80	35-65	35-40	15-20
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
202 Ryan Park	0-3	Loamy fine sand	SM	A-2-4	0	95-100	90-100	60-75	20-35	<20	NP
	3-17	Fine sandy loam, sandy loam.	SM, SC-SM, SC	A-2-4, A-4	0	95-100	90-100	65-80	30-50	20-30	NP-10
	17-60	Fine sandy loam, sandy loam.	SM, SC-SM, SC	A-2-4, A-4	0	95-100	90-100	65-80	25-45	20-30	NP-10
203*:											
Ryan Park	0-5	Sandy loam	SM, SC-SM	A-2-4, A-4	0	95-100	90-100	65-75	25-40	<25	NP-5
	5-15	Fine sandy loam, sandy loam.	SM, SC-SM, SC	A-2-4, A-4	0	95-100	90-100	65-80	30-50	20-30	NP-10
	15-60	Fine sandy loam, sandy loam.	SM, SC-SM, SC	A-2-4, A-4	0	95-100	90-100	65-80	25-45	20-30	NP-10

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
203*:											
Carmody	0-5	Sandy loam	ML, SM, CL-ML, SC-SM	A-4	0-5	75-100	75-100	65-90	45-55	---	NP-5
	5-38	Fine sandy loam, very fine sandy loam, sandy loam.	ML, SM, CL-ML, SC-SM	A-4	0-5	75-100	75-100	65-85	45-55	---	NP-5
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
204 Ryark	0-5	Sandy loam	SM	A-1, A-2	0	85-100	75-100	45-65	20-30	---	NP
	5-27	Sandy loam	SC-SM, SC	A-2	0	85-100	75-100	50-70	20-35	20-25	5-10
	27-60	Gravelly loamy sand.	SP-SM	A-1	0	70-80	50-60	30-40	5-10	---	NP
205*:											
Ryark	0-6	Loamy sand	SM	A-1, A-2	0	85-100	75-100	40-70	15-30	---	NP
	6-13	Sandy loam	SC-SM, SC	A-2	0	85-100	75-100	50-70	20-35	20-25	5-10
	13-60	Loamy sand	SM	A-1, A-2	0	85-100	75-100	40-70	15-30	---	NP
Zeomont	0-3	Loamy sand	SM	A-1, A-2	0	100	100	40-60	15-25	---	NP
	3-60	Sand, loamy sand	SM, SP-SM	A-1, A-2	0	100	100	40-60	10-20	---	NP
206*:											
Sandbranch	0-2	Loam	CL-ML, CL	A-4	0	95-100	95-100	70-85	60-70	20-30	5-10
	2-17	Sandy clay loam, clay loam.	CL-ML, CL	A-4, A-6	0	95-100	95-100	60-80	50-65	25-40	5-15
	17-34	Loam, clay loam, sandy clay loam.	CL-ML, CL	A-4, A-6	0	95-100	95-100	60-80	50-65	25-40	5-15
	34-60	Stratified sandy loam to clay loam.	CL-ML, CL	A-4	0	95-100	95-100	70-85	60-70	20-30	5-10
Ryan Park Variant	0-6	Loamy fine sand	SM	A-2	0	90-100	90-100	75-95	20-35	---	NP
	6-38	Fine sandy loam	SM, SC-SM	A-4	0	90-100	90-100	75-95	35-50	20-25	NP-5
	38-55	Fine sandy loam	SM, SC-SM	A-4	0	90-100	90-100	75-95	35-50	20-25	NP-5
	55	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Poposhia	0-10	Loam	CL-ML, CL	A-4, A-6	0	85-100	75-100	70-100	60-70	25-40	5-15
	10-60	Loam, clay loam, sandy clay loam.	CL	A-6	0	85-100	75-100	70-90	50-85	25-40	10-20
207*:											
Sinkson	0-5	Sandy clay loam	CL	A-6	0	90-100	80-100	70-90	50-75	25-40	10-20
	5-60	Sandy clay loam, loam.	CL	A-6	0	90-100	80-100	70-90	50-75	25-40	10-20
Almy	0-3	Sandy clay loam	SC, CL	A-6	0	80-100	75-100	60-80	45-55	25-30	10-15
	3-17	Clay loam, sandy clay loam, loam.	CL, CL-ML	A-6, A-4	0	80-100	75-100	55-80	50-70	25-40	5-15
	17-40	Loam, sandy clay loam.	SC-SM, SM, CL-ML, ML	A-4	0	80-100	75-100	55-80	40-60	20-30	NP-10
	40-60	Gravelly sandy loam.	SM, GM, GM-GC, SC-SM	A-2, A-1	0	55-80	50-75	30-50	20-30	15-25	NP-5

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
208*:											
Sinkson	0-4	Loam	ML	A-4	0	95-100	95-100	90-95	70-85	---	NP
	4-60	Loam, clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	95-100	95-100	80-90	60-75	25-35	5-15
Almy	0-2	Loam	CL	A-6	0	80-100	75-100	55-80	50-65	30-35	10-15
	2-20	Clay loam, sandy clay loam, loam.	CL, CL-ML	A-6, A-4	0	80-100	75-100	55-80	50-70	25-40	5-15
	20-60	Loam, sandy clay loam.	SC-SM, SM, CL-ML, ML	A-4	0	80-100	75-100	55-80	40-60	20-30	NP-10
Thermopolis	0-3	Loam	ML, CL-ML	A-4	0	80-100	80-100	70-90	50-70	20-25	NP-5
	3-16	Loam, silt loam	CL, CL-ML	A-4, A-6	0	80-100	80-100	70-90	65-85	20-35	5-15
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
209*:											
Starman	0-2	Very gravelly loam.	GM-GC, GC	A-2	0-15	40-60	40-60	35-50	25-35	15-25	5-10
	2-12	Very gravelly loam.	GM-GC, GC	A-2, A-1	0-15	35-55	30-50	25-45	20-35	20-30	5-15
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Woosley	0-5	Loam	CL-ML, CL	A-4	0	80-100	75-100	70-90	55-70	25-35	5-10
	5-15	Clay loam	CL	A-6	0	80-100	75-100	70-90	60-70	30-40	10-20
	15-33	Clay loam, loam	CL, CL-ML	A-6, A-4	0	80-100	75-100	70-90	50-70	25-35	5-15
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
210*:											
Taluce	0-4	Sandy loam	SM	A-4	0	95-100	90-100	70-85	35-50	<30	NP-5
	4-12	Sandy loam, fine sandy loam, very fine sandy loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	0	95-100	90-100	60-85	25-55	<25	NP-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bowbac	0-5	Sandy loam	SM, SC-SM	A-4	0	90-100	90-100	65-80	35-50	15-25	NP-5
	5-15	Sandy clay loam	CL	A-6	0	90-100	90-100	70-85	50-60	25-40	10-20
	15-37	Sandy loam, fine sandy loam, sandy clay loam.	SC, CL, SC-SM, CL-ML	A-4, A-6	0	90-100	90-100	60-80	45-55	25-35	5-15
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
211*:											
Thermopolis	0-2	Loam	ML, CL-ML	A-4	0	80-100	80-100	70-90	50-70	20-25	NP-5
	2-10	Loam, silt loam	CL, CL-ML	A-4, A-6	0	80-100	80-100	70-90	65-85	20-35	5-15
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Sinkson	0-3	Loam	ML	A-4	0	95-100	95-100	90-95	70-85	---	NP
	3-60	Loam, clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	95-100	95-100	80-90	60-75	25-35	5-15

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
212*:											
Tisworth	0-3	Sandy loam	SC-SM, SM, SC	A-2, A-4	0	75-100	75-100	50-70	25-45	20-30	NP-10
	3-20	Loam, sandy clay loam, clay loam.	SC, CL	A-6	0	75-100	75-100	65-95	35-75	25-35	10-20
	20-60	Loam, clay loam, sandy clay loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	0	80-100	75-100	60-80	40-70	20-30	NP-10
Absher	0-3	Loam	CL	A-6	0	95-100	75-100	65-90	60-75	30-35	10-15
	3-11	Silty clay, clay	CL, CH	A-7	0	95-100	75-100	70-100	60-80	45-60	20-30
	11-60	Clay loam	CL	A-6, A-7	0	95-100	85-100	70-90	65-80	35-45	15-25
Forelle	0-4	Loam	CL	A-6	0-5	95-100	90-100	80-90	75-85	25-35	10-15
	4-24	Clay loam	CL	A-6, A-7	0-5	95-100	95-100	85-95	80-90	35-45	15-25
	24-60	Sandy clay loam, loam.	CL	A-6	0-5	90-100	90-100	75-85	65-75	25-35	10-15
213*:											
Tisworth	0-2	Fine sandy loam	SC-SM, SM, SC	A-2, A-4	0	75-100	75-100	50-70	25-45	20-30	NP-10
	2-16	Loam, sandy clay loam, clay loam.	SC, CL	A-6	0	75-100	75-100	65-95	35-75	25-35	10-20
	16-60	Loam, sandy loam, sandy clay loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	0	80-100	75-100	55-90	30-65	20-30	NP-10
Poposhia	0-4	Clay loam	CL-ML, CL	A-4, A-6	0	85-100	75-100	70-100	60-70	25-40	5-15
	4-60	Loam, clay loam, sandy clay loam.	CL	A-6	0	85-100	75-100	70-90	50-85	25-40	10-20
214*:											
Tisworth	0-3	Loamy sand	SM	A-2	0	90-100	85-100	50-65	20-30	---	NP
	3-27	Loam, sandy clay loam, clay loam.	SC, CL	A-6	0	75-100	75-100	65-95	35-75	25-35	10-20
	27-60	Stratified sandy clay loam to gravelly loamy sand.	SM, SC-SM, SC	A-1, A-2, A-4	0	80-100	75-100	40-80	20-50	15-30	NP-10
Ryan Park	0-4	Sandy loam	SM, SC-SM	A-2-4, A-4	0	95-100	90-100	65-75	25-40	<25	NP-5
	4-15	Fine sandy loam, sandy loam.	SM, SC-SM, SC	A-2-4, A-4	0	95-100	90-100	65-80	30-50	20-30	NP-10
	15-60	Fine sandy loam, sandy loam.	SM, SC-SM, SC	A-2-4, A-4	0	95-100	90-100	65-80	25-45	20-30	NP-10
Countryman	0-2	Fine sandy loam	SM, SC-SM	A-2, A-4	0	90-100	85-100	75-85	30-40	15-25	NP-5
	2-60	Stratified loamy fine sand to clay loam.	SM, SC-SM	A-4	0	90-100	85-100	45-65	35-50	15-25	NP-5
215*:											
Tongue River	0-1	Loam	CL-ML, CL	A-4	0-5	80-100	80-100	65-90	55-65	25-30	5-10
	1-19	Channery sandy clay loam, sandy clay loam.	CL, GC, SC	A-6	5-25	60-85	60-85	40-80	35-65	35-40	15-20
	19-34	Very channery sandy clay loam.	GC	A-2	0-5	30-55	25-50	20-35	15-25	30-35	10-15
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
215*:											
Inchau----------	0-1	Sandy clay loam	CL, SC	A-6	0	80-100	75-100	70-80	40-55	30-35	10-15
	1-19	Sandy clay loam	CL, SC	A-6	0	80-100	75-100	70-80	40-55	35-40	15-20
	19-38	Very gravelly sandy clay loam.	GC, SC	A-2	0-10	45-65	30-50	25-40	15-30	35-40	15-20
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Farlow Variant--	0-1	Loam-------------	CL	A-6	0-5	90-100	90-100	80-100	65-85	25-35	10-15
	1-11	Channery loam----	GC, SC	A-6	0	50-75	50-75	45-65	40-50	25-35	10-15
	11-35	Very channery sandy clay loam.	SC, GC	A-2	5-10	60-80	30-55	20-35	15-30	30-40	15-20
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
216*:											
Uffens----------	0-4	Loam-------------	CL-ML, CL	A-4	0	90-100	90-100	80-90	70-80	20-25	5-10
	4-20	Clay loam, sandy clay loam.	CL	A-6	0	90-100	90-100	85-95	60-80	30-35	10-15
	20-40	Sandy clay loam, clay loam.	CL	A-6	0	90-100	90-100	80-95	60-80	25-35	10-15
	40-60	Loamy sand-------	SM	A-2, A-4	0	90-100	85-95	65-75	30-40	<25	NP
Muff------------	0-2	Loam-------------	ML, CL-ML, CL	A-4	0	95-100	90-100	85-95	50-70	20-30	NP-10
	2-20	Sandy clay loam, clay loam.	CL	A-6	0	90-100	75-100	70-90	60-75	30-40	15-20
	20-29	Sandy clay loam	SC	A-6	0	90-100	75-100	65-90	35-50	30-35	10-15
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Frisite---------	0-6	Loam-------------	ML, CL-ML	A-4	0	100	100	65-85	60-75	20-30	NP-10
	6-25	Clay loam, loam	CL	A-6	0	100	100	80-95	70-85	30-40	10-15
	25-42	Clay loam, loam	CL	A-6	0	90-100	85-100	60-75	55-70	30-40	10-15
	42-60	Silty clay loam	CL	A-6	0	90-100	85-100	75-95	70-90	30-40	10-15
217*:											
Uhl-------------	0-4	Loam-------------	CL-ML, CL	A-4	0-5	95-100	95-100	85-95	60-75	15-25	5-10
	4-60	Loam, sandy clay loam.	CL	A-6	0-5	95-100	95-100	85-95	60-75	30-40	10-15
Gelkie----------	0-5	Loam-------------	CL-ML, CL	A-4	0	90-100	85-95	75-85	50-60	25-30	5-10
	5-15	Sandy clay loam, loam.	CL, CL-ML	A-6, A-4	0	90-100	85-95	60-70	50-65	25-35	5-15
	15-60	Loam, sandy clay loam.	SC, SC-SM, CL-ML, CL	A-4	0	90-100	85-95	75-85	45-60	25-30	5-10
218*:											
Venapass--------	0-16	Loam-------------	CL, CL-ML	A-4	0	90-100	90-100	70-80	55-65	20-30	5-10
	16-20	Sandy loam-------	SM, SC-SM	A-2	0	90-100	90-100	50-60	15-25	20-25	NP-5
	20-60	Gravelly coarse sandy loam.	GM, SM, GM-GC, SC-SM	A-1, A-2	0-10	60-80	50-75	30-50	20-35	20-25	NP-5
Uhl-------------	0-13	Loam-------------	CL-ML, CL	A-4	0-5	95-100	95-100	85-95	60-75	15-25	5-10
	13-60	Loam, sandy clay loam.	CL	A-6	0-5	95-100	95-100	85-95	60-75	30-40	10-15

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
218*:											
Absher----------	0-2	Loam-------------	CL	A-6	0	95-100	75-100	65-90	60-75	30-35	10-15
	2-13	Silty clay, clay	CL, CH	A-7	0	95-100	75-100	70-100	60-80	45-60	20-30
	13-60	Clay loam--------	CL	A-6, A-7	0	95-100	85-100	70-90	65-80	35-45	15-25
219*:											
Venapass--------	0-16	Loam-------------	CL, CL-ML	A-4	0	90-100	90-100	70-80	55-65	20-30	5-10
	16-30	Loam-------------	CL, CL-ML	A-4	0	90-100	90-100	70-80	55-65	20-30	5-10
	30-60	Gravelly coarse sandy loam.	GM, SM, GM-GC, SC-SM	A-1, A-2	0-10	60-80	50-75	30-50	20-35	20-25	NP-5
Silas-----------	0-16	Loam-------------	ML	A-4	0-10	90-100	90-100	80-95	60-70	25-35	NP-5
	16-60	Clay loam, loam	CL	A-6	0-10	90-100	90-100	75-90	70-80	30-40	10-15
220*:											
Vonalee---------	0-4	Loamy sand-------	SM	A-2	0	100	95-100	70-90	20-30	---	NP
	4-11	Sandy loam, fine sandy loam.	SC-SM, SM, SC	A-2, A-4	0	100	90-100	55-75	30-40	20-30	NP-10
	11-60	Loamy sand, loamy fine sand, sandy loam.	SM, SC-SM	A-2-4, A-4	0	100	90-100	70-90	20-40	<25	NP-5
Hiland----------	0-4	Sandy loam-------	SM, SC-SM	A-2	0	95-100	90-100	65-75	25-35	15-25	NP-5
	4-15	Sandy clay loam	CL	A-6	0	95-100	90-100	60-80	50-60	30-40	10-15
	15-20	Sandy loam-------	SM, SC-SM	A-2	0	95-100	90-100	65-75	25-35	15-25	NP-5
	20-22	Loamy sand-------	SM, SP-SM	A-1, A-2	0	95-100	90-100	40-60	10-20	---	NP
	22-60	Sand-------------	SP, SP-SM	A-1, A-3, A-2	0	95-100	90-100	40-60	0-5	---	NP
221*:											
Woosley---------	0-5	Loam-------------	CL-ML, CL	A-4	0	80-100	75-100	70-90	55-70	25-35	5-10
	5-15	Clay loam--------	CL	A-6	0	80-100	75-100	70-90	60-70	30-40	10-20
	15-19	Clay loam, loam	CL, CL-ML	A-6, A-4	0	80-100	75-100	70-90	50-70	25-35	5-15
	19-31	Gravelly loam, gravelly clay loam.	GM-GC, CL-ML, CL	A-2-4, A-4, A-6	0	60-80	50-75	45-70	30-55	25-35	5-15
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Decross---------	0-10	Loam-------------	CL	A-6	0	75-100	75-100	65-90	50-75	30-35	10-15
	10-38	Clay loam, loam	CL	A-6	0	75-100	75-100	70-95	60-80	30-40	10-20
	38-60	Loam, clay loam	CL	A-6	0	75-100	75-100	65-85	50-70	30-35	10-15
Starman---------	0-3	Gravelly loam----	GM-GC, SC-SM, GC, SC	A-4	0-5	55-80	50-75	40-60	40-50	20-30	5-10
	3-15	Very gravelly loam.	GM-GC, GC	A-2, A-1	0-15	35-55	30-50	25-45	20-35	20-30	5-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
222*:											
Worland---------	0-4	Sandy loam-------	SM, SC-SM	A-2	0	75-100	75-100	50-65	25-35	20-25	NP-5
	4-34	Sandy loam, fine sandy loam.	SM, SC-SM	A-2, A-4	0	75-100	75-100	50-75	25-45	20-25	NP-5
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
222*:											
Oceanet----------	0-1	Sandy loam--------	SM, SC-SM	A-2, A-1	0-5	75-100	75-100	45-65	20-35	15-20	NP-5
	1-19	Fine sandy loam, sandy loam.	SM, SC-SM	A-4, A-2-4	0-5	85-100	75-100	50-70	30-45	15-20	NP-5
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Persayo----------	0-6	Silty clay loam	CL	A-6	0-10	80-100	75-100	75-95	60-85	25-40	10-20
	6-18	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0-10	80-100	75-100	75-95	60-85	25-40	5-20
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
223*:											
Youga------------	0-14	Loam--------------	CL-ML, CL	A-4, A-6	0-10	75-95	75-90	70-80	50-60	20-30	5-15
	14-21	Sandy clay loam, loam.	CL, SC	A-6	0-25	80-90	75-90	60-75	45-65	25-35	10-20
	21-60	Sandy clay loam, sandy loam.	SC, CL, SC-SM, CL-ML	A-2, A-6, A-4	0-5	80-100	75-100	40-70	30-60	25-35	5-15
Quander----------	0-3	Cobbly loam-------	SM, GM, ML	A-4	15-35	70-85	70-80	60-70	40-60	25-40	NP-10
	3-14	Very cobbly sandy clay loam, very gravelly sandy clay loam.	SC, GC	A-2	35-55	50-75	45-60	40-50	20-35	30-40	10-20
	14-60	Very cobbly loam, very cobbly sandy clay loam.	SC, GC	A-2	35-55	50-75	45-60	40-50	20-35	25-35	10-20
224*:											
Youngston--------	0-3	Loam--------------	CL-ML, CL	A-4	0	100	100	70-80	55-65	20-30	5-10
	3-60	Stratified fine sandy loam to clay loam.	CL	A-6	0	100	100	80-100	60-80	30-40	10-20
Effington--------	0-4	Loam--------------	CL	A-6	0	90-100	85-100	70-85	55-65	30-35	10-15
	4-9	Clay loam---------	CL	A-7	0	90-100	85-100	75-95	65-75	40-45	20-25
	9-16	Clay, sandy clay	CL, CH	A-7	0	90-100	85-100	70-85	60-75	45-60	20-30
	16-50	Clay loam---------	CL	A-6, A-7	0	90-100	85-100	75-95	65-75	35-45	15-20
	50-60	Sandy loam--------	SM	A-2	0	90-100	85-100	55-70	25-35	---	NP
225*:											
Youngston--------	0-6	Loam--------------	CL-ML, CL	A-4, A-6	0	95-100	95-100	75-95	60-80	25-35	5-15
	6-60	Stratified fine sandy loam to clay loam.	CL	A-6	0	100	100	95-100	70-85	35-40	15-20
Lostwells--------	0-5	Loam--------------	ML	A-4	0-5	80-100	80-100	70-90	50-75	30-35	5-10
	5-60	Stratified sandy loam to clay loam.	SC, SM	A-6, A-4	0-5	80-100	80-100	70-100	35-50	30-40	5-15
Apron------------	0-4	Sandy loam--------	SM, SC-SM	A-2, A-4	0	75-100	75-100	65-75	30-45	15-25	NP-5
	4-60	Fine sandy loam, sandy loam.	SM, SC-SM	A-2, A-4	0	75-100	75-100	65-75	30-45	15-25	NP-5

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
226*:											
Youngston--------	0-4	Clay loam--------	CL	A-6	0	100	100	90-100	70-80	30-40	10-20
	4-60	Stratified fine sandy loam to clay loam.	CL	A-6	0	100	100	80-100	60-80	30-40	10-20
Lostwells--------	0-11	Loam-------------	ML	A-4	0-5	80-100	80-100	70-90	50-75	30-35	5-10
	11-60	Stratified sandy loam to clay loam.	SC, SM	A-6, A-4	0-5	80-100	80-100	70-100	35-50	30-40	5-15
227*:											
Youngston--------	0-4	Loam-------------	CL-ML, CL	A-4	0	100	100	70-80	55-65	20-30	5-10
	4-60	Stratified fine sandy loam to clay loam.	CL	A-6	0	100	100	80-100	60-80	30-40	10-20
Persayo----------	0-2	Loam-------------	CL-ML, CL	A-4	0-10	80-100	75-100	75-95	50-80	25-30	5-10
	2-10	Loam, clay loam	CL-ML, CL	A-4, A-6	0-10	80-100	75-100	75-95	60-85	25-40	5-20
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
228-------------- Zeomont	0-7	Loamy sand-------	SM	A-1, A-2	0	100	100	40-60	15-25	---	NP
	7-60	Sand, loamy sand	SM, SP-SM	A-1, A-2	0	100	100	40-60	10-20	---	NP
229*. Dumps, mine											
230*. Pits, gravel											

* 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	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
100*:												
Absher----------	0-1	20-27	1.15-1.25	0.6-2.0	0.12-0.14	>7.8	4-8	Moderate	0.49	5	5	1-2
	1-16	40-55	1.15-1.25	<0.06	0.10-0.12	7.9-9.0	8-16	High------	0.49			
	16-60	35-45	1.15-1.25	<0.06	0.09-0.11	>8.4	8-16	High------	0.55			
Elkol-----------	0-2	35-40	1.10-1.20	0.06-0.2	0.08-0.10	>8.4	2-16	Moderate	0.32	5	4L	<1
	2-56	35-45	1.20-1.30	0.06-0.2	0.08-0.10	>8.4	2-16	High------	0.32			
	56-60	12-20	1.30-1.40	0.6-2.0	0.11-0.13	>8.4	2-16	Low-------	0.43			
101*:												
Absher----------	0-4	20-27	1.15-1.25	0.6-2.0	0.12-0.14	6.6-8.4	4-8	Moderate	0.49	5	5	1-2
	4-9	40-55	1.15-1.25	<0.06	0.10-0.12	7.9-9.0	8-16	High------	0.49			
	9-60	30-40	1.25-1.35	<0.06	0.09-0.11	>8.4	>16	High------	0.49			
Poposhia--------	0-4	15-27	1.15-1.25	0.6-2.0	0.17-0.20	7.4-9.0	<4	Moderate	0.32	5	4L	1-2
	4-60	18-35	1.25-1.35	0.6-2.0	0.13-0.15	7.9-9.0	<8	Moderate	0.37			
Sinkson---------	0-9	18-28	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	18-28	1.30-1.40	0.6-2.0	0.15-0.20	7.9-8.4	<4	Moderate	0.32			
102*:												
Absher Variant--	0-2	35-40	1.05-1.15	0.06-0.2	0.14-0.16	>8.4	4-8	Moderate	0.37	2	4	1-2
	2-24	40-60	1.15-1.25	0.06-0.2	0.11-0.13	>8.4	4-8	High------	0.37			
	24	---	---	---	---	---	---	----------	----			
Absher----------	0-4	20-30	1.15-1.25	0.6-2.0	0.11-0.13	>7.8	4-8	Moderate	0.49	5	5	1-2
	4-13	35-45	1.15-1.25	<0.06	0.09-0.11	>8.4	8-16	High------	0.55			
	13-60	30-40	1.25-1.35	<0.06	0.09-0.11	>8.4	>16	High------	0.49			
103*:												
Abston----------	0-3	10-18	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low-------	0.24	2	3	<.5
	3-6	35-40	1.25-1.35	0.06-0.2	0.19-0.21	>8.4	<2	High------	0.49			
	6-13	35-40	1.25-1.35	0.2-0.6	0.15-0.17	>8.4	<2	Moderate	0.28			
	13-34	20-30	1.25-1.35	0.6-2.0	0.14-0.16	>7.8	<2	Low-------	0.43			
	34	---	---	---	---	---	---	----------	----			
Diamondville----	0-3	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low-------	0.37	2	5	.5-1
	3-12	20-35	1.25-1.35	0.2-0.6	0.16-0.18	6.6-8.4	<2	Moderate	0.49			
	12-36	10-25	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low-------	0.49			
	36	---	---	---	---	---	---	----------	----			
104-------------- Almy	0-1	20-25	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.32	5	6	1-3
	1-17	20-35	1.25-1.40	0.6-2.0	0.19-0.21	7.4-8.4	<4	Moderate	0.37			
	17-60	18-30	1.35-1.50	0.6-2.0	0.14-0.18	7.9-9.0	<4	Low-------	0.37			
105*:												
Almy------------	0-2	20-25	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.32	5	6	1-3
	2-18	20-35	1.25-1.40	0.6-2.0	0.19-0.21	7.4-9.0	<4	Moderate	0.37			
	18-60	18-30	1.35-1.50	0.6-2.0	0.14-0.18	7.9-9.0	<4	Low-------	0.37			
Monbutte--------	0-4	10-15	1.25-1.35	2.0-6.0	0.10-0.12	7.9-9.0	2-8	Low-------	0.32	5	3	1-2
	4-23	35-60	1.20-1.30	0.06-0.2	0.12-0.15	>8.4	2-8	High------	0.37			
	23-60	22-35	1.25-1.35	0.2-0.6	0.12-0.15	>9.0	4-8	Moderate	0.37			

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	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
105*:												
Rallod----------	0-4	10-20	1.25-1.35	2.0-6.0	0.08-0.11	7.4-9.0	<2	Low--------	0.32	1	3	1-3
	4-7	20-27	1.25-1.40	0.6-2.0	0.12-0.14	>8.4	4-8	Moderate	0.37			
	7-14	35-50	1.20-1.40	0.06-0.2	0.10-0.12	>8.4	4-8	High-------	0.37			
	14-18	20-30	1.25-1.40	0.6-2.0	0.11-0.13	>8.4	4-8	Moderate	0.37			
	18	---	---	---	---	---	---	-----------	----			
106*:												
Ansel-----------	0-10	10-20	1.25-1.35	2.0-6.0	0.12-0.14	6.1-7.8	<2	Low--------	0.24	5	3	2-4
	10-33	20-35	1.25-1.40	0.6-2.0	0.17-0.19	6.1-7.8	<2	Moderate	0.32			
	33-60	10-20	1.30-1.45	2.0-6.0	0.06-0.08	6.1-7.8	<2	Low--------	0.20			
Ansel Variant---	0-2	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low--------	0.37	2	5	2-5
	2-8	15-20	1.35-1.50	2.0-6.0	0.06-0.08	6.6-7.3	<2	Low--------	0.17			
	8-22	28-33	1.25-1.40	0.6-2.0	0.10-0.13	6.6-7.3	<2	Moderate	0.28			
	22-30	22-27	1.25-1.40	0.6-2.0	0.05-0.07	6.6-7.3	<2	Moderate	0.10			
	30	---	---	---	---	---	---	-----------	----			
107*:												
Ansel-----------	0-4	10-20	1.25-1.35	2.0-6.0	0.12-0.14	6.1-7.8	<2	Low--------	0.24	5	3	2-4
	4-21	20-35	1.25-1.40	0.6-2.0	0.17-0.19	6.1-7.8	<2	Moderate	0.32			
	21-60	10-20	1.30-1.45	2.0-6.0	0.06-0.08	6.1-7.8	<2	Low--------	0.20			
Rock outcrop.												
108*:												
Apron-----------	0-4	5-18	1.25-1.35	2.0-6.0	0.12-0.14	7.4-8.4	<2	Low--------	0.28	5	3	.5-1
	4-60	5-18	1.35-1.45	2.0-6.0	0.12-0.14	7.9-9.0	<2	Low--------	0.32			
Lostwells--------	0-5	20-27	1.15-1.25	0.6-2.0	0.17-0.19	7.4-9.0	<2	Low--------	0.37	5	4L	<1
	5-60	20-30	1.25-1.40	0.6-2.0	0.13-0.16	7.9-9.0	<4	Moderate	0.32			
109*:												
Apron-----------	0-8	0-10	1.35-1.45	2.0-6.0	0.06-0.08	7.4-8.4	<2	Low--------	0.20	5	2	.5-1
	8-60	5-18	1.35-1.45	2.0-6.0	0.12-0.14	7.9-9.0	<2	Low--------	0.32			
Wallson---------	0-3	5-12	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low--------	0.28	5	3	.5-.8
	3-22	10-18	1.35-1.45	2.0-6.0	0.12-0.14	6.6-8.4	2-4	Low--------	0.24			
	22-60	5-12	1.35-1.45	2.0-6.0	0.11-0.13	7.4-9.0	2-4	Low--------	0.28			
Worland---------	0-5	4-12	1.35-1.45	2.0-6.0	0.06-0.08	7.4-9.0	<2	Low--------	0.17	2	2	<1
	5-25	10-18	1.35-1.50	2.0-6.0	0.11-0.13	7.9-9.0	<4	Low--------	0.32			
	25	---	---	---	---	---	---	-----------	----			
110*:												
Aquic Cryofluvents---	0-2	---	---	---	---	5.6-6.5	<2	-----------	----	5	---	1-2
	2-60	---	---	---	---	6.1-6.5	<2	-----------	----			
Ansel-----------	0-7	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.1-7.8	<2	Low--------	0.28	5	5	2-4
	7-27	20-35	1.25-1.40	0.6-2.0	0.17-0.19	6.1-7.8	<2	Moderate	0.32			
	27-60	10-20	1.30-1.45	2.0-6.0	0.06-0.08	6.1-7.8	<2	Low--------	0.20			
112*:												
Badland.												

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	Permea-bility	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
112*:												
Birdsley--------	0-2	22-30	1.25-1.35	<0.06	0.14-0.16	>8.4	<4	Moderate	0.32	1	5	<.5
	2-14	20-35	1.35-1.55	<0.06	0.12-0.15	>9.0	<8	Moderate	0.43			
	14	---	---	---	---	---	---	-----------	----			
113*:												
Badland.												
Seaverson-------	0-2	27-35	1.15-1.25	<0.06	0.10-0.12	7.9-9.0	2-8	Moderate	0.49	1	4L	1-2
	2-10	18-35	1.25-1.40	<0.06	0.09-0.11	>8.4	4-16	Moderate	0.49			
	10	---	---	---	---	---	---	-----------	----			
Blazon----------	0-2	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
	2-19	27-35	1.25-1.35	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate	0.43			
	19	---	---	---	---	---	---	-----------	----			
114*:												
Binton----------	0-3	27-35	1.20-1.40	0.06-0.2	0.15-0.17	>8.4	2-8	Moderate	0.32	5	4L	<1
	3-60	18-35	1.40-1.55	0.06-0.2	0.10-0.14	>8.4	2-8	Moderate	0.32			
Youngston-------	0-2	27-35	1.20-1.30	0.2-0.6	0.19-0.21	7.4-8.4	<2	Moderate	0.37	5	4L	<1
	2-60	18-35	1.25-1.35	0.2-0.6	0.19-0.21	7.9-9.0	2-8	Moderate	0.37			
115*:												
Birdsley--------	0-2	22-30	1.25-1.35	<0.06	0.14-0.16	>8.4	<4	Moderate	0.32	1	5	<.5
	2-13	20-35	1.35-1.55	<0.06	0.12-0.15	>9.0	<8	Moderate	0.43			
	13	---	---	---	---	---	---	-----------	----			
Mudray----------	0-2	5-15	1.25-1.45	2.0-6.0	0.11-0.13	>7.8	<4	Low-------	0.28	1	3	<1
	2-12	35-50	1.15-1.25	<0.06	0.14-0.16	>9.0	<4	High------	0.43			
	12-19	27-35	1.20-1.30	0.2-0.6	0.14-0.16	>8.4	<4	Moderate	0.37			
	19	---	---	---	---	---	---	-----------	----			
116*:												
Blackhall-------	0-2	5-15	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.32	1	4L	1-2
	2-11	5-18	1.35-1.45	0.6-2.0	0.12-0.16	7.9-9.0	<2	Low-------	0.37			
	11	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
117*:												
Blackhall-------	0-2	5-15	1.25-1.35	0.6-2.0	0.12-0.16	7.4-8.4	<2	Low-------	0.32	1	3	1-2
	2-17	5-18	1.35-1.45	0.6-2.0	0.12-0.16	7.9-9.0	<2	Low-------	0.37			
	17	---	---	---	---	---	---	-----------	----			
Carmody---------	0-4	10-20	1.25-1.35	0.6-2.0	0.14-0.16	7.9-8.4	<2	Low-------	0.37	3	3	1-2
	4-24	10-18	1.35-1.50	0.6-2.0	0.14-0.16	7.9-9.0	<2	Low-------	0.43			
	24	---	---	---	---	---	---	-----------	----			
118*:												
Blazon----------	0-2	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
	2-19	27-35	1.25-1.35	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate	0.43			
	19	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
Carmody---------	0-5	5-15	1.25-1.35	2.0-6.0	0.06-0.09	7.9-8.4	<2	Low-------	0.15	3	7	1-2
	5-20	10-18	1.35-1.50	0.6-2.0	0.14-0.16	7.9-9.0	<2	Low-------	0.43			
	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
119*:												
Bluerim----------	0-3	5-15	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low--------	0.24	2	3	1-2
	3-12	20-27	1.25-1.35	0.6-2.0	0.14-0.16	6.6-7.8	<2	Low--------	0.37			
	12-36	10-25	1.35-1.45	2.0-6.0	0.11-0.13	7.9-9.0	<4	Low--------	0.20			
	36	---	---	---	---	---	---	-----------	----			
Onason-----------	0-2	8-18	1.25-1.40	2.0-6.0	0.07-0.09	6.6-7.8	<2	Low--------	0.10	1	7	1-2
	2-17	8-18	1.35-1.50	2.0-6.0	0.07-0.11	6.6-7.8	<2	Low--------	0.10			
	17	---	---	---	---	---	<2	-----------	----			
120*:												
Bosler-----------	0-3	10-20	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low--------	0.28	2	3	.5-1
	3-31	20-35	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.37			
	31-60	0-5	1.45-1.55	6.0-20	0.03-0.04	7.9-9.0	<2	Low--------	0.05			
Rock River-------	0-3	8-18	1.25-1.35	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low--------	0.24	5	5	.5-2
	3-13	20-35	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low--------	0.24			
	13-60	15-25	1.35-1.45	0.6-2.0	0.10-0.16	7.9-9.0	<2	Low--------	0.28			
121*:												
Bosler-----------	0-6	10-20	1.25-1.35	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low--------	0.37	2	3	.5-1
	6-13	20-35	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.37			
	13-20	20-30	1.25-1.35	0.6-2.0	0.09-0.12	6.6-7.8	<2	Moderate	0.20			
	20-60	0-5	1.45-1.55	6.0-20	0.03-0.04	7.9-9.0	<2	Low--------	0.05			
Ryan Park--------	0-3	8-15	1.25-1.35	2.0-6.0	0.11-0.13	7.4-7.9	<2	Low--------	0.28	5	3	1-2
	3-12	10-18	1.35-1.45	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low--------	0.32			
	12-60	3-10	1.40-1.50	2.0-6.0	0.07-0.11	7.9-9.0	<2	Low--------	0.24			
122*:												
Bowbac-----------	0-3	5-15	1.25-1.35	0.6-2.0	0.12-0.14	6.6-8.4	<2	Low--------	0.32	2	3	1-2
	3-15	20-35	1.25-1.40	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.37			
	15-26	15-25	1.30-1.50	0.6-2.0	0.12-0.17	7.9-9.0	<2	Low--------	0.37			
	26	---	---	---	---	---	---	-----------	----			
Hiland-----------	0-2	8-18	1.25-1.35	2.0-6.0	0.11-0.13	6.6-8.4	<2	Low--------	0.28	5	3	1-2
	2-16	20-35	1.25-1.35	0.6-2.0	0.14-0.16	6.6-8.4	<2	Moderate	0.37			
	16-60	8-18	1.35-1.45	2.0-6.0	0.11-0.13	7.9-9.0	<4	Low--------	0.32			
123--------------- Brownsto	0-2	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low--------	0.32	1	4L	1-2
	2-9	20-30	1.25-1.40	0.6-2.0	0.16-0.18	7.4-9.0	<2	Low--------	0.32			
	9-60	10-25	1.25-1.45	2.0-6.0	0.06-0.08	7.9-9.0	<4	Low--------	0.10			
124--------------- Brownsto	0-6	20-27	1.15-1.25	0.6-2.0	0.14-0.16	7.4-8.4	<2	Low--------	0.32	5	5	1-2
	6-27	20-30	1.25-1.40	0.6-2.0	0.16-0.18	7.4-9.0	<2	Low--------	0.32			
	27-60	10-25	1.25-1.45	2.0-6.0	0.06-0.08	7.9-9.0	<4	Low--------	0.10			
125*:												
Brownsto, very bouldery--------	0-8	20-30	1.15-1.25	0.6-2.0	0.06-0.09	7.4-8.4	<2	Moderate	0.15	1	8	1-2
	8-24	15-25	1.30-1.40	0.6-2.0	0.04-0.07	7.9-9.0	<2	Low--------	0.02			
	24-60	15-25	1.30-1.40	0.6-2.0	0.04-0.07	7.9-9.0	<2	Low--------	0.02			
Decross Variant-	0-2	15-20	1.25-1.35	2.0-6.0	0.11-0.13	7.9-8.4	<2	Low--------	0.28	5	3	2-4
	2-14	20-25	1.25-1.40	0.6-2.0	0.14-0.16	7.9-9.0	<4	Moderate	0.37			
	14-60	20-25	1.25-1.40	0.6-2.0	0.14-0.16	7.9-9.0	<4	Moderate	0.37			

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	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
125*:												
Brownsto--------	0-4	8-18	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low--------	0.28	1	3	1-2
	4-22	20-30	1.25-1.40	0.6-2.0	0.16-0.18	7.4-9.0	<2	Low--------	0.32			
	22-60	10-25	1.25-1.45	2.0-6.0	0.06-0.08	7.9-9.0	<4	Low--------	0.10			
126-------------- Burnette	0-2	15-27	1.20-1.30	0.6-2.0	0.16-0.18	6.1-7.3	<2	Low--------	0.32	5	5	1-3
	2-18	35-45	1.20-1.30	0.2-0.6	0.19-0.21	6.6-7.8	<2	Moderate	0.32			
	18-60	35-50	1.10-1.20	0.06-0.2	0.14-0.16	7.4-8.4	<2	High-------	0.32			
127*:												
Chittum---------	0-3	20-27	1.20-1.30	0.6-2.0	0.16-0.17	5.6-7.3	<2	Moderate	0.15	1	5	2-3
	3-11	18-35	1.30-1.50	0.6-2.0	0.12-0.14	5.6-7.3	<2	Low--------	0.24			
	11-15	---	---	---	---	---	---	-----------	----			
Bachus----------	0-5	15-25	1.15-1.25	0.6-2.0	0.16-0.18	5.6-6.5	<2	Low--------	0.32	2	5	2-3
	5-24	18-35	1.25-1.35	0.6-2.0	0.16-0.18	5.6-6.5	<2	Moderate	0.37			
	24	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
128*:												
Cific-----------	0-2	10-18	1.25-1.35	2.0-6.0	0.03-0.06	7.4-7.8	<2	Low--------	0.15	2	8	3-5
	2-7	10-18	1.35-1.45	2.0-6.0	0.07-0.10	7.4-7.8	<2	Low--------	0.20			
	7-14	28-35	1.25-1.35	0.6-2.0	0.10-0.15	7.4-8.4	<2	Moderate	0.20			
	14-24	20-27	1.25-1.35	0.6-2.0	0.09-0.13	>7.8	<4	Low--------	0.20			
	24-30	20-27	1.25-1.35	0.6-2.0	0.09-0.12	>9.0	4-8	Low--------	0.20			
	30	---	---	---	---	---	---	-----------	----			
Hoodle----------	0-3	10-15	1.40-1.50	2.0-6.0	0.09-0.11	6.6-7.8	<2	Low--------	0.17	5	6	1-2
	3-13	18-35	1.30-1.40	0.6-2.0	0.08-0.10	7.4-7.8	<2	Moderate	0.10			
	13-60	10-25	1.40-1.50	2.0-6.0	0.06-0.08	7.9-8.4	<2	Low--------	0.10			
129*:												
Clifsand--------	0-7	10-20	1.15-1.25	0.6-2.0	0.13-0.15	7.4-8.4	<2	Low--------	0.20	1	8	.5-1
	7-60	5-18	1.30-1.40	2.0-6.0	0.07-0.09	7.9-9.0	<4	Low--------	0.15			
Persayo---------	0-2	18-27	1.35-1.45	0.2-0.6	0.17-0.19	7.9-9.0	<8	Low--------	0.37	1	4L	.5-1
	2-15	18-35	1.25-1.35	0.2-0.6	0.17-0.19	7.9-9.0	<8	Moderate	0.37			
	15	---	---	---	---	---	---	-----------	----			
130*:												
Cloud Peak------	0-1	15-20	1.15-1.25	0.6-2.0	0.09-0.13	6.1-7.3	<2	Low--------	0.17	1	8	1-3
	1-15	28-35	1.25-1.35	0.6-2.0	0.03-0.05	6.6-7.8	<2	Moderate	0.05			
	15-30	20-27	1.25-1.35	0.6-2.0	0.02-0.05	7.4-8.4	<2	Moderate	0.05			
	30	20-27	---	---	---	---	---	Low--------	0.05			
Farlow----------	0-6	28-35	1.15-1.25	0.6-2.0	0.12-0.14	6.1-8.4	<2	Low--------	0.15	3	8	2-3
	6-55	28-35	1.25-1.35	0.6-2.0	0.03-0.05	7.9-9.0	<2	Low--------	0.05			
	55	---	---	---	---	---	---	Low--------	0.28			
131*:												
Coalmont--------	0-2	15-22	1.30-1.40	0.6-2.0	0.16-0.18	7.4-7.8	<4	Low--------	0.28	2	5	1-2
	2-30	35-50	1.25-1.35	0.06-0.2	0.15-0.20	7.4-8.4	<4	High-------	0.37			
	30	---	---	---	---	---	---	-----------	----			
Milren----------	0-3	15-22	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low--------	0.28	5	5	1-2
	3-23	35-60	1.15-1.30	0.06-0.2	0.14-0.16	6.6-7.8	<2	High-------	0.37			
	23-60	20-30	1.20-1.35	0.2-0.6	0.14-0.16	>7.8	2-4	Moderate	0.37			

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	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
131*:												
Cragosen--------	0-2	10-18	1.15-1.30	0.6-2.0	0.14-0.16	7.4-9.0	<2	Low--------	0.20	1	8	1-2
	2-12	10-18	1.25-1.45	0.6-2.0	0.06-0.08	7.4-9.0	<2	Low--------	0.10			
	12	---	---	---	---	---	---	-----------	----			
132*:												
Conpeak---------	0-2	10-18	1.25-1.35	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low--------	0.32	1	3	1-2
	2-13	10-18	1.30-1.40	0.6-2.0	0.10-0.14	7.9-9.0	<2	Low--------	0.37			
	13	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
Cryluha---------	0-8	5-12	1.25-1.35	2.0-6.0	0.06-0.09	7.9-8.4	<2	Low--------	0.15	2	7	1-2
	8-27	12-18	1.25-1.35	0.6-2.0	0.09-0.13	7.9-8.4	<2	Low--------	0.20			
	27-30	5-12	1.35-1.45	2.0-6.0	0.13-0.15	7.9-9.0	<2	Low--------	0.37			
	30	---	---	---	---	---	---	-----------	----			
133*:												
Countryman------	0-2	5-15	1.25-1.35	2.0-6.0	0.13-0.15	7.4-8.4	4-8	Low--------	0.32	5	3	2-4
	2-25	5-18	1.25-1.40	0.6-2.0	0.15-0.17	7.4-8.4	2-8	Low--------	0.43			
	25-60	10-18	1.25-1.40	0.6-2.0	0.11-0.15	7.4-8.4	2-8	Low--------	0.37			
Absher----------	0-3	20-27	1.15-1.25	0.6-2.0	0.12-0.14	6.6-8.4	4-8	Moderate	0.49	5	5	1-2
	3-18	35-45	1.15-1.25	<0.06	0.09-0.11	>8.4	8-16	High------	0.55			
	18-60	30-40	1.25-1.35	<0.06	0.09-0.11	>8.4	>16	High------	0.49			
134--------------	0-4	12-18	1.25-1.35	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low--------	0.32	5	3	2-3
Coutis	4-60	12-18	1.25-1.35	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low--------	0.37			
135*:												
Crago-----------	0-3	15-27	1.15-1.35	0.6-2.0	0.10-0.12	7.4-8.4	<2	Low--------	0.20	3	4L	1-3
	3-60	18-30	1.30-1.55	0.6-2.0	0.03-0.04	7.4-9.0	<2	Low--------	0.10			
Pensore---------	0-3	15-25	1.20-1.30	0.6-2.0	0.09-0.11	7.9-8.4	<2	Low--------	0.15	1	8	1-2
	3-13	15-25	1.20-1.30	0.6-2.0	0.06-0.08	7.9-9.0	<2	Low--------	0.10			
	13	---	---	---	---	---	---	-----------	----			
136*:												
Cragosen--------	0-6	10-18	1.15-1.30	0.6-2.0	0.14-0.16	7.4-9.0	<2	Low--------	0.20	1	8	1-2
	6-12	10-18	1.25-1.45	0.6-2.0	0.06-0.08	7.4-9.0	<2	Low--------	0.10			
	12	---	---	---	---	---	---	-----------	----			
Carmody---------	0-1	5-15	1.25-1.35	2.0-6.0	0.06-0.09	7.9-8.4	<2	Low--------	0.15	3	7	1-2
	1-22	10-18	1.35-1.50	0.6-2.0	0.14-0.16	7.9-9.0	<2	Low--------	0.43			
	22	---	---	---	---	---	---	-----------	----			
Blazon----------	0-3	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
	3-15	27-35	1.25-1.35	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate	0.43			
	15	---	---	---	---	---	---	-----------	----			
137*:												
Cragosen--------	0-4	10-18	1.15-1.30	0.6-2.0	0.14-0.16	7.4-9.0	<2	Low--------	0.20	1	8	1-2
	4-19	10-18	1.25-1.45	0.6-2.0	0.06-0.08	7.4-9.0	<2	Low--------	0.10			
	19	---	---	---	---	---	---	-----------	----			
Rock outcrop.												

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	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
137*:												
Carmody---------	0-1	10-20	1.25-1.35	0.6-2.0	0.14-0.16	7.9-8.4	<2	Low--------	0.37	3	3	1-2
	1-35	10-18	1.35-1.50	0.6-2.0	0.14-0.16	7.9-9.0	<2	Low--------	0.43			
	35	---	---	---	---	---	---	-----------	----			
138*:												
Cragosen--------	0-6	10-18	1.15-1.30	0.6-2.0	0.14-0.16	7.4-9.0	<2	Low--------	0.20	1	8	1-2
	6-10	10-18	1.25-1.45	0.6-2.0	0.06-0.08	7.4-9.0	<2	Low--------	0.10			
	10	---	---	---	---	---	---	-----------	----			
Bosler----------	0-2	10-20	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low--------	0.28	2	3	.5-1
	2-20	20-35	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.37			
	20-24	0-5	1.45-1.55	6.0-20	0.03-0.04	7.9-9.0	<2	Low--------	0.05			
	24-60	0-5	1.45-1.55	6.0-20	0.03-0.04	7.9-9.0	<2	Low--------	0.05			
Cushool---------	0-3	5-12	1.25-1.35	2.0-6.0	0.11-0.13	6.6-8.4	<2	Low--------	0.24	3	3	1-2
	3-16	20-35	1.25-1.35	0.6-2.0	0.14-0.16	7.4-9.0	<2	Moderate	0.28			
	16-36	15-25	1.30-1.40	0.6-2.0	0.13-0.16	7.9-9.0	2-4	Low--------	0.28			
	36	---	---	---	---	---	---	-----------	----			
139*:												
Cryluha---------	0-5	5-12	1.25-1.35	2.0-6.0	0.06-0.09	7.9-8.4	<2	Low--------	0.15	2	7	1-2
	5-13	12-18	1.25-1.35	0.6-2.0	0.09-0.13	7.9-8.4	<2	Low--------	0.20			
	13-19	5-12	1.35-1.45	2.0-6.0	0.07-0.11	7.9-9.0	<2	Low--------	0.20			
	19-27	12-18	1.25-1.35	0.6-2.0	0.09-0.13	7.9-9.0	<2	Low--------	0.20			
	27	---	---	---	---	---	---	-----------	----			
Conpeak---------	0-2	10-18	1.25-1.35	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low--------	0.32	1	3	1-2
	2-14	10-18	1.30-1.40	0.6-2.0	0.10-0.14	7.9-9.0	<2	Low--------	0.37			
	14	---	---	---	---	---	---	-----------	----			
140*:												
Cushool---------	0-3	5-12	1.25-1.35	2.0-6.0	0.11-0.13	6.6-8.4	<2	Low--------	0.24	3	3	1-2
	3-17	20-35	1.25-1.35	0.6-2.0	0.14-0.16	7.4-9.0	<2	Moderate	0.28			
	17-35	15-25	1.30-1.40	0.6-2.0	0.13-0.16	7.9-9.0	2-4	Low--------	0.28			
	35	---	---	---	---	---	---	-----------	----			
Rock River------	0-3	8-18	1.25-1.35	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low--------	0.28	5	5	.5-2
	3-18	20-35	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low--------	0.24			
	18-34	20-30	1.30-1.40	0.6-2.0	0.14-0.18	7.9-9.0	<2	Low--------	0.24			
	34-60	15-25	1.35-1.45	0.6-2.0	0.10-0.16	7.9-9.0	<2	Low--------	0.28			
141*:												
Dahlquist-------	0-3	12-25	1.15-1.25	0.6-2.0	0.05-0.10	6.6-7.8	<2	Low--------	0.10	1	8	1-3
	3-14	20-30	1.25-1.35	0.6-2.0	0.04-0.08	6.6-7.8	<2	Moderate	0.10			
	14-60	7-12	1.35-1.45	2.0-6.0	0.01-0.03	7.9-9.0	<2	Low--------	0.05			
Rock River------	0-4	8-18	1.25-1.35	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low--------	0.24	5	5	.5-2
	4-21	20-35	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low--------	0.24			
	21-60	15-25	1.35-1.45	0.6-2.0	0.10-0.16	7.9-9.0	<2	Low--------	0.28			
142*:												
Diamondville----	0-2	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low--------	0.37	2	5	.5-1
	2-13	20-35	1.25-1.35	0.2-0.6	0.16-0.18	6.6-8.4	<2	Moderate	0.49			
	13-24	10-25	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low--------	0.49			
	24	---	---	---	---	---	---	-----------	----			

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
142*:												
Forelle	0-6	15-25	1.30-1.35	0.6-2.0	0.16-0.18	6.6-7.8	<2	Moderate	0.37	5	5	1-2
	6-18	28-35	1.25-1.30	0.2-0.6	0.19-0.21	7.4-8.4	<2	Moderate	0.37			
	18-60	20-30	1.30-1.35	0.6-2.0	0.16-0.18	7.4-9.0	<2	Moderate	0.37			
143*:												
Effington	0-2	20-27	1.15-1.25	0.6-2.0	0.08-0.10	>7.8	1-8	Moderate	0.37	5	6	<1
	2-5	35-40	1.25-1.35	0.2-0.6	0.09-0.11	>9.0	2-16	High	0.43			
	5-11	40-55	1.15-1.25	<0.06	0.07-0.09	>9.0	2-16	High	0.43			
	11-60	28-40	1.25-1.35	0.2-0.6	0.09-0.11	>8.4	8-16	Moderate	0.43			
Mudray	0-2	28-35	1.10-1.20	0.2-0.6	0.19-0.21	>7.8	<4	Moderate	0.37	5	4L	<1
	2-14	40-50	1.15-1.25	<0.06	0.14-0.16	>9.0	<4	High	0.43			
	14	---	---	---	---	---	---	---	---			
144*:												
Emblem	0-2	5-15	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low	0.28	2	3	<1
	2-20	20-27	1.25-1.35	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low	0.37			
	20-30	0-10	1.35-1.45	>6.0	0.04-0.06	7.9-9.0	<4	Low	0.02			
	30-60	0-10	1.35-1.45	>6.0	0.02-0.04	7.9-9.0	<4	Low	0.02			
Clifsand	0-4	10-20	1.15-1.25	0.6-2.0	0.10-0.12	7.4-8.4	<2	Low	0.15	1	8	.5-1
	4-60	5-18	1.30-1.40	2.0-6.0	0.07-0.09	7.9-9.0	<4	Low	0.15			
Rairdent	0-2	10-25	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	2-4	Low	0.32	5	4L	.5-1
	2-7	10-25	1.25-1.40	0.6-2.0	0.12-0.17	7.4-8.4	2-8	Low	0.37			
	7-60	18-33	1.25-1.40	0.6-2.0	0.10-0.14	7.4-8.4	2-8	Low	0.37			
145 Fluvaquents	0-60	---	---	---	---	---	>8	---	---	5	---	.5-1
146*:												
Fluvaquents	0-60	---	---	---	---	---	>8	---	---	5	---	.5-1
Youngston	0-3	15-25	1.25-1.35	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low	0.32	5	4L	<1
	3-60	18-35	1.25-1.35	0.2-0.6	0.19-0.21	7.9-9.0	2-8	Moderate	0.37			
147*:												
Forelle	0-2	15-25	1.30-1.35	0.6-2.0	0.16-0.18	6.6-7.8	<2	Moderate	0.37	5	5	1-2
	2-14	28-35	1.25-1.30	0.2-0.6	0.19-0.21	7.4-8.4	<2	Moderate	0.37			
	14-31	20-30	1.30-1.35	0.6-2.0	0.14-0.16	7.9-9.0	<2	Moderate	0.32			
	31-60	20-30	1.30-1.35	0.6-2.0	0.16-0.18	7.4-9.0	<2	Moderate	0.37			
Luhon	0-7	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
	7-60	18-30	1.25-1.35	0.6-2.0	0.15-0.20	7.9-9.0	<4	Low	0.32			
148*:												
Forelle	0-2	15-25	1.30-1.35	0.6-2.0	0.16-0.18	6.6-7.8	<2	Moderate	0.37	5	5	1-2
	2-16	28-35	1.25-1.30	0.2-0.6	0.19-0.21	7.4-8.4	<2	Moderate	0.37			
	16-24	20-30	1.30-1.35	0.6-2.0	0.16-0.18	7.4-9.0	<2	Moderate	0.37			
	24-60	10-18	1.40-1.45	2.0-6.0	0.11-0.13	7.4-9.0	<2	Low	0.24			
Poposhia	0-3	15-27	1.15-1.25	0.6-2.0	0.17-0.20	7.4-9.0	<4	Moderate	0.32	5	4L	1-2
	3-15	18-35	1.25-1.35	0.6-2.0	0.17-0.20	7.4-9.0	<4	Moderate	0.37			
	15-60	20-35	1.25-1.35	0.6-2.0	0.13-0.15	7.9-9.0	<8	Moderate	0.37			
149*:												
Fornor	0-2	12-20	1.15-1.25	0.6-2.0	0.08-0.10	6.6-7.8	<2	Low	0.10	1	8	2-5
	2-13	18-35	1.25-1.35	0.6-2.0	0.08-0.10	6.6-7.8	<2	Moderate	0.10			
	13-25	18-30	1.25-1.35	0.6-2.0	0.05-0.08	7.4-8.4	<2	Moderate	0.05			
	25-60	18-27	1.30-1.40	0.6-2.0	0.08-0.10	6.6-8.4	<2	Moderate	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 K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
149*:												
Decross	0-8	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Moderate	0.32	5	5	2-3
	8-21	18-35	1.25-1.35	0.6-2.0	0.19-0.21	6.6-7.8	<2	Moderate	0.37			
	21-60	15-30	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low	0.43			
150*:												
Frisite	0-3	10-20	1.10-1.20	2.0-6.0	0.15-0.17	7.4-8.4	<2	Low	0.32	5	5	<1
	3-23	25-35	1.25-1.40	0.6-2.0	0.17-0.20	7.9-9.0	<2	Moderate	0.37			
	23-60	22-33	1.30-1.45	0.6-2.0	0.15-0.20	7.9-9.0	2-4	Moderate	0.37			
Emblem	0-3	20-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low	0.32	2	6	<1
	3-21	20-27	1.25-1.35	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low	0.37			
	21-60	0-10	1.35-1.45	>6.0	0.02-0.04	7.9-9.0	<4	Low	0.02			
151*:												
Frisite	0-3	10-20	1.25-1.35	2.0-6.0	0.12-0.14	7.4-8.4	<2	Low	0.32	5	3	<1
	3-16	25-35	1.25-1.40	0.6-2.0	0.17-0.20	7.9-9.0	<2	Moderate	0.37			
	16-60	22-33	1.30-1.45	0.6-2.0	0.15-0.20	7.9-9.0	2-4	Moderate	0.37			
Youngston	0-4	15-25	1.25-1.35	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low	0.32	5	4L	<1
	4-60	18-35	1.25-1.35	0.2-0.6	0.19-0.21	7.9-9.0	2-8	Moderate	0.37			
152*:												
Gelkie Variant	0-2	20-25	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Moderate	0.37	3	6	1-3
	2-9	27-35	1.25-1.40	0.2-0.6	0.16-0.18	7.4-8.4	<2	Moderate	0.43			
	9-42	27-35	1.20-1.40	0.2-0.6	0.19-0.21	7.9-9.0	<2	Moderate	0.43			
	42	---	---	---	---	---	---	----------	----			
Barrett Variant	0-4	15-20	1.15-1.25	0.6-2.0	0.07-0.10	7.9-8.4	2-4	Low	0.24	1	8	1-2
	4-11	20-27	1.25-1.40	0.6-2.0	0.07-0.11	7.9-8.4	2-4	Low	0.20			
	11-18	28-35	1.10-1.30	0.6-2.0	0.08-0.14	7.9-8.4	2-4	Moderate	0.28			
	18	---	---	---	---	---	---	----------	----			
153*:												
Granile	0-7	5-10	1.30-1.40	2.0-6.0	0.09-0.11	5.6-6.0	<2	Low	0.17	5	6	1-2
	7-46	18-28	1.30-1.40	0.6-2.0	0.08-0.10	5.6-6.5	<2	Moderate	0.10			
	46-60	10-23	1.40-1.50	2.0-6.0	0.06-0.08	5.6-6.5	<2	Low	0.10			
Ansel	0-10	10-20	1.25-1.35	2.0-6.0	0.12-0.14	6.1-7.8	<2	Low	0.24	5	3	2-4
	10-60	20-35	1.25-1.40	0.6-2.0	0.17-0.19	6.1-7.8	<2	Moderate	0.32			
154*:												
Griffy	0-6	5-15	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low	0.28	5	3	.5-1
	6-13	20-35	1.25-1.40	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.20			
	13-60	10-20	1.40-1.60	2.0-6.0	0.07-0.12	7.9-9.0	<4	Low	0.24			
Saddle	0-2	10-15	1.25-1.35	2.0-6.0	0.11-0.13	6.6-8.4	<2	Low	0.24	2	3	<1
	2-13	20-35	1.25-1.40	0.6-2.0	0.14-0.16	6.6-8.4	<2	Moderate	0.32			
	13-33	12-25	1.30-1.50	0.6-2.0	0.12-0.14	7.9-9.0	<4	Low	0.32			
	33	---	---	---	---	---	---	----------	----			
Wallson	0-4	5-10	1.35-1.45	6.0-20	0.06-0.11	6.6-8.4	<2	Low	0.17	5	2	.3-.5
	4-21	10-18	1.35-1.45	2.0-6.0	0.12-0.14	6.6-8.4	2-4	Low	0.24			
	21-60	5-12	1.35-1.45	2.0-6.0	0.11-0.13	7.4-9.0	2-4	Low	0.28			
155*:												
Haplaquolls	0-60	---	---	---	---	---	---	----------	----	3	---	1-2

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	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
155*:												
Aquic Ustifluvents	0-60	---	---	---	---	---	<2	-----------	----	5	---	.5-1
156*:												
Haverdad	0-10	13-27	1.05-1.25	0.6-2.0	0.16-0.18	7.4-9.0	0-8	Low	0.37	5	4L	1-2
	10-60	20-30	1.25-1.40	0.6-2.0	0.16-0.18	7.9-9.0	0-8	Low	0.37			
Clarkelen	0-2	8-15	1.35-1.45	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low	0.24	5	3	1-2
	2-5	10-20	1.25-1.35	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low	0.32			
	5-60	8-18	1.25-1.45	2.0-6.0	0.10-0.13	7.4-8.4	<2	Low	0.28			
157*:												
Havre	0-3	15-25	1.30-1.40	0.6-2.0	0.16-0.18	7.4-7.8	<2	Low	0.37	5	4L	1-2
	3-60	20-35	1.20-1.30	0.6-2.0	0.14-0.20	7.9-8.4	<2	Low	0.32			
Absher	0-3	20-27	1.15-1.25	0.6-2.0	0.12-0.14	6.6-8.4	4-8	Moderate	0.49	5	5	1-2
	3-24	35-45	1.15-1.25	<0.06	0.09-0.11	>8.4	8-16	High	0.55			
	24-60	28-35	1.15-1.25	<0.06	0.09-0.11	>8.4	>16	Moderate	0.49			
Forelle	0-8	15-25	1.30-1.35	0.6-2.0	0.16-0.18	6.6-7.8	<2	Moderate	0.37	5	5	1-2
	8-24	28-35	1.25-1.30	0.2-0.6	0.19-0.21	7.4-8.4	<2	Moderate	0.37			
	24-60	20-30	1.30-1.35	0.6-2.0	0.16-0.18	7.4-9.0	<2	Moderate	0.37			
158*:												
Havre	0-4	15-25	1.30-1.40	0.6-2.0	0.16-0.18	7.4-7.8	<2	Low	0.37	5	4L	1-2
	4-60	20-35	1.20-1.30	0.6-2.0	0.14-0.20	7.9-8.4	<2	Low	0.32			
Forelle	0-5	15-25	1.30-1.35	0.6-2.0	0.16-0.18	6.6-7.8	<2	Moderate	0.37	5	5	1-2
	5-19	28-35	1.25-1.30	0.2-0.6	0.19-0.21	7.4-8.4	<2	Moderate	0.37			
	19-60	10-18	1.40-1.45	2.0-6.0	0.11-0.13	7.4-9.0	<2	Low	0.24			
Glendive	0-4	10-15	1.40-1.50	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low	0.28	5	3	1-2
	4-60	9-18	1.30-1.50	2.0-6.0	0.07-0.15	7.4-9.0	<2	Low	0.28			
159*:												
Havre	0-2	15-25	1.30-1.40	0.6-2.0	0.16-0.18	7.4-7.8	<2	Low	0.37	5	4L	1-2
	2-60	20-35	1.20-1.30	0.6-2.0	0.14-0.20	7.9-8.4	<2	Low	0.32			
Havre Variant	0-1	10-20	1.15-1.25	0.6-2.0	0.08-0.10	7.9-9.0	8-16	Low	0.32	5	5	1-2
	1-60	18-30	1.35-1.50	0.6-2.0	0.12-0.14	7.9-9.0	2-8	Moderate	0.32			
Elkol	0-2	40-45	1.05-1.15	0.06-0.2	0.08-0.10	>8.4	2-16	High	0.32	5	4L	<1
	2-60	35-45	1.20-1.30	0.06-0.2	0.08-0.10	>8.4	2-16	High	0.32			
160*:												
Highpoint	0-1	27-35	1.10-1.20	0.6-2.0	0.14-0.16	6.1-7.8	<2	Moderate	0.15	1	8	1-4
	1-11	27-35	1.20-1.40	0.6-2.0	0.05-0.09	6.1-7.8	<2	Moderate	0.10			
	11	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
161 Hiland	0-3	8-18	1.25-1.35	2.0-6.0	0.11-0.13	6.6-8.4	<2	Low	0.28	5	3	1-2
	3-15	20-35	1.25-1.35	0.6-2.0	0.14-0.16	6.6-8.4	<2	Moderate	0.37			
	15-33	8-18	1.35-1.45	2.0-6.0	0.11-0.13	7.9-9.0	<4	Low	0.32			
	33-60	3-8	1.45-1.55	6.0-20	0.06-0.08	7.9-9.0	<4	Low	0.24			

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	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
162*:												
Hoodle----------	0-3	10-15	1.40-1.50	2.0-6.0	0.09-0.11	6.6-7.8	<2	Low--------	0.17	5	6	1-2
	3-16	18-35	1.30-1.40	0.6-2.0	0.08-0.10	7.4-7.8	<2	Moderate	0.10			
	16-60	10-25	1.40-1.50	2.0-6.0	0.06-0.08	7.9-8.4	<2	Low--------	0.10			
Rock outcrop.												
163*:												
Hoodle----------	0-3	15-25	1.30-1.40	0.6-2.0	0.13-0.15	6.6-7.8	<2	Moderate	0.24	5	8	1-2
	3-13	18-35	1.30-1.40	0.6-2.0	0.08-0.10	7.4-7.8	<2	Moderate	0.10			
	13-60	10-25	1.40-1.50	2.0-6.0	0.06-0.08	7.9-8.4	<2	Low--------	0.10			
Gelkie----------	0-7	15-20	1.25-1.35	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low--------	0.37	5	4	2-3
	7-29	18-35	1.30-1.40	0.6-2.0	0.14-0.16	6.6-7.8	<2	Moderate	0.37			
	29-60	12-18	1.40-1.50	2.0-6.0	0.11-0.13	7.9-9.0	<2	Low--------	0.28			
164*:												
Iceslew---------	0-2	12-20	1.10-1.30	0.6-2.0	0.15-0.17	7.4-9.0	2-8	Low--------	0.37	5	8	2-5
	2-12	12-20	1.25-1.45	0.6-2.0	0.16-0.18	7.4-9.0	2-8	Low--------	0.32			
	12-32	18-27	1.25-1.40	0.6-2.0	0.16-0.18	7.4-9.0	<4	Low--------	0.28			
	32-60	10-30	1.20-1.40	0.6-2.0	0.12-0.20	7.4-9.0	<4	Moderate	0.32			
Countryman------	0-2	10-20	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	4-8	Low--------	0.37	5	4L	2-4
	2-15	10-18	1.25-1.40	0.6-2.0	0.15-0.17	7.4-8.4	2-8	Low--------	0.43			
	15-21	10-18	1.35-1.50	2.0-6.0	0.11-0.13	7.4-8.4	2-8	Low--------	0.32			
	21-60	10-18	1.25-1.40	0.6-2.0	0.11-0.15	7.4-8.4	2-8	Low--------	0.37			
165*:												
Inchau----------	0-1	15-27	1.15-1.25	0.6-2.0	0.16-0.18	5.6-7.3	<2	Low--------	0.32	2	5	2-5
	1-28	20-35	1.25-1.40	0.6-2.0	0.18-0.20	5.6-7.3	<2	Moderate	0.37			
	28	---	---	---	---	---	---	-----------	----			
Youga-----------	0-2	15-27	1.35-1.45	0.6-2.0	0.06-0.18	6.1-7.8	<2	Low--------	0.24	5	5	2-5
	2-25	20-35	1.35-1.45	0.6-2.0	0.12-0.18	6.1-7.8	<2	Moderate	0.20			
	25-60	15-30	1.35-1.45	0.6-2.0	0.13-0.15	6.1-7.8	<2	Low--------	0.20			
166*:												
Irigul----------	0-9	18-27	1.15-1.25	0.6-2.0	0.09-0.11	6.6-7.8	<2	Low--------	0.10	1	8	1-3
	9-15	18-25	1.25-1.40	0.6-2.0	0.05-0.10	6.6-7.8	<2	Low--------	0.15			
	15	---	---	---	---	---	---	-----------	----			
Midelight-------	0-5	10-18	1.15-1.25	0.6-2.0	0.10-0.14	6.6-7.8	<2	Low--------	0.05	1	8	2-3
	5-41	18-27	1.25-1.40	0.6-2.0	0.05-0.07	7.9-9.0	<2	Low--------	0.10			
	41	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
167*:												
Irigul----------	0-7	18-27	1.15-1.25	0.6-2.0	0.05-0.07	6.6-7.8	<2	Low--------	0.15	1	8	1-3
	7-11	18-25	1.25-1.40	0.6-2.0	0.05-0.10	6.6-7.8	<2	Low--------	0.15			
	11	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
168*:												
Lander----------	0-13	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low--------	0.32	5	4L	2-3
	13-60	18-35	1.25-1.35	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low--------	0.37			

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	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
168*:												
Lander Variant--	0-15	15-22	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.32	5	4L	2-5
	15-60	3-10	1.30-1.50	6.0-20	0.04-0.06	7.4-8.4	<4	Low-------	0.10			
169*:												
Luhon-----------	0-4	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
	4-60	18-30	1.25-1.35	0.6-2.0	0.15-0.20	7.9-9.0	<4	Low-------	0.32			
Rock River------	0-3	8-18	1.25-1.35	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low-------	0.28	5	5	.5-2
	3-20	20-35	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low-------	0.24			
	20-60	15-25	1.35-1.45	0.6-2.0	0.10-0.16	7.9-9.0	<2	Low-------	0.28			
Forelle---------	0-6	15-25	1.30-1.35	0.6-2.0	0.16-0.18	6.6-7.8	<2	Moderate	0.37	5	5	1-2
	6-18	28-35	1.25-1.30	0.2-0.6	0.19-0.21	7.4-8.4	<2	Moderate	0.37			
	18-60	20-30	1.30-1.35	0.6-2.0	0.16-0.18	7.4-9.0	<2	Moderate	0.37			
170-------------- Lupinto	0-2	15-25	1.20-1.30	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low-------	0.32	4	5	1-2
	2-9	20-30	1.30-1.40	0.6-2.0	0.11-0.17	7.4-8.4	<2	Low-------	0.28			
	9-23	15-25	1.40-1.50	0.6-2.0	0.10-0.13	7.9-8.4	<2	Low-------	0.24			
	23-60	20-35	1.40-1.50	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low-------	0.10			
171*:												
Lymanson--------	0-3	15-25	1.15-1.25	0.6-2.0	0.12-0.14	7.4-8.4	<2	Low-------	0.24	2	8	1-2
	3-13	20-35	1.25-1.40	0.6-2.0	0.11-0.13	7.4-8.4	<2	Moderate	0.24			
	13-36	15-25	1.25-1.40	0.6-2.0	0.15-0.18	7.9-9.0	<2	Low-------	0.20			
	36	---	---	---	---	---	---	----------	----			
Abston----------	0-3	10-18	1.25-1.35	2.0-6.0	0.07-0.09	6.6-7.8	<2	Low-------	0.15	2	8	<.5
	3-14	35-45	1.25-1.35	0.06-0.2	0.15-0.17	>8.4	<2	Moderate	0.28			
	14-28	20-30	1.25-1.35	0.6-2.0	0.14-0.16	>7.8	<2	Low-------	0.43			
	28	---	---	---	---	---	---	----------	----			
Gelkie----------	0-4	12-18	1.40-1.50	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low-------	0.32	5	3	2-3
	4-30	18-35	1.30-1.40	0.6-2.0	0.14-0.16	6.6-7.8	<2	Moderate	0.37			
	30-60	18-28	1.30-1.40	0.6-2.0	0.11-0.13	7.9-9.0	<2	Moderate	0.15			
172*:												
Lymanson--------	0-2	10-20	1.15-1.25	2.0-6.0	0.15-0.17	7.4-8.4	<2	Low-------	0.28	2	3	1-2
	2-23	20-30	1.25-1.40	0.6-2.0	0.11-0.13	7.4-8.4	<2	Moderate	0.24			
	23-35	15-25	1.25-1.40	0.6-2.0	0.15-0.18	7.9-9.0	<2	Low-------	0.20			
	30	---	---	---	---	---	---	----------	----			
Conpeak---------	0-2	10-18	1.25-1.35	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low-------	0.32	1	3	1-2
	2-15	10-18	1.30-1.40	0.6-2.0	0.10-0.14	7.9-9.0	<2	Low-------	0.37			
	15	---	---	---	---	---	---	----------	----			
173*:												
Midelight Variant--------	0-6	20-27	1.15-1.25	0.6-2.0	0.12-0.15	6.6-8.4	<2	Moderate	0.17	1	8	2-5
	6-13	20-27	1.25-1.40	0.6-2.0	0.07-0.11	7.4-9.0	<2	Moderate	0.10			
	13-22	20-30	1.25-1.40	0.6-2.0	0.06-0.10	7.4-9.0	<4	Moderate	0.10			
	22	---	---	---	---	---	---	----------	----			
Winada Variant--	0-2	15-25	1.15-1.25	0.6-2.0	0.09-0.13	6.6-8.4	<2	Low-------	0.15	2	8	2-3
	2-8	20-30	1.25-1.35	0.6-2.0	0.06-0.10	6.6-8.4	<2	Moderate	0.10			
	8-26	20-30	1.25-1.35	0.6-2.0	0.06-0.10	7.9-9.0	<2	Moderate	0.10			
	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	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
173*:												
Starman----------	0-3	15-25	1.15-1.25	0.6-2.0	0.09-0.13	7.4-8.4	<2	Low--------	0.10	1	8	1-2
	3-12	18-27	1.25-1.35	0.6-2.0	0.09-0.13	7.9-9.0	<2	Low--------	0.10			
	12	---	---	---	---	---	---	-----------	----			
174*:												
Milren-----------	0-3	5-15	1.25-1.35	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low--------	0.32	5	3	1-2
	3-11	40-60	1.25-1.35	0.06-0.2	0.15-0.17	7.4-8.4	<2	High-------	0.37			
	11-16	27-35	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.37			
	16-23	20-27	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Moderate	0.37			
	23-56	5-15	1.35-1.45	0.6-2.0	0.13-0.15	7.9-9.0	2-4	Low--------	0.37			
	56-60	3-8	1.35-1.45	2.0-6.0	0.08-0.10	7.9-9.0	2-4	Low--------	0.37			
Bosler-----------	0-2	10-20	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low--------	0.28	2	3	.5-1
	2-20	20-35	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.37			
	20-60	0-5	1.45-1.55	6.0-20	0.03-0.04	7.9-9.0	<2	Low--------	0.05			
Rock River-------	0-3	8-18	1.25-1.35	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low--------	0.24	5	5	.5-2
	3-15	20-35	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low--------	0.24			
	15-34	20-30	1.30-1.40	0.6-2.0	0.14-0.18	7.9-9.0	<2	Low--------	0.24			
	34-60	15-25	1.35-1.45	0.6-2.0	0.10-0.16	7.9-9.0	<2	Low--------	0.28			
175*:												
Milvar-----------	0-3	18-25	1.15-1.25	0.6-2.0	0.11-0.14	7.4-8.4	<2	Low--------	0.28	1	8	1-2
	3-16	35-60	1.25-1.35	0.06-0.2	0.10-0.12	7.4-8.4	<2	High-------	0.20			
	16-26	18-27	1.25-1.35	0.6-2.0	0.07-0.11	7.4-8.4	<2	Low--------	0.15			
	26-60	3-10	1.45-1.55	2.0-6.0	0.03-0.05	7.4-8.4	<2	Low--------	0.10			
Milren-----------	0-2	5-15	1.25-1.35	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low--------	0.32	5	3	1-2
	2-16	40-60	1.25-1.35	0.06-0.2	0.15-0.17	7.4-8.4	<2	High-------	0.37			
	16-27	20-27	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Moderate	0.37			
	27-60	5-15	1.35-1.45	0.6-2.0	0.13-0.15	7.9-9.0	2-4	Low--------	0.37			
176*:												
Mosroc-----------	0-2	13-20	1.25-1.35	0.6-2.0	0.06-0.10	6.6-8.4	<2	Low--------	0.10	1	8	2-5
	2-12	20-30	1.25-1.35	0.6-2.0	0.07-0.10	6.6-8.4	<2	Moderate	0.17			
	12-18	16-27	1.30-1.40	0.6-2.0	0.04-0.07	6.6-8.4	<2	Low--------	0.20			
	18-22	---	---	---	---	---	---	-----------	----			
Lymanson---------	0-4	15-25	1.15-1.25	0.6-2.0	0.12-0.14	7.4-8.4	<2	Low--------	0.24	2	8	1-2
	4-24	20-35	1.25-1.40	0.6-2.0	0.11-0.13	7.4-8.4	<2	Moderate	0.24			
	24	---	---	---	---	---	---	-----------	----			
177*:												
Oceanet----------	0-4	5-15	1.25-1.35	2.0-6.0	0.11-0.14	7.9-9.0	<2	Low--------	0.32	1	3	.5-1
	4-18	5-15	1.35-1.50	2.0-6.0	0.11-0.14	7.9-9.0	<2	Low--------	0.37			
	18	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
Persayo----------	0-2	18-27	1.35-1.45	0.2-0.6	0.17-0.19	7.9-9.0	<8	Low--------	0.37	1	4L	.5-1
	2-13	18-35	1.25-1.35	0.2-0.6	0.17-0.19	7.9-9.0	<8	Moderate	0.37			
	13	---	---	---	---	---	---	-----------	----			
178*:												
Orpha------------	0-5	3-8	1.35-1.45	>20	0.05-0.06	6.6-7.8	<2	Low--------	0.17	5	1	1-2
	5-60	3-8	1.45-1.60	>20	0.06-0.07	6.6-8.4	<2	Low--------	0.28			

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	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
178*:												
Vonalee---------	0-4	0-10	1.35-1.45	6.0-20	0.07-0.09	6.6-7.8	<2	Low--------	0.24	5	2	1-2
	4-13	5-15	1.35-1.45	2.0-6.0	0.12-0.14	6.6-8.4	<2	Low--------	0.32			
	13-60	0-10	1.45-1.55	6.0-20	0.07-0.09	7.4-9.0	<2	Low--------	0.24			
179-------------- Owen Creek	0-2	28-35	1.15-1.25	0.2-0.6	0.09-0.15	7.4-8.4	<2	Moderate	0.15	2	8	1-3
	2-16	35-50	1.15-1.35	0.06-0.2	0.14-0.16	7.4-8.4	<2	High-------	0.24			
	16-39	27-35	1.20-1.35	0.6-2.0	0.17-0.20	8.4-9.0	<2	Moderate	0.37			
	39	---	---	---	---	---	---	-----------	----			
180*:												
Pensore---------	0-3	15-25	1.20-1.30	0.6-2.0	0.09-0.11	7.9-8.4	<2	Low--------	0.15	1	8	1-2
	3-11	15-25	1.20-1.30	0.6-2.0	0.06-0.08	7.9-9.0	<2	Low--------	0.10			
	11	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
181*:												
Persayo---------	0-3	27-35	1.35-1.45	0.2-0.6	0.15-0.17	7.9-9.0	<8	Moderate	0.37	1	4L	.5-1
	3-16	18-35	1.25-1.35	0.2-0.6	0.17-0.19	7.9-9.0	<8	Moderate	0.37			
	16	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
182*:												
Pesmore---------	0-3	15-20	1.25-1.35	2.0-6.0	0.06-0.07	6.6-7.8	<2	Low--------	0.10	1	8	2-4
	3-10	18-35	1.25-1.40	0.6-2.0	0.06-0.10	6.6-8.4	<2	Low--------	0.15			
	10-24	18-35	1.25-1.40	0.6-2.0	0.06-0.10	7.9-9.0	<2	Low--------	0.15			
	24	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
Asholler--------	0-3	10-25	1.15-1.25	0.6-2.0	0.11-0.15	6.1-7.3	<2	Low--------	0.17	1	8	1-2
	3-17	18-27	1.25-1.35	0.6-2.0	0.07-0.11	6.6-7.3	<2	Low--------	0.10			
	17	---	---	---	---	---	---	-----------	----			
183-------------- Peyton	0-2	10-20	1.40-1.50	0.6-6.0	0.11-0.13	6.1-7.3	<2	Low--------	0.10	5	3	2-4
	2-22	20-35	1.40-1.50	0.6-2.0	0.15-0.18	6.6-7.8	<2	Low--------	0.37			
	22-30	10-20	1.50-1.60	2.0-6.0	0.10-0.13	6.6-7.8	<2	Low--------	0.10			
	30-60	5-10	1.55-1.65	6.0-20.0	0.05-0.08	6.6-7.3	<2	Low--------	0.10			
184*:												
Pishkun Variant-	0-9	15-22	1.15-1.25	0.6-2.0	0.07-0.11	7.4-8.4	<2	Low--------	0.17	1	8	2-5
	9-60	10-20	1.35-1.50	2.0-6.0	0.05-0.08	7.4-9.0	<2	Low--------	0.10			
Hoodle----------	0-3	5-10	1.40-1.50	2.0-6.0	0.06-0.08	6.6-7.8	<2	Low--------	0.10	5	8	1-2
	3-14	18-28	1.30-1.40	0.6-2.0	0.08-0.10	7.4-7.8	<2	Moderate	0.10			
	14-27	5-15	1.40-1.50	2.0-6.0	0.06-0.08	7.9-8.4	<2	Low--------	0.10			
	27-60	5-15	1.50-1.60	6.0-20	0.03-0.05	7.9-8.4	<2	Low--------	0.05			
185-------------- Poposhia	0-7	15-27	1.15-1.25	0.6-2.0	0.17-0.20	7.4-8.4	<4	Moderate	0.32	5	4L	1-2
	7-18	18-35	1.25-1.35	0.6-2.0	0.17-0.20	7.4-8.4	<4	Moderate	0.37			
	18-60	18-35	1.25-1.35	0.6-2.0	0.13-0.15	7.9-9.0	<8	Moderate	0.37			
186*:												
Poposhia--------	0-3	15-27	1.15-1.25	0.6-2.0	0.17-0.20	7.4-9.0	<4	Moderate	0.32	5	4L	1-2
	3-10	18-35	1.25-1.35	0.6-2.0	0.17-0.20	7.4-9.0	<4	Moderate	0.37			
	10-60	20-35	1.25-1.35	0.6-2.0	0.13-0.15	7.9-9.0	<8	Moderate	0.37			

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	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
186*:												
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
	4-17	27-35	1.25-1.35	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate	0.43			
	17	---	---	---	---	---	---	----------	----			
Carmody---------	0-5	10-20	1.25-1.35	0.6-2.0	0.14-0.16	7.9-8.4	<2	Low-------	0.37	3	3	1-2
	5-28	10-18	1.35-1.50	0.6-2.0	0.14-0.16	7.9-9.0	<2	Low-------	0.43			
	28	---	---	---	---	---	---	----------	----			
187*:												
Poposhia, sodic-	0-2	18-27	1.15-1.25	0.6-2.0	0.12-0.14	>8.4	2-8	Low-------	0.32	5	4L	1-2
	2-27	18-35	1.25-1.35	0.2-0.6	0.13-0.15	>8.4	2-8	Low-------	0.37			
	27-60	18-27	1.25-1.35	0.2-0.6	0.12-0.14	>8.4	<8	Low-------	0.37			
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
	1-19	27-35	1.25-1.35	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate	0.43			
	19	---	---	---	---	---	---	----------	----			
188*:												
Quander---------	0-3	15-25	1.25-1.35	0.6-2.0	0.16-0.18	6.1-7.3	<2	Low-------	0.20	5	8	2-4
	3-16	25-35	1.35-1.50	0.6-2.0	0.08-0.12	6.1-7.3	<2	Low-------	0.10			
	16-60	18-30	1.35-1.50	0.6-2.0	0.08-0.12	6.1-7.3	<2	Low-------	0.10			
Youga-----------	0-7	15-27	1.35-1.45	0.6-2.0	0.06-0.18	6.1-7.8	<2	Low-------	0.24	5	5	2-5
	7-28	20-35	1.35-1.45	0.6-2.0	0.12-0.18	6.1-7.8	<2	Moderate	0.20			
	28-60	15-30	1.35-1.45	0.6-2.0	0.13-0.15	6.1-7.8	<2	Low-------	0.20			
Onason----------	0-11	8-18	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low-------	0.24	1	3	1-2
	11	---	---	---	---	---	<2	----------	----			
189*:												
Rallod----------	0-2	10-20	1.15-1.30	0.6-2.0	0.15-0.17	7.4-9.0	<2	Low-------	0.32	1	5	1-3
	2-18	35-50	1.20-1.40	0.06-0.2	0.10-0.12	>8.4	4-8	High------	0.37			
	18	---	---	---	---	---	---	----------	----			
Rock outcrop.												
Seaverson-------	0-2	18-27	1.15-1.25	<0.06	0.10-0.12	7.9-9.0	2-8	Moderate	0.49	1	4L	1-2
	2-11	18-35	1.25-1.40	<0.06	0.09-0.11	>8.4	4-16	Moderate	0.49			
	11	---	---	---	---	---	---	----------	----			
190*:												
Relsob----------	0-3	5-15	1.25-1.35	2.0-6.0	0.12-0.14	6.6-8.4	<2	Low-------	0.32	2	3	1-3
	3-12	20-26	1.25-1.40	0.6-2.0	0.14-0.16	6.6-7.8	<2	Moderate	0.37			
	12-15	20-26	1.25-1.40	0.6-2.0	0.08-0.12	6.6-7.8	<2	Moderate	0.15			
	15-60	0-5	1.45-1.55	6.0-20	0.03-0.04	6.6-8.4	<2	Low-------	0.05			
Bluerim---------	0-2	5-15	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low-------	0.24	2	3	1-2
	2-16	20-27	1.25-1.35	0.6-2.0	0.14-0.16	6.6-7.8	<2	Low-------	0.37			
	16-35	10-25	1.35-1.45	2.0-6.0	0.11-0.13	7.9-9.0	<4	Low-------	0.20			
	35	---	---	---	---	---	---	----------	----			
191*:												
Rentsac---------	0-5	7-18	1.30-1.35	0.6-2.0	0.07-0.09	7.9-8.4	<2	Low-------	0.15	1	8	.5-2
	5-14	7-18	1.30-1.35	0.6-2.0	0.07-0.09	7.9-9.0	<4	Low-------	0.10			
	14	---	---	---	---	---	---	Low-------	0.05			
Carmody---------	0-4	10-20	1.25-1.35	0.6-2.0	0.14-0.16	7.9-8.4	<2	Low-------	0.37	3	3	1-2
	4-39	10-18	1.35-1.50	0.6-2.0	0.14-0.16	7.9-9.0	<2	Low-------	0.43			
	39	---	---	---	---	---	---	----------	----			

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
192*:												
Riverwash	0-60	---	---	---	---	---	---	----------	----	---	---	---
Aquic Ustifluvents	0-60	---	---	---	---	---	<2	----------	----	5	---	.5-1
193*:												
Rockinchair	0-4	5-12	1.25-1.35	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low	0.32	3	3	1-3
	4-32	18-30	1.25-1.40	0.6-2.0	0.16-0.20	7.9-9.0	<4	Moderate	0.32			
	32	---	---	---	---	---	---	----------	----			
Rock outcrop.												
Sinkson	0-6	18-28	1.25-1.35	0.6-2.0	0.15-0.20	7.9-8.4	<4	Moderate	0.32	5	5	1-2
	6-60	18-28	1.30-1.40	0.6-2.0	0.15-0.20	7.9-8.4	<4	Moderate	0.32			
194*:												
Rockinchair	0-3	18-27	1.15-1.25	0.6-2.0	0.16-0.20	7.9-8.4	<2	Moderate	0.32	3	4L	1-3
	3-34	18-30	1.25-1.40	0.6-2.0	0.16-0.20	7.9-9.0	<4	Moderate	0.32			
	34	---	---	---	---	---	---	----------	----			
Sinkson	0-5	15-25	1.10-1.20	0.6-2.0	0.17-0.20	7.9-8.4	<4	Low	0.43	5	4L	1-2
	5-60	18-30	1.20-1.40	0.6-2.0	0.16-0.18	7.9-8.4	<4	Moderate	0.55			
195*:												
Rock outcrop.												
Asholler	0-3	10-25	1.15-1.25	0.6-2.0	0.07-0.11	6.1-7.3	<2	Low	0.10	1	8	1-2
	3-14	18-27	1.25-1.35	0.6-2.0	0.07-0.11	6.6-7.3	<2	Low	0.10			
	14	---	---	---	---	---	---	----------	----			
196*:												
Rock outcrop.												
Blackhall	0-2	5-15	1.25-1.35	0.6-2.0	0.12-0.16	7.4-8.4	<2	Low	0.32	1	3	1-2
	2-18	5-18	1.35-1.45	0.6-2.0	0.12-0.16	7.9-9.0	<2	Low	0.37			
	18	---	---	---	---	---	---	----------	----			
197*:												
Rock outcrop.												
Blazon	0-2	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
	2-17	27-35	1.25-1.35	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate	0.43			
	17	---	---	---	---	---	---	----------	----			
198*:												
Rock outcrop.												
Mosroc	0-3	15-25	1.15-1.25	0.6-2.0	0.12-0.14	6.6-8.4	<2	Low	0.32	1	8	2-5
	3-10	20-30	1.25-1.35	0.6-2.0	0.07-0.10	6.6-8.4	<2	Low	0.17			
	10	---	---	---	---	---	---	----------	----			
199*:												
Rock outcrop.												
Oceanet	0-5	5-15	1.25-1.35	2.0-6.0	0.11-0.14	7.9-9.0	<2	Low	0.32	1	3	.5-1
	5-16	5-15	1.35-1.50	2.0-6.0	0.09-0.11	7.9-9.0	<2	Low	0.37			
	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	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
200*:												
Roxal	0-3	15-27	1.15-1.25	0.6-2.0	0.16-0.18	6.6-8.4	<2	Low	0.32	1	4L	1-2
	3-17	18-35	1.25-1.35	0.6-2.0	0.15-0.17	7.9-9.0	<2	Moderate	0.37			
	17	---	---	---	---	---	---	---	---			
Rock outcrop.												
201*:												
Roxal	0-4	20-27	1.15-1.25	0.6-2.0	0.14-0.16	6.6-8.4	<2	Moderate	0.32	1	5	1-2
	4-13	18-35	1.25-1.35	0.6-2.0	0.15-0.17	7.9-9.0	<2	Moderate	0.37			
	13	---	---	---	---	---	---	---	---			
Tongue River	0-1	5-15	1.25-1.35	2.0-6.0	0.13-0.15	5.6-7.3	<2	Low	0.37	2	3	2-4
	1-33	25-35	1.20-1.40	0.6-2.0	0.14-0.16	5.6-7.3	<2	Moderate	0.20			
	33	---	---	---	---	---	---	---	---			
202 Ryan Park	0-3	3-10	1.30-1.40	2.0-6.0	0.07-0.11	7.4-7.9	<2	Low	0.24	5	2	1-2
	3-17	10-18	1.35-1.45	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low	0.32			
	17-60	7-15	1.35-1.45	2.0-6.0	0.11-0.13	7.9-9.0	<2	Low	0.32			
203*:												
Ryan Park	0-5	8-15	1.25-1.35	2.0-6.0	0.11-0.13	7.4-7.9	<2	Low	0.28	5	3	1-2
	5-15	10-18	1.35-1.45	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low	0.32			
	15-60	7-15	1.35-1.45	2.0-6.0	0.11-0.13	7.9-9.0	<2	Low	0.32			
Carmody	0-5	10-20	1.25-1.35	0.6-2.0	0.14-0.16	7.9-8.4	<2	Low	0.37	3	3	1-2
	5-38	10-18	1.35-1.50	0.6-2.0	0.14-0.16	7.9-9.0	<2	Low	0.43			
	38	---	---	---	---	---	---	---	---			
204 Ryark	0-5	3-8	1.25-1.35	2.0-6.0	0.09-0.12	6.6-7.8	<2	Low	0.28	5	3	.5-1
	5-27	10-18	1.35-1.50	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low	0.24			
	27-60	1-4	1.45-1.55	>6.0	0.04-0.06	6.6-7.8	<2	Low	0.05			
205*:												
Ryark	0-6	3-8	1.35-1.45	>6.0	0.06-0.08	6.6-7.8	<2	Low	0.15	5	2	.5-1
	6-13	10-18	1.35-1.50	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low	0.24			
	13-60	3-8	1.45-1.60	>6.0	0.06-0.08	6.6-7.8	<2	Low	0.17			
Zeomont	0-3	3-10	1.35-1.45	6.0-20	0.06-0.08	7.4-8.4	<2	Low	0.15	5	2	1-2
	3-60	0-5	1.40-1.55	6.0-20	0.05-0.07	7.4-7.8	<2	Low	0.17			
206*:												
Sandbranch	0-2	10-20	1.15-1.25	0.6-2.0	0.12-0.14	7.9-9.0	<4	Low	0.32	5	4L	<1
	2-17	20-35	1.25-1.35	0.2-0.6	0.11-0.15	>8.4	2-8	Moderate	0.37			
	17-34	20-35	1.25-1.35	0.2-0.6	0.11-0.15	>7.8	>4	Moderate	0.37			
	34-60	18-27	1.25-1.45	0.2-0.6	0.15-0.19	>7.8	>4	Low	0.37			
Ryan Park Variant	0-6	5-12	1.35-1.45	2.0-6.0	0.08-0.10	7.4-8.4	<2	Low	0.32	5	2	1-2
	6-38	10-18	1.35-1.50	2.0-6.0	0.13-0.15	7.9-8.4	<2	Low	0.37			
	38-55	10-18	1.50-1.65	2.0-6.0	0.03-0.05	>8.4	<8	Low	0.37			
	55	---	---	---	---	---	---	---	---			
Poposhia	0-10	15-27	1.15-1.25	0.6-2.0	0.17-0.20	7.4-9.0	<4	Moderate	0.32	5	4L	1-2
	10-60	18-35	1.25-1.35	0.6-2.0	0.13-0.15	7.9-9.0	<8	Moderate	0.37			
207*:												
Sinkson	0-5	18-30	1.25-1.35	0.6-2.0	0.15-0.20	7.9-8.4	<4	Moderate	0.32	5	5	1-2
	5-60	18-30	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
207*:												
Almy-------------	0-3	20-25	1.15-1.25	0.6-2.0	0.14-0.16	7.4-8.4	<2	Low--------	0.32	5	5	1-3
	3-17	20-35	1.25-1.40	0.6-2.0	0.19-0.21	7.4-8.4	<2	Moderate	0.37			
	17-40	18-30	1.35-1.50	0.6-2.0	0.14-0.18	7.9-9.0	<4	Low--------	0.37			
	40-60	5-15	1.35-1.50	2.0-6.0	0.06-0.09	7.9-9.0	<4	Low--------	0.17			
208*:												
Sinkson----------	0-4	15-25	1.10-1.20	0.6-2.0	0.17-0.20	7.9-8.4	<4	Low--------	0.43	5	4L	1-2
	4-60	18-30	1.20-1.40	0.6-2.0	0.16-0.18	7.9-8.4	<4	Moderate	0.55			
Almy-------------	0-2	20-25	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low--------	0.32	5	6	1-3
	2-20	20-35	1.25-1.40	0.6-2.0	0.19-0.21	7.4-9.0	<4	Moderate	0.37			
	20-60	18-30	1.35-1.50	0.6-2.0	0.14-0.18	7.9-9.0	<4	Low--------	0.37			
Thermopolis------	0-3	18-27	1.10-1.20	0.6-2.0	0.15-0.18	7.4-8.4	<2	Low--------	0.43	1	4L	1-2
	3-16	18-27	1.20-1.30	0.6-2.0	0.15-0.18	7.4-8.4	<2	Moderate	0.55			
	16	---	---	---	---	---	---	-----------	----			
209*:												
Starman----------	0-2	15-23	1.15-1.25	0.6-2.0	0.09-0.11	7.4-8.4	<2	Low--------	0.05	1	8	1-2
	2-12	18-27	1.25-1.35	0.6-2.0	0.09-0.13	7.9-9.0	<2	Low--------	0.10			
	12	---	---	---	---	---	---	-----------	----			
Rock outcrop.												
Woosley----------	0-5	18-27	1.10-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low--------	0.37	2	6	2-3
	5-15	28-35	1.20-1.30	0.6-2.0	0.19-0.21	6.6-7.8	<2	Moderate	0.43			
	15-33	18-30	1.20-1.30	0.6-2.0	0.19-0.21	7.9-8.4	<2	Moderate	0.43			
	33	---	---	---	---	---	---	-----------	----			
210*:												
Taluce-----------	0-4	12-20	1.25-1.35	2.0-6.0	0.10-0.12	7.4-8.4	<2	Low--------	0.20	1	3	.5-1
	4-12	10-18	1.30-1.40	2.0-6.0	0.10-0.12	7.9-9.0	<2	Low--------	0.20			
	12	---	---	---	---	---	---	-----------	----			
Bowbac-----------	0-5	5-15	1.25-1.35	0.6-2.0	0.12-0.14	6.6-8.4	<2	Low--------	0.32	2	3	1-2
	5-15	20-35	1.25-1.40	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.37			
	15-37	15-25	1.30-1.50	0.6-2.0	0.12-0.17	7.9-9.0	<2	Low--------	0.37			
	37	---	---	---	---	---	---	-----------	----			
211*:												
Thermopolis------	0-2	18-27	1.10-1.20	0.6-2.0	0.15-0.18	7.4-8.4	<2	Low--------	0.43	1	4L	1-2
	2-10	18-27	1.20-1.30	0.6-2.0	0.15-0.18	7.4-8.4	<2	Moderate	0.55			
	10	---	---	---	---	---	---	-----------	----			
Sinkson----------	0-3	15-25	1.10-1.20	0.6-2.0	0.17-0.20	7.9-8.4	<4	Low--------	0.43	5	4L	1-2
	3-60	18-30	1.20-1.40	0.6-2.0	0.16-0.18	7.9-8.4	<4	Moderate	0.55			
212*:												
Tisworth---------	0-3	10-18	1.25-1.35	2.0-6.0	0.08-0.10	7.4-9.0	<4	Low--------	0.32	5	3	1-2
	3-20	18-30	1.25-1.35	0.06-0.2	0.07-0.11	>8.4	2-8	Moderate	0.49			
	20-60	20-30	1.30-1.40	0.2-0.6	0.09-0.12	>8.4	>4	Low--------	0.32			
Absher-----------	0-3	20-27	1.15-1.25	0.6-2.0	0.12-0.14	6.6-8.4	4-8	Moderate	0.49	5	5	1-2
	3-11	40-55	1.15-1.25	<0.06	0.10-0.12	7.9-9.0	8-16	High-------	0.49			
	11-60	30-40	1.25-1.35	<0.06	0.09-0.11	>8.4	>16	High-------	0.49			

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	Permea-bility	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
212*:												
Forelle---------	0-4	15-25	1.30-1.35	0.6-2.0	0.16-0.18	6.6-7.8	<2	Moderate	0.37	5	5	1-2
	4-24	28-35	1.25-1.30	0.2-0.6	0.19-0.21	7.4-8.4	<2	Moderate	0.37			
	24-60	20-30	1.30-1.35	0.6-2.0	0.14-0.16	7.9-9.0	<2	Moderate	0.32			
213*:												
Tisworth--------	0-2	10-18	1.25-1.35	2.0-6.0	0.08-0.10	7.4-9.0	<4	Low-------	0.32	5	3	1-2
	2-16	18-30	1.25-1.35	0.06-0.2	0.07-0.11	>8.4	2-8	Moderate	0.49			
	16-60	10-25	1.30-1.40	0.2-0.6	0.09-0.12	>8.4	>4	Low-------	0.32			
Poposhia--------	0-4	27-35	1.15-1.25	0.6-2.0	0.17-0.20	7.4-9.0	<4	Moderate	0.32	5	4L	1-2
	4-60	18-35	1.25-1.35	0.6-2.0	0.13-0.15	7.9-9.0	<8	Moderate	0.37			
214*:												
Tisworth--------	0-3	3-9	1.35-1.45	6.0-20	0.05-0.07	7.4-9.0	<2	Low-------	0.20	5	2	1-2
	3-27	18-30	1.25-1.35	0.06-0.2	0.07-0.11	>8.4	2-8	Moderate	0.49			
	27-60	5-20	1.25-1.55	0.6-2.0	0.07-0.10	>8.4	>4	Low-------	0.32			
Ryan Park-------	0-4	8-15	1.25-1.35	2.0-6.0	0.11-0.13	7.4-7.9	<2	Low-------	0.28	5	3	1-2
	4-15	10-18	1.35-1.45	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low-------	0.32			
	15-60	7-15	1.35-1.45	2.0-6.0	0.11-0.13	7.9-9.0	<2	Low-------	0.32			
Countryman------	0-2	5-15	1.25-1.35	2.0-6.0	0.13-0.15	7.4-8.4	4-8	Low-------	0.32	5	3	2-4
	2-60	10-18	1.25-1.40	0.6-2.0	0.11-0.15	7.4-8.4	2-8	Low-------	0.37			
215*:												
Tongue River----	0-1	15-25	1.10-1.20	0.6-2.0	0.17-0.20	5.6-7.3	<2	Low-------	0.37	2	5	2-4
	1-19	25-35	1.20-1.40	0.6-2.0	0.14-0.16	5.6-7.3	<2	Moderate	0.20			
	19-34	20-30	1.25-1.40	0.6-2.0	0.04-0.08	5.6-7.8	<2	Moderate	0.10			
	34	---	---	---	---	---	---	----------	----			
Inchau----------	0-1	22-27	1.15-1.25	0.6-2.0	0.14-0.16	6.1-7.3	<2	Moderate	0.32	2	5	2-5
	1-19	27-35	1.25-1.40	0.6-2.0	0.14-0.16	6.6-7.3	<2	Moderate	0.37			
	19-38	27-35	1.25-1.40	0.6-2.0	0.04-0.06	6.6-7.8	<2	Moderate	0.10			
	38	---	---	---	---	---	---	----------	----			
215*:												
Farlow Variant--	0-1	20-27	1.15-1.25	0.6-2.0	0.16-0.18	6.1-7.3	<2	Moderate	0.24	2	4L	2-3
	1-11	20-27	1.25-1.40	0.6-2.0	0.16-0.18	6.1-7.3	<2	Moderate	0.28			
	11-35	20-35	1.25-1.40	0.6-2.0	0.06-0.08	6.6-8.4	<2	Moderate	0.17			
	35	---	---	---	---	---	---	----------	----			
216*:												
Uffens----------	0-4	10-20	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	4-8	Low-------	0.43	1	4L	.5-2
	4-20	28-35	1.25-1.35	0.2-0.6	0.09-0.11	>8.4	8-16	Moderate	0.43			
	20-40	20-30	1.25-1.35	0.2-0.6	0.12-0.15	7.9-9.0	4-8	Moderate	0.32			
	40-60	2-7	1.50-1.60	6.0-20	0.03-0.05	7.9-8.4	<4	Low-------	0.20			
Muff------------	0-2	10-20	1.15-1.25	0.6-2.0	0.15-0.17	7.4-8.4	2-4	Low-------	0.32	2	5	<1
	2-20	20-35	1.20-1.35	0.06-0.2	0.04-0.16	>8.4	4-8	Moderate	0.37			
	20-29	20-30	1.25-1.40	0.2-0.6	0.12-0.14	>8.4	4-8	Moderate	0.32			
	29	---	---	---	---	---	---	----------	----			
Frisite---------	0-6	10-20	1.10-1.20	2.0-6.0	0.15-0.17	7.4-8.4	<2	Low-------	0.32	5	5	<1
	6-25	25-35	1.25-1.40	0.6-2.0	0.17-0.20	7.9-9.0	<2	Moderate	0.37			
	25-42	22-33	1.30-1.45	0.6-2.0	0.15-0.20	7.9-9.0	2-4	Moderate	0.37			
	42-60	28-33	1.25-1.40	0.6-2.0	0.17-0.20	7.9-9.0	2-4	Moderate	0.43			

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	Permea-bility	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
217*:												
Uhl--------------	0-4	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.1-7.3	<2	Low--------	0.32	5	5	1-3
	4-60	18-35	1.25-1.40	0.6-2.0	0.16-0.18	6.6-7.8	<2	Moderate	0.37			
Gelkie-----------	0-5	15-20	1.25-1.35	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low--------	0.37	5	4	2-3
	5-15	18-35	1.30-1.40	0.6-2.0	0.14-0.16	6.6-7.8	<2	Moderate	0.37			
	15-60	15-25	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low--------	0.43			
218*:												
Venapass---------	0-16	10-18	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low--------	0.32	5	8	2-5
	16-20	10-18	1.35-1.45	2.0-6.0	0.11-0.13	7.4-7.8	<2	Low--------	0.28			
	20-60	5-18	1.35-1.45	6.0-20	0.05-0.08	7.4-7.8	<2	Low--------	0.10			
Uhl--------------	0-13	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.1-7.3	<2	Low--------	0.32	5	5	1-3
	13-60	18-35	1.25-1.40	0.6-2.0	0.16-0.18	6.6-7.8	<2	Moderate	0.37			
Absher-----------	0-2	20-27	1.15-1.25	0.6-2.0	0.12-0.14	6.6-8.4	4-8	Moderate	0.49	5	5	1-2
	2-13	40-55	1.15-1.25	<0.06	0.10-0.12	7.9-9.0	8-16	High-------	0.49			
	13-60	30-40	1.25-1.35	<0.06	0.09-0.11	>8.4	>16	High-------	0.49			
219*:												
Venapass---------	0-16	10-18	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low--------	0.32	5	8	2-5
	16-30	10-18	1.25-1.35	0.6-2.0	0.16-0.18	7.4-7.8	<2	Low--------	0.37			
	30-60	5-18	1.35-1.45	6.0-20	0.05-0.08	7.4-7.8	<2	Low--------	0.10			
Silas------------	0-16	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low--------	0.32	5	5	1-3
	16-60	18-35	1.25-1.35	0.6-2.0	0.19-0.21	6.6-7.8	<2	Moderate	0.37			
220*:												
Vonalee----------	0-4	0-10	1.35-1.45	6.0-20	0.07-0.09	6.6-7.8	<2	Low--------	0.24	5	2	1-2
	4-11	5-15	1.35-1.45	2.0-6.0	0.12-0.14	6.6-8.4	<2	Low--------	0.32			
	11-60	0-15	1.45-1.55	6.0-20	0.07-0.09	7.4-9.0	<2	Low--------	0.24			
Hiland-----------	0-4	8-18	1.25-1.35	2.0-6.0	0.11-0.13	6.6-8.4	<2	Low--------	0.28	5	3	1-2
	4-15	20-35	1.25-1.35	0.6-2.0	0.14-0.16	6.6-8.4	<2	Moderate	0.37			
	15-20	8-18	1.35-1.45	2.0-6.0	0.11-0.13	7.9-9.0	<4	Low--------	0.32			
	20-22	3-8	1.45-1.55	6.0-20	0.06-0.08	7.9-9.0	<4	Low--------	0.24			
	22-60	0-55	1.45-1.55	6.0-20	0.05-0.07	7.9-9.0	<4	Low--------	0.15			
221*:												
Woosley----------	0-5	18-27	1.10-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low--------	0.37	2	6	2-3
	5-15	28-35	1.20-1.30	0.6-2.0	0.19-0.21	6.6-7.8	<2	Moderate	0.43			
	15-19	18-30	1.20-1.30	0.6-2.0	0.19-0.21	7.9-8.4	<2	Moderate	0.43			
	19-31	18-30	1.25-1.35	0.6-2.0	0.16-0.18	7.9-8.4	<2	Low--------	0.28			
	31	---	---	---	---	---	---	-----------	----			
Decross----------	0-10	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Moderate	0.32	5	5	2-3
	10-38	18-35	1.25-1.35	0.6-2.0	0.19-0.21	6.6-7.8	<2	Moderate	0.37			
	38-60	15-30	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low--------	0.43			
Starman----------	0-3	15-25	1.15-1.25	0.6-2.0	0.09-0.13	7.4-8.4	<2	Low--------	0.10	1	8	1-2
	3-15	18-27	1.25-1.35	0.6-2.0	0.09-0.13	7.9-9.0	<2	Low--------	0.10			
	15	---	---	---	---	---	---	-----------	----			
222*:												
Worland----------	0-4	10-18	1.25-1.35	2.0-6.0	0.11-0.13	7.4-9.0	<2	Low--------	0.24	2	3	<1
	4-34	10-18	1.35-1.50	2.0-6.0	0.11-0.13	7.9-9.0	<4	Low--------	0.32			
	34	---	---	---	---	---	---	-----------	----			

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
222*:												
Oceanet----------	0-1	5-15	1.25-1.35	2.0-6.0	0.11-0.14	7.4-9.0	<2	Low--------	0.32	1	3	.5-1
	1-19	5-15	1.35-1.50	2.0-6.0	0.11-0.14	7.4-9.0	<2	Low--------	0.37			
	19	---	---	---	---	---	---	-----------	----			
Persayo----------	0-6	27-35	1.35-1.45	0.2-0.6	0.15-0.17	7.9-9.0	<8	Moderate	0.37	1	4L	.5-1
	6-18	20-35	1.25-1.35	0.2-0.6	0.17-0.19	7.9-9.0	<8	Moderate	0.37			
	18	---	---	---	---	---	---	-----------	----			
223*:												
Youga------------	0-14	15-27	1.35-1.45	0.6-2.0	0.06-0.18	6.1-7.8	<2	Low--------	0.24	5	5	2-5
	14-21	20-35	1.35-1.45	0.6-2.0	0.12-0.18	6.1-7.8	<2	Moderate	0.20			
	21-60	15-30	1.35-1.45	0.6-2.0	0.13-0.15	6.1-7.8	<2	Low--------	0.20			
Quander----------	0-3	15-25	1.25-1.35	0.6-2.0	0.16-0.18	6.1-7.3	<2	Low--------	0.20	5	8	2-4
	3-14	25-35	1.35-1.50	0.6-2.0	0.08-0.12	6.1-7.3	<2	Low--------	0.10			
	14-60	18-30	1.35-1.50	0.6-2.0	0.08-0.12	6.1-7.3	<2	Low--------	0.10			
224*:												
Youngston--------	0-3	15-25	1.25-1.35	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low--------	0.32	5	4L	<1
	3-60	18-35	1.25-1.35	0.2-0.6	0.19-0.21	7.9-9.0	2-8	Moderate	0.37			
Effington--------	0-4	20-27	1.15-1.25	0.6-2.0	0.08-0.10	>7.8	1-8	Moderate	0.37	5	6	<1
	4-9	35-40	1.25-1.35	0.2-0.6	0.09-0.11	>9.0	2-16	High-------	0.43			
	9-16	40-55	1.15-1.25	<0.06	0.07-0.09	>9.0	2-16	High-------	0.43			
	16-50	28-40	1.25-1.35	0.2-0.6	0.09-0.11	>8.4	8-16	Moderate	0.43			
	50-60	8-12	1.35-1.45	2.0-6.0	0.05-0.07	>8.4	2-16	Low--------	0.32			
225*:												
Youngston--------	0-6	18-27	1.30-1.50	0.6-2.0	0.19-0.21	7.4-8.4	<2	Moderate	0.49	5	4L	<.5
	6-60	20-35	1.40-1.60	0.2-0.6	0.19-0.21	7.9-9.0	2-8	Moderate	0.37			
Lostwells--------	0-5	20-27	1.15-1.25	0.6-2.0	0.17-0.19	7.4-9.0	<2	Low--------	0.37	5	4L	<1
	5-60	20-30	1.25-1.40	0.6-2.0	0.13-0.16	7.9-9.0	<4	Moderate	0.32			
Apron------------	0-4	5-18	1.25-1.35	2.0-6.0	0.12-0.14	7.4-8.4	<2	Low--------	0.28	5	3	.5-1
	4-60	5-18	1.35-1.45	2.0-6.0	0.12-0.14	7.9-9.0	<2	Low--------	0.32			
226*:												
Youngston--------	0-4	27-35	1.20-1.30	0.2-0.6	0.19-0.21	7.4-8.4	<2	Moderate	0.37	5	4L	<1
	4-60	18-30	1.25-1.35	0.2-0.6	0.19-0.21	7.9-9.0	2-8	Moderate	0.37			
Lostwells--------	0-11	20-27	1.15-1.25	0.6-2.0	0.17-0.19	7.4-9.0	<2	Low--------	0.37	5	4L	<1
	11-60	20-30	1.25-1.40	0.6-2.0	0.13-0.16	7.9-9.0	<4	Moderate	0.32			
227*:												
Youngston--------	0-4	15-25	1.25-1.35	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low--------	0.32	5	4L	<1
	4-60	18-35	1.25-1.35	0.2-0.6	0.19-0.21	7.9-9.0	2-8	Moderate	0.37			
Persayo----------	0-2	20-27	1.35-1.45	0.2-0.6	0.17-0.19	7.9-9.0	<8	Low--------	0.37	1	4L	.5-1
	2-10	18-35	1.25-1.35	0.2-0.6	0.17-0.19	7.9-9.0	<8	Moderate	0.37			
	10	---	---	---	---	---	---	-----------	----			
228--------------- Zeomont	0-7	3-10	1.35-1.45	6.0-20	0.06-0.08	7.4-8.4	<2	Low--------	0.15	5	2	1-2
	7-60	0-5	1.40-1.55	6.0-20	0.05-0.07	7.4-7.8	<2	Low--------	0.17			

* 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," and "apparent" 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	Hydro-logic 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*:												
Absher	D	None	---	---	>6.0	---	---	>60	---	Low	High	High.
Elkol	D	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
101*:												
Absher	D	None	---	---	>6.0	---	---	>60	---	Low	High	High.
Poposhia	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
Sinkson	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Moderate.
102*:												
Absher Variant	D	None	---	---	>6.0	---	---	20-40	Soft	Low	High	High.
Absher	D	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
103*:												
Abston	C	None	---	---	>6.0	---	---	20-40	Soft	High	High	Moderate.
Diamondville	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
104* Almy	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
105*:												
Almy	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Monbutte	C	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
Rallod	D	None	---	---	>6.0	---	---	9-20	Soft	Low	High	Low.
106*:												
Ansel	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Ansel Variant	C	None	---	---	>6.0	---	---	20-40	Hard	Low	Moderate	Low.
107*:												
Ansel	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic 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*:												
Rock outcrop.												
108*:												
Apron------------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Lostwells--------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
109*:												
Apron------------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Wallson----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Worland----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
110*:												
Aquic cryofluvents----	C	None--------	---	---	0.5-2.0	Apparent	Jan-Dec	>60	---	High-----	High-----	Low.
Ansel------------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
111*.												
Badland												
112*:												
Badland.												
Birdsley---------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
113*:												
Badland.												
Seaverson--------	D	None--------	---	---	>6.0	---	---	4-20	Soft	Low------	High-----	High.
113*:												
Blazon-----------	D	None--------	---	---	>6.0	---	---	4-20	Soft	Low------	High-----	Low.
114*:												
Binton-----------	C	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
Youngston--------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
115*:												
Birdsley---------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
115*:												
Mudray	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Moderate.
116*:												
Blackhall	D	None	---	---	>6.0	---	---	6-20	Soft	Low	High	Low.
Rock outcrop.												
117*:												
Blackhall	D	None	---	---	>6.0	---	---	6-20	Soft	Low	High	Low.
Carmody	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
118*:												
Blazon	D	None	---	---	>6.0	---	---	4-20	Soft	Low	High	Low.
Rock outcrop.												
Carmody	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
119*:												
Bluerim	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
Onason	D	None	---	---	>6.0	---	---	10-20	Soft	Low	Moderate	Low.
120*:												
Bosler	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Rock River	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
121*:												
Bosler	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Ryan Park	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
122*:												
Bowbac	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
Hiland	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
123, 124 Brownsto	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
125*:												
Brownsto, very bouldery	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	Hydro-logic 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				
125*:												
Decross Variant--	B	Rare--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Brownsto---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
126--------------- Burnette	C	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
127*:												
Chittum----------	D	None--------	---	---	>6.0	---	---	8-20	Hard	Moderate	Moderate	Moderate.
Bachus-----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	Moderate	Moderate.
Rock outcrop.												
128*:												
Cific------------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Hoodle-----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
129*:												
Clifsand---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Persayo----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Moderate.
130*:												
Cloud Peak-------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	High-----	Low.
Farlow-----------	B	None--------	---	---	>6.0	---	---	40-60	Hard	Low------	High-----	Low.
131*:												
Coalmont---------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Moderate	High-----	Low.
Milren-----------	C	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Cragosen---------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
132*:												
Conpeak----------	D	None--------	---	---	>6.0	---	---	8-20	Soft	Low------	High-----	Low.
Rock outcrop.												
Cryluha----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
133*:												
Countryman	C	Frequent	Brief	Mar-Jul	1.5-3.5	Apparent	May-Sep	>60	---	Moderate	High	Low.
Absher	D	None	---	---	>6.0	---	---	>60	---	Low	High	High.
134* Coutis	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
135*:												
Crago	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
Pensore	D	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Moderate	Low.
136*:												
Cragosen	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Low.
Carmody	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
Blazon	D	None	---	---	>6.0	---	---	4-20	Soft	Low	High	Low.
137*:												
Cragosen	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Low.
Rock outcrop.												
Carmody	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
138*:												
Cragosen	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Low.
Bosler	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Cushool	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
139*:												
Cryluha	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
Conpeak	D	None	---	---	>6.0	---	---	8-20	Soft	Low	High	Low.
140*:												
Cushool	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
Rock River	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
141*:												
Dahlquist	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				
141*:												
Rock River	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
142*:												
Diamondville	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
Forelle	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
143*:												
Effington	D	None	---	---	>6.0	---	---	>60	---	Low	High	High.
Mudray	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Moderate.
144*:												
Emblem	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Clifsand	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Rairdent	B	None	---	---	>6.0	---	---	>60	---	Low	High	High.
145 Fluvaquents	D	Occasional	Brief	May-Jun	0.5-2.0	Apparent	Mar-Sep	>60	---	High	High	High.
146*:												
Fluvaquents	D	Occasional	Brief	Feb-Jun	1.0-2.5	Apparent	May-Jul	>60	---	High	High	High.
Youngston	B	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
147*:												
Forelle	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Luhon	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
148*:												
Forelle	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Poposhia	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
149*:												
Fornor	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
Decross	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
150*:												
Frisite	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
Emblem	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: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
151*:												
Frisite----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Youngston--------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
152*:												
Gelkie Variant---	B	None--------	---	---	>6.0	---	---	40-60	Soft	Moderate	High-----	Low.
Barrett Variant--	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
153*:												
Granile----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
Ansel------------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
154*:												
Griffy-----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Saddle-----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Wallson----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
155*:												
Haplaquolls------	C	Frequent----	Very long	May-Aug	0.5-1.5	Apparent	Jan-Dec	>60	---	High-----	High-----	Low.
Aquic Ustifluvents----	---	Occasional	Brief-----	Apr-Aug	1.5-3.0	Apparent	Apr-Sep	>60	---	High-----	---	---
156*:												
Haverdad---------	B	Rare--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
Clarkelen--------	B	Rare--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
157*:												
Havre------------	B	Rare--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Absher-----------	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
Forelle----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
158*:												
Havre------------	B	Rare--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Forelle----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic 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				
158*:												
Glendive	B	Rare	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
159*:												
Havre	B	Rare	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
Havre Variant	D	Rare	---	---	1.0-3.5	Apparent	Apr-Sep	>60	---	High	High	High.
Elkol	D	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
160*:												
Highpoint	D	None	---	---	>6.0	---	---	4-20	Soft	Low	Moderate	Low.
Rock outcrop.												
161 Hiland	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
162*:												
Hoodle	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
Rock outcrop.												
163*:												
Hoodle	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
Gelkie	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
164*:												
Iceslew	D	Occasional	Brief	Mar-Aug	+1-2.5	Apparent	Jan-Dec	>60	---	High	High	Moderate.
Countryman	C	Occasional	Brief	Mar-Jul	1.5-3.5	Apparent	May-Sep	>60	---	Moderate	High	Low.
165*:												
Inchau	B	None	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate	Moderate.
Youga	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
166*:												
Irigul	D	None	---	---	>6.0	---	---	6-20	Hard	Low	Moderate	Low.
Midelight	B	None	---	---	>6.0	---	---	40-60	Hard	Moderate	High	Low.
Rock outcrop.												

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
167*:												
Irigul-----------	D	None--------	---	---	>6.0	---	---	7-20	Hard	Low------	Moderate	Low.
Rock outcrop.												
168*:												
Lander-----------	C	Occasional	Brief-----	Apr-Aug	1.5-3.5	Apparent	May-Sep	>60	---	High-----	High-----	High.
Lander Variant---	C	Occasional	Brief-----	Apr-Aug	1.5-3.5	Apparent	May-Sep	>60	---	High-----	High-----	Low.
169*:												
Luhon------------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Rock River-------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Forelle----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
170--------------- Lupinto	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate	Moderate.
171*:												
Lymanson---------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Abston-----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	High-----	High-----	Moderate.
Gelkie-----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
172*:												
Lymanson---------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Conpeak----------	D	None--------	---	---	>6.0	---	---	8-20	Soft	Low------	High-----	Low.
173*:												
Midelight Variant	C	None--------	---	---	>6.0	---	---	20-40	Soft	Moderate	High-----	Low.
Winada Variant---	C	None--------	---	---	>6.0	---	---	20-40	Soft	Moderate	High-----	Low.
Starman----------	D	None--------	---	---	>6.0	---	---	8-20	Hard	Moderate	High-----	Low.
174*:												
Milren-----------	C	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Bosler-----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Rock River-------	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	Hydro-logic 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				
175*:												
Milvar-----------	C	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Milren-----------	C	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
176*:												
Mosroc-----------	D	None--------	---	---	>6.0	---	---	9-20	Hard	Low------	High-----	Low.
Lymanson---------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
177*:												
Oceanet----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
Rock outcrop.												
Persayo----------	D	None--------	---	---	>6.0	---	---	4-20	Soft	Low------	High-----	Moderate.
178*:												
Orpha------------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate	Low.
Vonalee----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
179--------------- Owen Creek	C	None--------	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate	Low.
180*:												
Pensore----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Moderate	Low.
Rock outcrop.												
181*:												
Persayo----------	D	None--------	---	---	>6.0	---	---	4-20	Soft	Low------	High-----	Moderate.
Rock outcrop.												
182*:												
Pesmore----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Low------	High-----	Low.
Rock outcrop.												
Asholler---------	D	None--------	---	---	>6.0	---	---	6-20	Hard	Moderate	Moderate	Low.
183--------------- Peyton	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
184*:												
Pishkun Variant--	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Hoodle-----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
185*-------------- Poposhia	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
186*:												
Poposhia---------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Blazon-----------	D	None--------	---	---	>6.0	---	---	4-20	Soft	Low------	High-----	Low.
Carmody----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
187*:												
Poposhia, sodic--	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Moderate.
Blazon-----------	D	None--------	---	---	>6.0	---	---	4-20	Soft	Low------	High-----	Low.
188*:												
Quander----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Youga------------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Onason-----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	Moderate	Low.
189*:												
Rallod-----------	D	None--------	---	---	>6.0	---	---	9-20	Soft	Low------	High-----	Low.
Rock outcrop.												
Seaverson--------	D	None--------	---	---	>6.0	---	---	4-20	Soft	Low------	High-----	High.
190*:												
Relsob-----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Bluerim----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
191*:												
Rentsac----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	High-----	Moderate.
Carmody----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
192*:												
Riverwash--------	---	Frequent----	Very long	Jan-Dec	0-0.5	Apparent	Jan-Dec	>60	---	---------	---------	---

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				
192*:												
Aquic Ustifluvents----	---	Frequent----	Brief-----	May-Aug	1.5-3.5	Apparent	Jan-Dec	>60	---	High-----	---	---
193*:												
Rockinchair------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Moderate.
Rock outcrop.												
Sinkson----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Moderate.
194*:												
Rockinchair------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Moderate.
Sinkson----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
195*:												
Rock outcrop.												
Asholler---------	D	None--------	---	---	>6.0	---	---	6-20	Hard	Moderate	Moderate	Low.
196*:												
Rock outcrop.												
Blackhall--------	D	None--------	---	---	>6.0	---	---	6-20	Soft	Low------	High-----	Low.
197*:												
Rock outcrop.												
Blazon-----------	D	None--------	---	---	>6.0	---	---	4-20	Soft	Low------	High-----	Low.
198*:												
Rock outcrop.												
Mosroc-----------	D	None--------	---	---	>6.0	---	---	9-20	Hard	Low------	High-----	Low.
199*:												
Rock outcrop.												
Oceanet----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
200*:												
Roxal------------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Moderate	High-----	Low.
Rock outcrop.												

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic 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				
201*:												
Roxal	D	None	---	---	>6.0	---	---	10-20	Soft	Moderate	High	Low.
Tongue River	C	None	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate	Moderate.
202 Ryan Park	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
203*:												
Ryan Park	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Carmody	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
204 Ryark	A	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
205*:												
Ryark	A	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Zeomont	A	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
206*:												
Sandbranch	B	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
Ryan Park Variant	B	None	---	---	>6.0	---	---	40-60	Soft	Low	High	Low.
Poposhia	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
207*:												
Sinkson	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Moderate.
Almy	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
208*:												
Sinkson	B	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
Almy	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Thermopolis	D	None	---	---	>6.0	---	---	6-20	Soft	Low	High	High.
209*:												
Starman	D	None	---	---	>6.0	---	---	8-20	Hard	Moderate	High	Low.
Rock outcrop.												

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic 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				
209*:												
Woosley	C	None	---	---	>6.0	---	---	20-40	Hard	Moderate	High	Low.
210*:												
Taluce	D	None	---	---	>6.0	---	---	8-20	Soft	Low	High	Low.
Bowbac	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
211*:												
Thermopolis	D	None	---	---	>6.0	---	---	6-20	Soft	Low	High	High.
Sinkson	B	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
212*:												
Tisworth	C	None	---	---	>6.0	---	---	>60	---	Low	High	High.
Absher	D	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
Forelle	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
213*:												
Tisworth	C	None	---	---	>6.0	---	---	>60	---	Low	High	High.
Poposhia	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
214*:												
Tisworth	C	None	---	---	>6.0	---	---	>60	---	Low	High	High.
Ryan Park	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Countryman	C	Frequent	Brief	Mar-Jul	1.5-3.5	Apparent	May-Sep	>60	---	Moderate	High	Low.
215*:												
Tongue River	C	None	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate	Moderate.
Inchau	C	None	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate	Low.
Farlow Variant	C	None	---	---	>6.0	---	---	20-40	Hard	Moderate	High	Low.
216*:												
Uffens	B	None	---	---	>6.0	---	---	>60	---	Low	High	High.
Muff	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Moderate.
Frisite	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
217*:												
Uhl	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Gelkie	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
218*:												
Venapass	D	Occasional	Brief	Apr-Jun	0-1.5	Apparent	Apr-Aug	>60	---	High	Moderate	Low.
Uhl	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Absher	D	None	---	---	>6.0	---	---	>60	---	Low	High	High.
219*:												
Venapass	D	Occasional	Brief	Apr-Jun	0-1.5	Apparent	Apr-Aug	>60	---	High	Moderate	Low.
Silas	B	None	---	---	3.0-5.0	Apparent	Apr-Jun	>60	---	Moderate	Moderate	Low.
220*:												
Vonalee	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Hiland	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
221*:												
Woosley	C	None	---	---	>6.0	---	---	20-40	Hard	Moderate	High	Low.
Decross	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
Starman	D	None	---	---	>6.0	---	---	10-20	Hard	Moderate	High	Low.
222*:												
Worland	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Low.
Oceanet	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Low.
Persayo	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Moderate.
223*:												
Youga	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Quander	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
224*:												
Youngston	B	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
Effington	D	Rare	---	---	>6.0	---	---	>60	---	Low	High	High.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic 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				
225*:												
Youngston--------	B	Occasional	Brief-----	Feb-Aug	>6.0	---	---	>60	---	Low------	High-----	Moderate.
Lostwells--------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Apron------------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
226*:												
Youngston--------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
Lostwells--------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
227*:												
Youngston--------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
Persayo----------	D	None---------	---	---	>6.0	---	---	4-20	Soft	Low------	High-----	Moderate.
228--------------- Zeomont	A	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
229*. Dumps, mine												
230*. Pits, gravel												

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil in one or more of the detailed soil map units is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
*Absher	Fine, montmorillonitic Borollic Natrargids
Absher Variant	Fine, montmorillonitic, frigid Typic Natrargids
*Abston	Fine, montmorillonitic Borollic Natrargids
Almy	Fine-loamy, mixed Borollic Haplargids
Ansel	Fine-loamy, mixed Typic Cryoboralfs
Ansel Variant	Fine-loamy, mixed Typic Cryoboralfs
Apron	Coarse-loamy, mixed (calcareous), mesic Typic Torriorthents
Aquic Cryofluvents	Aquic Cryofluvents
Aquic Ustifluvents	Aquic Ustifluvents
Asholler	Loamy-skeletal, mixed, nonacid, frigid Lithic Ustic Torriorthents
Bachus	Fine-loamy, mixed Argic Pachic Cryoborolls
Barrett Variant	Loamy-skeletal, mixed (calcareous), shallow Typic Cryorthents
Binton	Fine-loamy, mixed (calcareous), mesic Typic Torrifluvents
Birdsley	Loamy, mixed (calcareous), mesic, shallow Typic Torriorthents
Blackhall	Loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents
Blazon	Loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents
Bluerim	Fine-loamy, mixed Borollic Haplargids
Bosler	Fine-loamy over sandy or sandy-skeletal, mixed Borollic Haplargids
Bowbac	Fine-loamy, mixed, mesic Ustollic Haplargids
Brownsto	Loamy-skeletal, mixed Borollic Calciorthids
Burnette	Fine, montmorillonitic Argic Pachic Cryoborolls
Carmody	Coarse-loamy, mixed (calcareous), frigid Ustic Torriorthents
Chittum	Loamy, mixed Argic Lithic Cryoborolls
Cific	Fine-loamy, mixed Argic Cryoborolls
Clarkelen	Coarse-loamy, mixed (calcareous), mesic Ustic Torrifluvents
Clifsand	Loamy-skeletal, mixed, mesic Typic Calciorthids
Cloud Peak	Loamy-skeletal, mixed Typic Cryoboralfs
Coalmont	Fine, montmorillonitic Borollic Paleargids
Conpeak	Loamy, mixed, shallow Borollic Calciorthids
Countryman	Coarse-loamy, mixed (calcareous), frigid Aquic Ustifluvents
Coutis	Coarse-loamy, mixed Pachic Cryoborolls
Crago	Loamy-skeletal, carbonatic Borollic Calciorthids
Cragosen	Loamy-skeletal, mixed (calcareous), frigid, shallow Ustic Torriorthents
Cryluha	Coarse-loamy, mixed Borollic Calciorthids
Cushool	Fine-loamy, mixed Borollic Haplargids
Dahlquist	Loamy-skeletal, mixed Borollic Haplargids
Decross	Fine-loamy, mixed Argic Pachic Cryoborolls
Decross Variant	Fine-loamy, mixed Aridic Haploborolls
Diamondville	Fine-loamy, mixed Borollic Haplargids
Effington	Fine, montmorillonitic, mesic Typic Natrargids
Elkol	Fine, montmorillonitic (calcareous), frigid Ustertic Torriorthents
Emblem	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Calciorthids
Farlow	Loamy-skeletal, mixed Typic Cryoborolls
Farlow Variant	Loamy-skeletal, mixed Typic Cryoborolls
Fluvaquents	Fluvaquents
Forelle	Fine-loamy, mixed Borollic Haplargids
Fornor	Loamy-skeletal, mixed Argic Cryoborolls
Frisite	Fine-loamy, mixed, mesic Typic Haplargids
Gelkie	Fine-loamy, mixed Argic Cryoborolls
Gelkie Variant	Fine-loamy, mixed Argic Cryoborolls
Glendive	Coarse-loamy, mixed (calcareous), frigid Ustic Torrifluvents
Granile	Loamy-skeletal, mixed Typic Cryoboralfs
Griffy	Fine-loamy, mixed, mesic Typic Haplargids
Haplaquolls	Haplaquolls
Haverdad	Fine-loamy, mixed (calcareous), mesic Ustic Torrifluvents
Havre	Fine-loamy, mixed (calcareous), frigid Ustic Torrifluvents
Havre Variant	Fine-loamy, mixed (calcareous), frigid Aquic Ustifluvents

TABLE 14.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Highpoint	Loamy-skeletal, mixed, nonacid, frigid, shallow Ustic Torriorthents
Hiland	Fine-loamy, mixed, mesic Ustollic Haplargids
Hoodle	Loamy-skeletal, mixed Argic Cryoborolls
Iceslew	Fine-loamy, mixed (calcareous), frigid Aeric Fluvaquents
Inchau	Fine-loamy, mixed Argic Cryoborolls
Irigul	Loamy-skeletal, mixed Lithic Cryoborolls
Lander	Fine-loamy, mixed Fluvaquentic Haploborolls
Lander Variant	Fine-loamy over sandy or sandy-skeletal, mixed Fluvaquentic Haploborolls
Lostwells	Fine-loamy, mixed (calcareous), mesic Typic Torrifluvents
Luhon	Fine-loamy, mixed Borollic Calciorthids
Lupinto	Loamy-skeletal, mixed Borollic Haplargids
*Lymanson	Fine-loamy, mixed Argic Cryoborolls
*Midelight	Loamy-skeletal, mixed Typic Cryoborolls
Midelight Variant	Loamy-skeletal, mixed Calcic Cryoborolls
Milren	Fine, montmorillonitic Borollic Paleargids
Milvar	Fine, montmorillonitic Borollic Paleargids
Monbutte	Fine, mixed Borollic Natrargids
Mosroc	Loamy-skeletal, mixed Argic Lithic Cryoborolls
Mudray	Clayey, montmorillonitic, mesic, shallow Typic Natrargids
Muff	Fine-loamy, mixed, mesic Typic Natrargids
Oceanet	Loamy, mixed (calcareous), mesic, shallow Typic Torriorthents
Onason	Loamy, mixed, nonacid, frigid, shallow Ustic Torriorthents
Orpha	Mixed, mesic Ustic Torripsamments
Owen Creek	Fine, montmorillonitic Argic Cryoborolls
Pensore	Loamy-skeletal, carbonatic Borollic Lithic Calciorthids
Persayo	Loamy, mixed (calcareous), mesic, shallow Typic Torriorthents
Pesmore	Loamy-skeletal, mixed Typic Haploborolls
Peyton	Fine-loamy, mixed Aridic Argiborolls
Pishkun Variant	Loamy-skeletal, mixed (calcareous) Typic Cryorthents
Poposhia	Fine-loamy, mixed (calcareous), frigid Ustic Torriorthents
Quander	Loamy-skeletal, mixed Argic Cryoborolls
Rairdent	Fine-loamy, mixed, mesic Cambic Gypsiorthids
Rallod	Clayey, montmorillonitic, shallow Borollic Natrargids
Relsob	Fine-loamy over sandy or sandy-skeletal, mixed Borollic Haplargids
Rentsac	Loamy-skeletal, mixed (calcareous), frigid Lithic Ustic Torriorthents
Rockinchair	Fine-loamy, mixed Borollic Calciorthids
Rock River	Fine-loamy, mixed Borollic Haplargids
Roxal	Loamy, mixed (calcareous), shallow Typic Cryorthents
Ryan Park	Coarse-loamy, mixed Borollic Haplargids
Ryan Park Variant	Coarse-loamy, mixed Borollic Haplargids
Ryark	Coarse-loamy, mixed Borollic Haplargids
Saddle	Fine-loamy, mixed, mesic Typic Haplargids
Sandbranch	Fine-loamy, mixed, frigid Typic Natrargids
Seaverson	Loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents
Silas	Fine-loamy, mixed Cumulic Cryoborolls
Sinkson	Fine-loamy, mixed (calcareous), frigid Ustic Torriorthents
Starman	Loamy-skeletal, mixed (calcareous) Lithic Cryorthents
Taluce	Loamy, mixed (calcareous), mesic, shallow Ustic Torriorthents
Thermopolis	Loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents
Tisworth	Fine-loamy, mixed Borollic Natrargids
Tongue River	Fine-loamy, mixed Typic Cryoboralfs
Uffens	Fine-loamy, mixed, mesic Typic Natrargids
Uhl	Fine-loamy, mixed Typic Cryoborolls
Venapass	Coarse-loamy, mixed Cumulic Cryaquolls
Vonalee	Coarse-loamy, mixed, mesic Ustollic Haplargids
Wallson	Coarse-loamy, mixed, mesic Typic Haplargids
Winada Variant	Loamy-skeletal, mixed Argic Cryoborolls
Woosley	Fine-loamy, mixed Argic Cryoborolls
Worland	Coarse-loamy, mixed (calcareous), mesic Typic Torriorthents
Youga	Fine-loamy, mixed Argic Cryoborolls
Youngston	Fine-loamy, mixed (calcareous), mesic Typic Torrifluvents
Zeomont	Mixed, frigid Ustic Torripsamments

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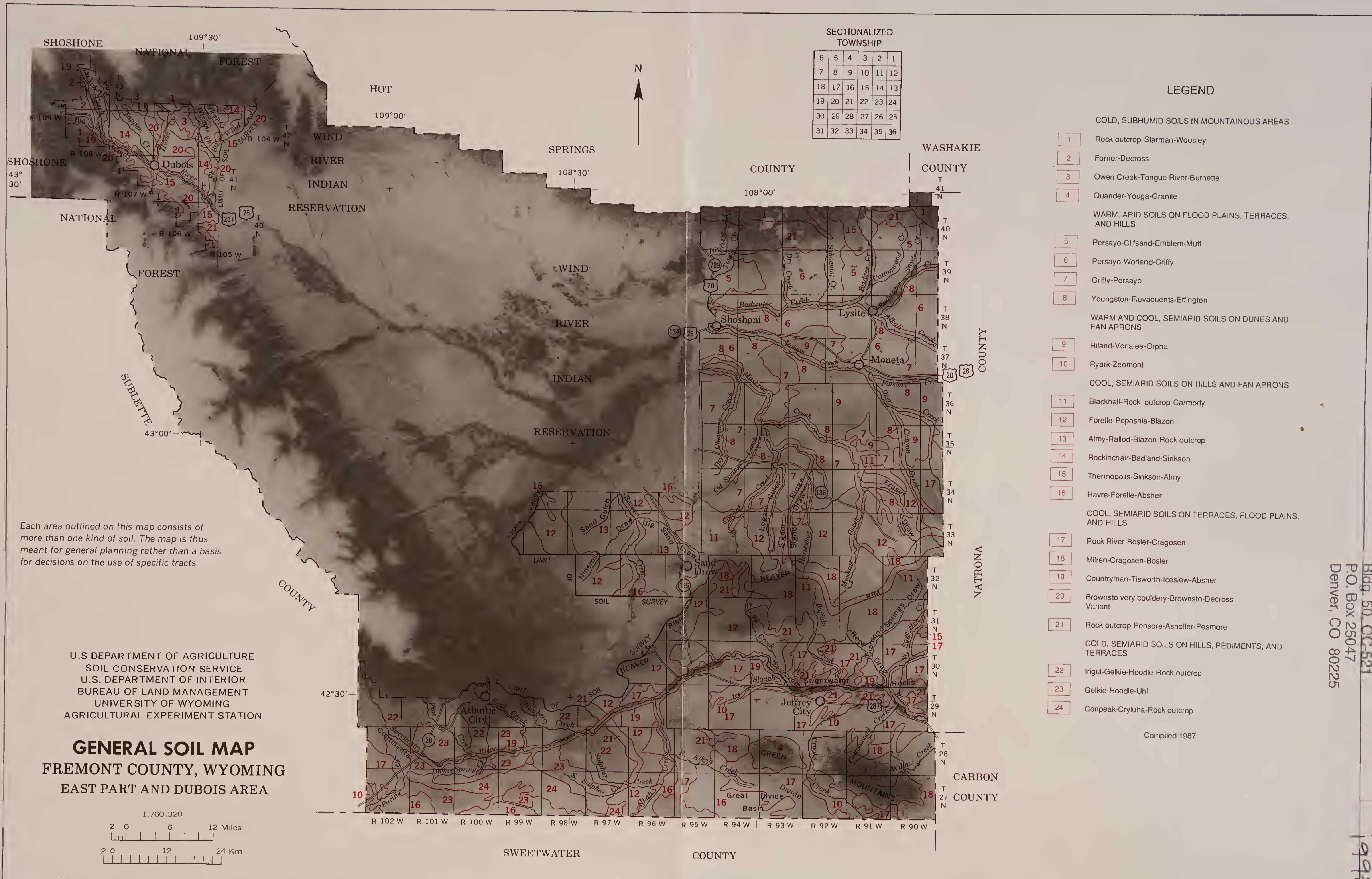

GENERAL SOIL MAP
FREMONT COUNTY, WYOMING
EAST PART AND DUBOIS AREA
U.S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
UNIVERSITY OF WYOMING
AGRICULTURAL EXPERIMENT STATION
1:760,320
Miles
Km
Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.
SECTIONALIZED TOWNSHIP
LEGEND
COLD, SUBHUMID SOILS IN MOUNTAINOUS AREAS
1 Rock outcrop-Starman-Woosley
2 Fornor-Decross
3 Owen Creek-Tongue River-Burnette
4 Quander-Youga-Granile
WARM, ARID SOILS ON FLOOD PLAINS, TERRACES, AND HILLS
5 Persayo-Clifsand-Emblem-Muff
6 Persayo-Worland-Griffy
7 Griffy-Persayo
8 Youngston-Fluvaquents-Effington
WARM AND COOL, SEMIARID SOILS ON DUNES AND FAN APRONS
9 Hiland-Vonalee-Orpha
10 Ryark-Zeomont
COOL, SEMIARID SOILS ON HILLS AND FAN APRONS
11 Blackhall-Rock outcrop-Carmody
12 Forelle-Poposhia-Blazon
13 Almy-Rallod-Blazon-Rock outcrop
14 Rockinchair-Badland-Sinkson
15 Thermopolis-Sinkson-Almy
16 Havre-Forelle-Absher
COOL, SEMIARID SOILS ON TERRACES, FLOOD PLAINS, AND HILLS
17 Rock River-Bosler-Cragosen
18 Milren-Cragosen-Bosler
19 Countryman-Tisworth-Iceslew-Absher
20 Brownsto very bouldery-Brownsto-Decross Variant
21 Rock outcrop-Pensore-Asholler-Pesmore
COLD, SEMIARID SOILS ON HILLS, PEDIMENTS, AND TERRACES
22 Irigul-Gelkie-Hoodle-Rock outcrop
23 Gelkie-Hoodle-Uhl
24 Conpeak-Cryluha-Rock outcrop
Compiled 1987
SHOSHONE NATIONAL FOREST
WIND RIVER INDIAN RESERVATION
HOT SPRINGS COUNTY
WASHAKIE COUNTY
NATRONA COUNTY
CARBON COUNTY
SWEETWATER COUNTY
SUBLETTE COUNTY
Dubois
Shoshoni
Lysite
Moneta
Sand Draw
Atlantic City
Jeffrey City
GREEN MOUNTAINS
Great Divide Basin

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FREMONT COUNTY, WYOMING (EAST PART AND DUBOIS AREA)

U.S. DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
UNIVERSITY OF WYOMING AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF WYOMING EXTENSION SERVICE

SOIL LEGEND

SYMBOL	NAME
100	Absher-Elkol complex, 0 to 4 percent slopes
101	Absher-Poposhia-Sinkson complex, 1 to 10 percent slopes
102	Absher Variant-Absher complex, 0 to 6 percent slopes
103	Abston-Diamondville complex, 1 to 12 percent slopes
104	Almy loam, 0 to 6 percent slopes
105	Almy-Monbutte-Rallod complex, 1 to 10 percent slopes
106	Ansel-Ansel Variant complex, steep
107	Ansel-Rock outcrop complex, hilly
108	Apron-Lostwells complex, 0 to 10 percent slopes
109	Apron-Wallson-Worland association, 1 to 15 percent slopes
110	Aquic Cryofluvents-Ansel complex, 1 to 10 percent slopes
111	Badland
112	Badland-Birdsley complex, steep
113	Badland-Seaverson-Blazon complex, steep
114	Binton-Youngston clay loams, 0 to 3 percent slopes
115	Birdsley-Mudray complex, 3 to 15 percent slopes
116	Blackhall-Rock outcrop complex, steep
117	Blackhall-Carmody association, hilly
118	Blazon-Rock outcrop-Carmody complex, hilly
119	Bluerim-Onason complex, hilly
120	Bosler-Rock River sandy loams, 1 to 8 percent slopes
121	Bosler-Ryan Park fine sandy loams, 1 to 8 percent slopes
122	Bowback-Hiland complex, rolling
123	Brownsto loam, 0 to 6 percent slopes
124	Brownsto sandy clay loam, 1 to 10 percent slopes
125	Brownsto very bouldery-Decross Variant-Brownsto complex, hilly
126	Burnette loam, 3 to 10 percent slopes
127	Chittum-Bachus-Rock outcrop association, hilly
128	Cific-Hoodle complex, sloping
129	Clifsand-Persayo complex, hilly
130	Cloud Peak-Farlow complex, 10 to 30 percent slopes
131	Coalmont-Milren-Cragosen complex, rolling
132	Conpeak-Rock outcrop-Cryluha complex, hilly
133	Countryman-Absher complex, 0 to 3 percent slopes
134	Coutis fine sandy loam, rolling
135	Crago-Pensore association, undulating
136	Cragosen-Carmody-Blazon complex, hilly
137	Cragosen-Rock outcrop-Carmody complex, hilly
138	Cragosen-Bosler-Cushool association, rolling
139	Cryluha-Conpeak association, 1 to 15 percent slopes
140	Cushool-Rock River association, 1 to 15 percent slopes
141	Dahlquist-Rock River complex, 1 to 12 percent slopes
142	Diamondville-Forelle association, rolling
143	Effington-Mudray complex, 0 to 8 percent slopes
144	Emblem-Clifsand-Rairdent complex, 1 to 25 percent slopes
145	Fluvaquents
146	Fluvaquents-Youngston complex, 0 to 3 percent slopes
147	Forelle-Luhon loams, 1 to 10 percent slopes
148	Forelle-Poposhia association, 2 to 12 percent slopes
149	Fornor-Decross complex, hilly
150	Frisite-Emblem loams, 1 to 8 percent slopes
151	Frisite-Youngston complex, 1 to 8 percent slopes
152	Gelkie Variant-Barrett Variant association, undulating
153	Granile-Ansel complex, hilly
154	Griffy-Saddle-Wallson association, undulating
155	Haplaquolls-Aquic Ustifluvents complex, nearly level
156	Haverdad-Clarkelen complex, 0 to 3 percent slopes
157	Havre-Absher-Forelle loams, 0 to 6 percent slopes
158	Havre-Forelle-Glendive complex, 0 to 3 percent slopes
159	Havre-Havre Variant-Elkol complex, 0 to 3 percent slopes
160	Highpoint-Rock outcrop complex, steep
161	Hiland sandy loam, 1 to 15 percent slopes
162	Hoodle-Rock outcrop complex, 1 to 8 percent slopes
163	Hoodle-Gelkie association, 2 to 15 percent slopes
164	Iceslew-Countryman complex, 0 to 3 percent slopes
165	Inchau-Youga loams, 10 to 30 percent slopes
166	Irigul-Midelight-Rock outcrop association, rolling
167	Irigul-Rock outcrop complex, steep

SYMBOL	NAME
168	Lander-Lander Variant loams, 0 to 3 percent slopes
169	Luhon-Rock River-Forelle complex, undulating
170	Lupinto loam, 1 to 6 percent slopes
171	Lymanson-Abston-Gelkie association, hilly
172	Lymanson-Conpeak association, rolling
173	Midelight Variant-Winada Variant-Starman gravelly loams, steep
174	Milren-Bosler-Rock River sandy loams, 1 to 12 percent slopes
175	Milvar-Milren complex, 1 to 6 percent slopes
176	Mosroc-Lymanson association, hilly
177	Oceanet-Rock outcrop-Persayo complex, hilly
178	Orpha-Vonalee complex, hilly
179	Owen Creek very stony clay loam, 2 to 15 percent slopes
180	Pensore-Rock outcrop complex, hilly
181	Persayo-Rock outcrop complex, hilly
182	Pesmore-Rock outcrop-Asholler complex, steep
183	Peyton sandy loam, 1 to 10 percent slopes
184	Pishkun Variant-Hoodle complex, hilly
185	Poposhia loam, 1 to 6 percent slopes
186	Poposhia-Blazon-Carmody complex, hilly
187	Poposhia, sodic-Blazon complex, rolling
188	Quander-Youga-Onason complex, steep
189	Rallod-Rock outcrop-Seaverson complex, hilly
190	Relsob-Bluerim sandy loams, 1 to 10 percent slopes
191	Rentsac-Carmody complex, hilly
192	Riverwash-Aquic Ustifluvents complex, nearly level
193	Rockinchair-Rock outcrop-Sinkson complex, hilly
194	Rockinchair-Sinkson loams, 1 to 15 percent slopes
195	Rock outcrop-Asholler complex, steep
196	Rock outcrop-Blackhall complex, hilly
197	Rock outcrop-Blazon complex, hilly
198	Rock outcrop-Mosroc complex, hilly
199	Rock outcrop-Oceanet complex, hilly
200	Roxal-Rock outcrop complex, steep
201	Roxal-Tongue River complex, hilly
202	Ryan Park loamy fine sand, undulating
203	Ryan Park-Carmody association, 1 to 15 percent slopes
204	Ryark sandy loam, 1 to 6 percent slopes
205	Ryark-Zeomont loamy sands, rolling
206	Sandbranch-Ryan Park Variant-Poposhia complex, 1 to 8 percent slopes
207	Sinkson-Almy sandy clay loams, 0 to 6 percent slopes
208	Sinkson-Almy-Thermopolis association, rolling
209	Starman-Rock outcrop-Woosley complex, steep
210	Taluce-Bowbac sandy loams, hilly
211	Thermopolis-Sinkson association, hilly
212	Tisworth-Absher-Forelle complex, 0 to 6 percent slopes
213	Tisworth-Poposhia complex, undulating
214	Tisworth-Ryan Park-Countryman complex, gently undulating
215	Tongue River-Inchau-Farlow Variant complex, 10 to 30 percent slopes
216	Uffens-Muff-Frisite loams, 1 to 12 percent slopes
217	Uhl-Gelkie loams, 1 to 8 percent slopes
218	Venapass-Uhl-Absher loams, 1 to 6 percent slopes
219	Venapass-Silas loams, 0 to 6 percent slopes
220	Vonalee-Hiland complex, undulating
221	Woosley-Decross-Starman association, rolling
222	Worland-Oceanet-Persayo association, rolling
223	Youga-Quander complex, 2 to 25 percent slopes
224	Youngston-Effington loams, 0 to 6 percent slopes
225	Youngston-Lostwells-Apron complex, 0 to 3 percent slopes
226	Youngston-Lostwells complex, 1 to 3 percent slopes
227	Youngston-Persayo loams, rolling
228	Zeomont loamy sand, hilly
229	Dumps, mine
230	Pits, gravel
W	Water

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline and neatline

AD HOC BOUNDARY (label) — Swift Airport

- Small airport, airfield, park, oilfield, cemetery, or flood pool — FLOOD POOL LINE

STATE COORDINATE TICK

LAND DIVISION CORNER (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS

- Interstate — 21
- Federal — 173
- State — 28
- County, farm or ranch — 1283

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or Small — water; w

PITS

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label) — Indian Mound
- Located object (label) — Tower
- Tank (label) — Gas
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) — CANAL
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial — water; w
- Intermittent — int; i

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS — 103 220

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

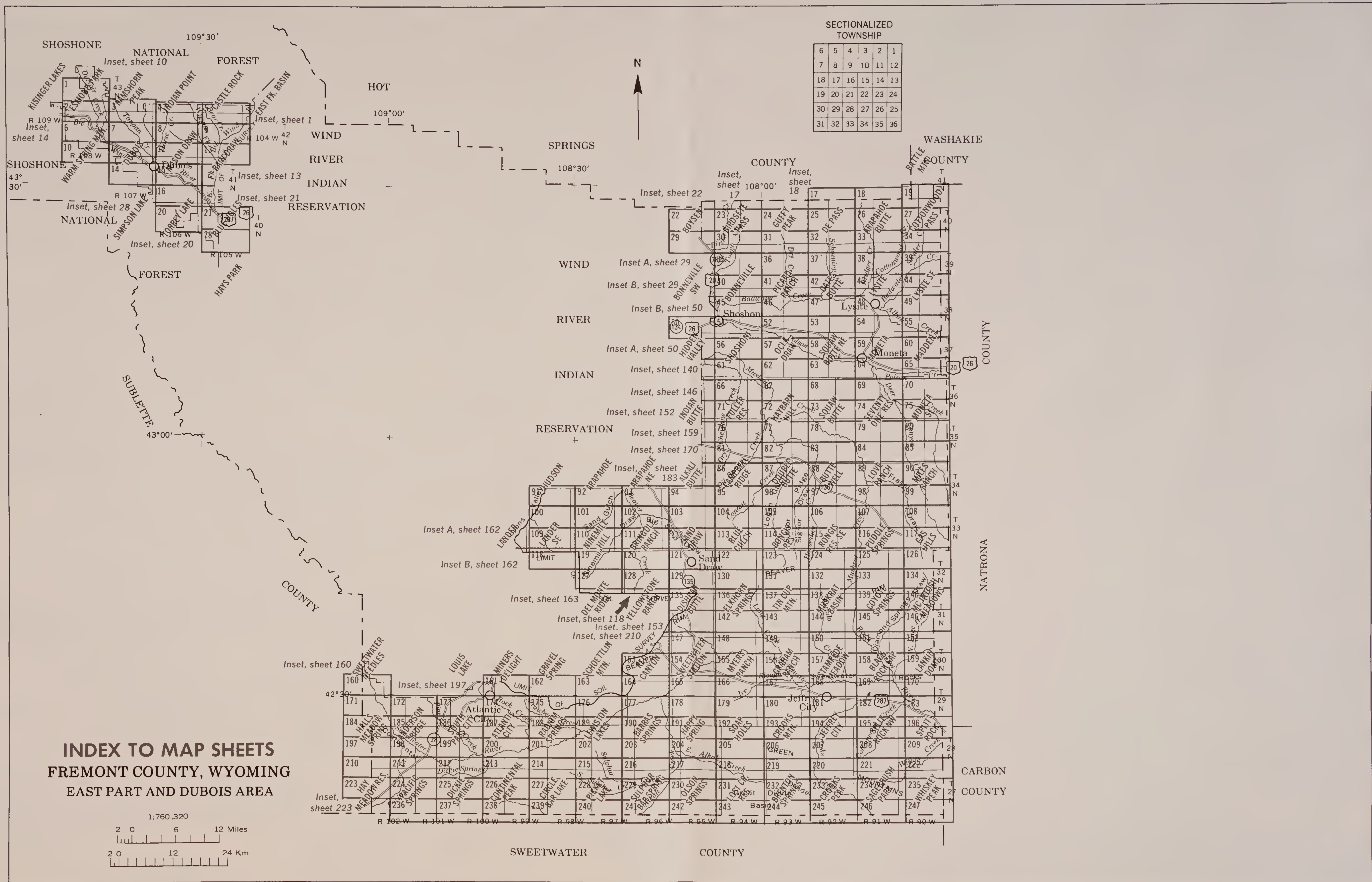
GULLY

DEPRESSION OR SINK

SOIL SAMPLE (normally not shown) — S

MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot



INDEX TO MAP SHEETS

FREMONT COUNTY, WYOMING

EAST PART AND DUBOIS AREA

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 1

1

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 2

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 2

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3

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 3

4

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 4

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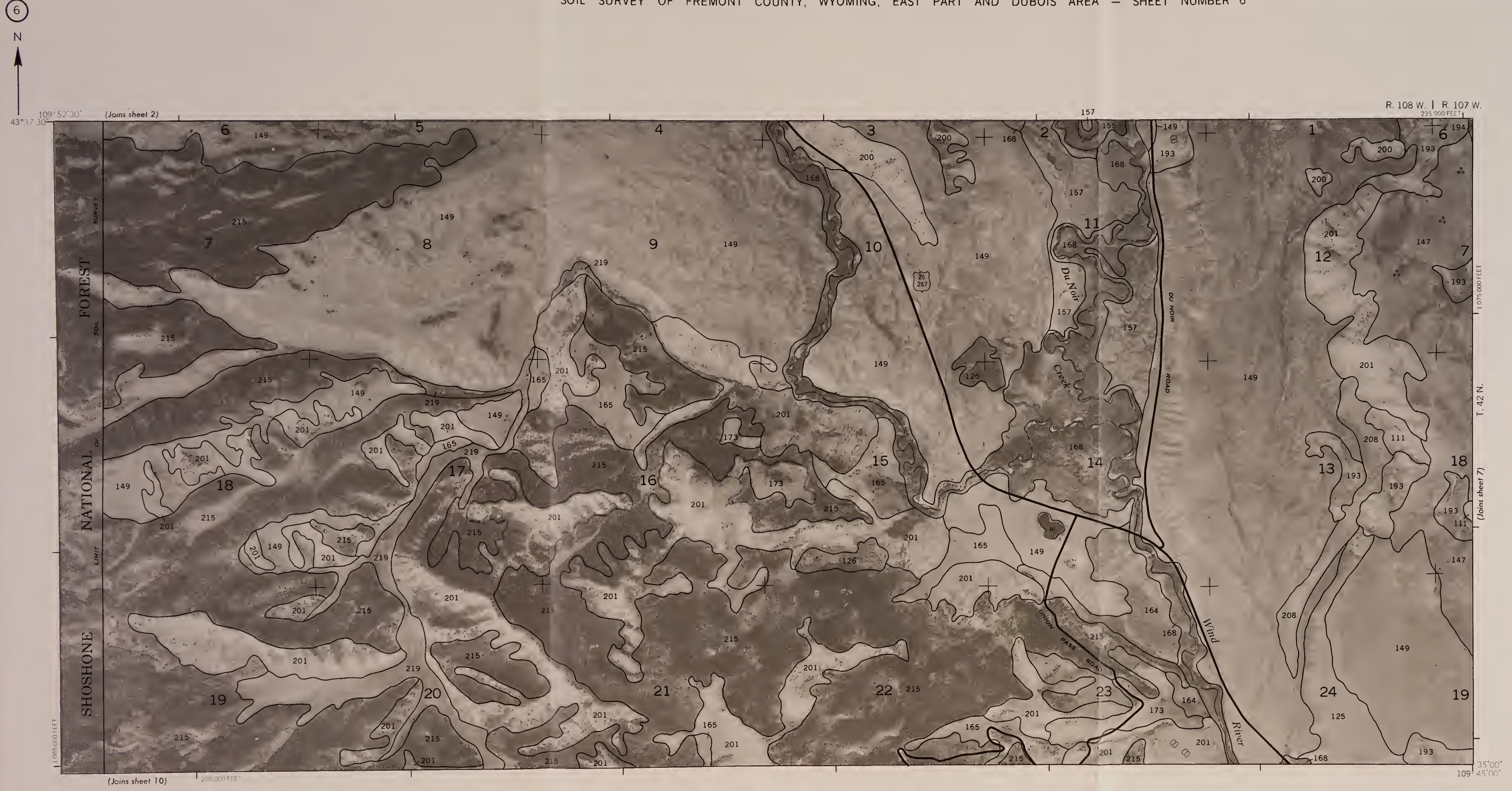
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 5

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 6



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 6

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SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 7

7

N

(Joins sheet 3) R. 107 W. | R. 106 W.

109° 37'30"
43° 37'30"

240 000 FEET

1 075 000 FEET

T. 42 N.

(Joins sheet 6)

(Joins sheet 8)

35'00"
109° 45'00"

(Joins sheet 11)

265 000 FEET

1 065 000 FEET

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

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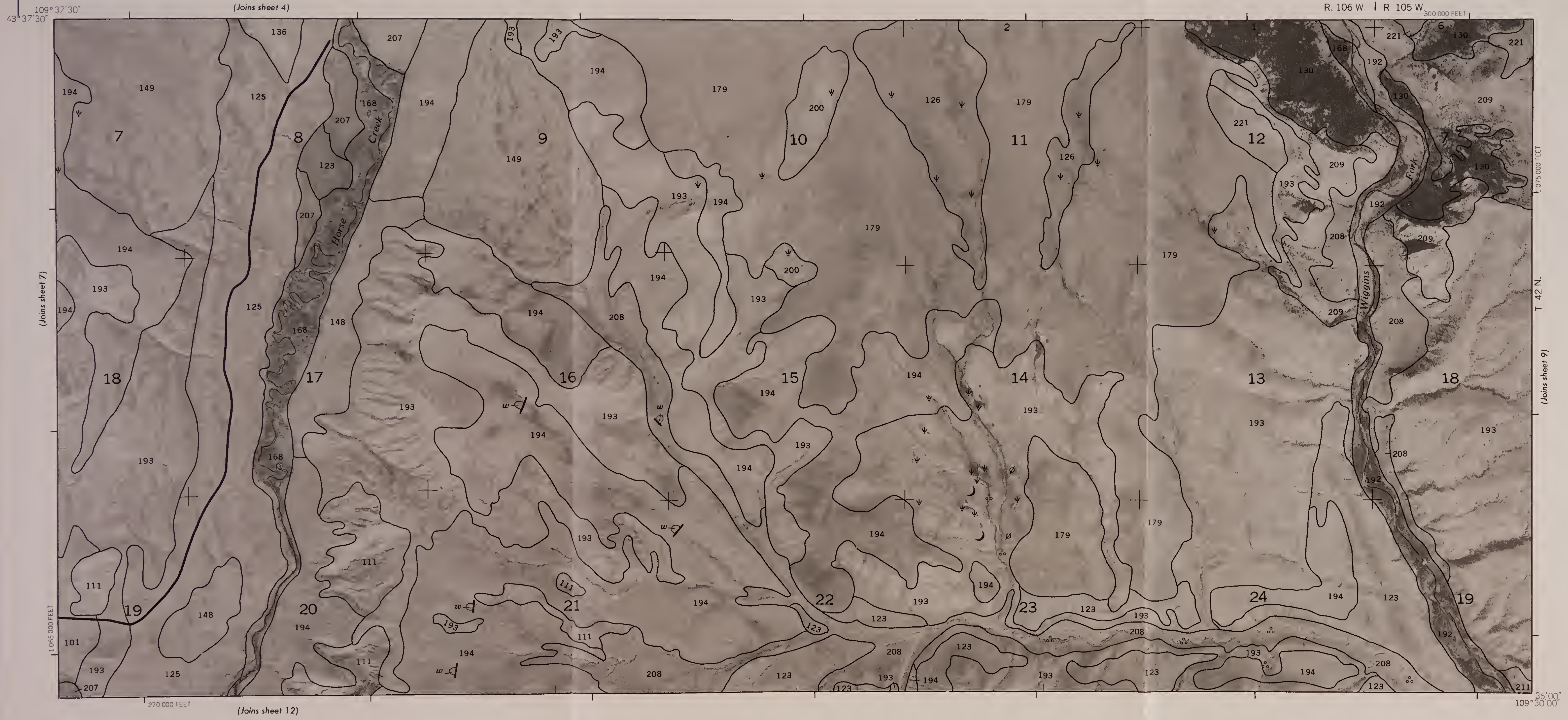
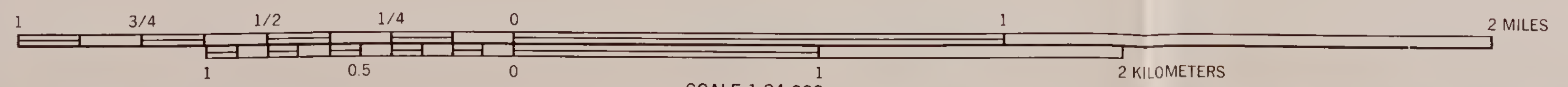
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 7

(8)

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 8





SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 8

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 9

9

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 10

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 10

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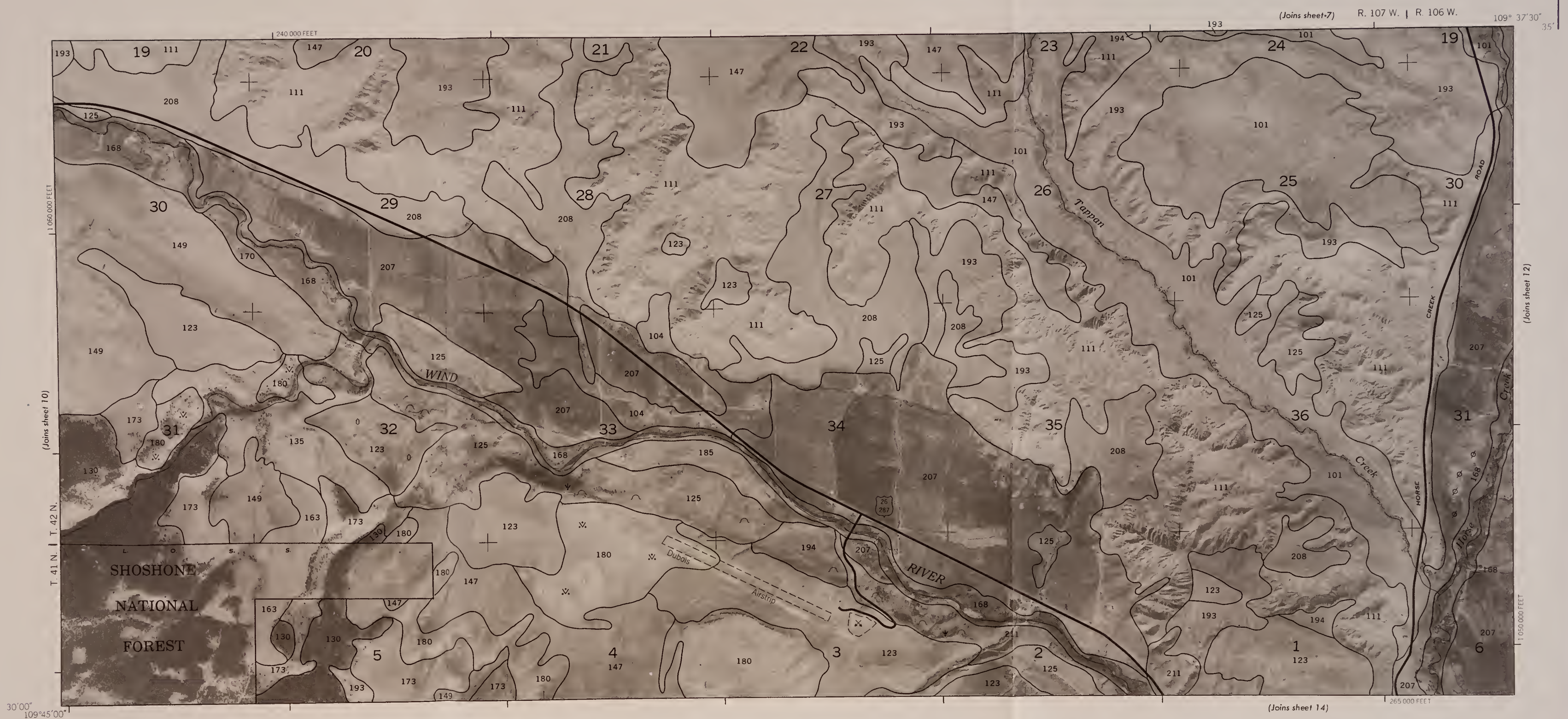

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

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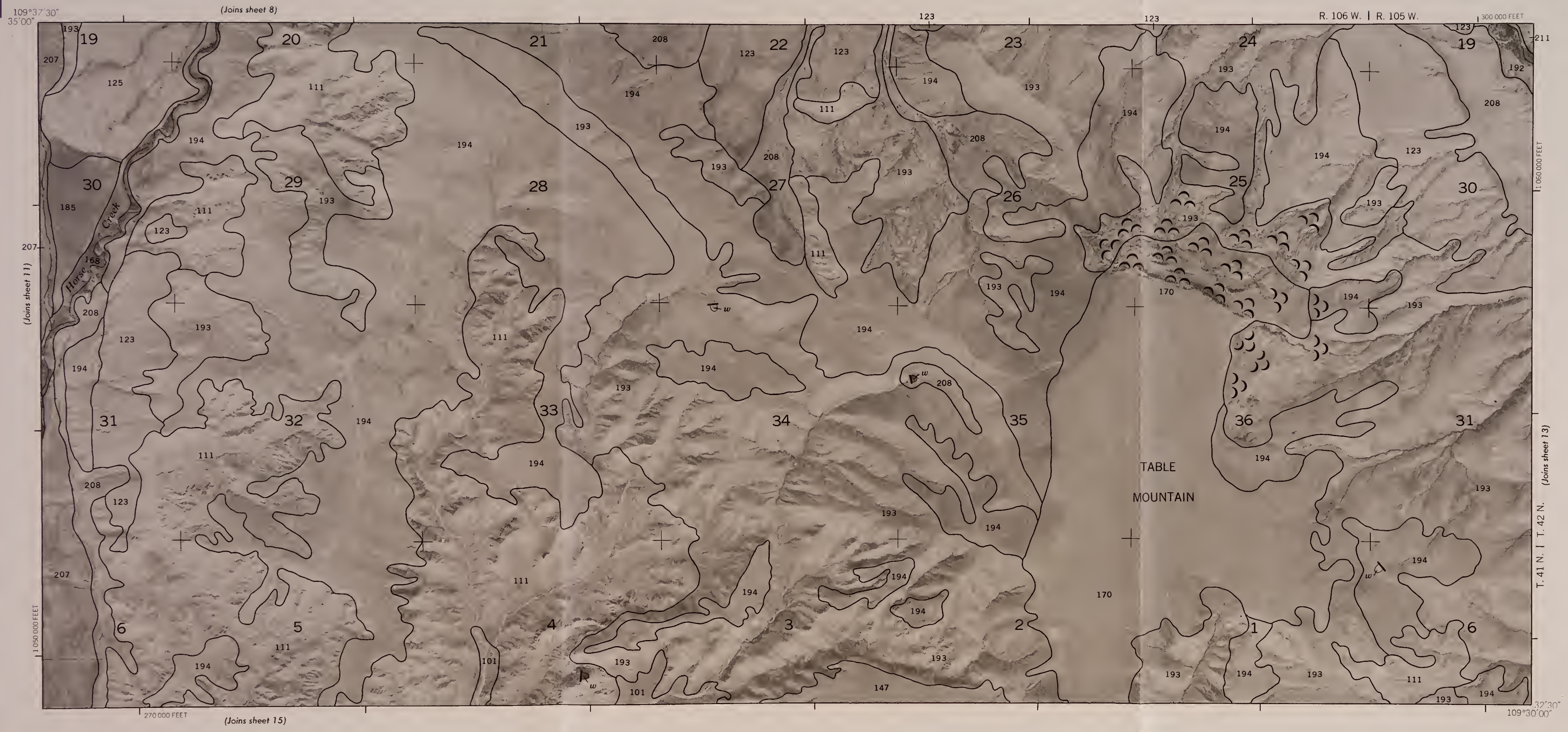
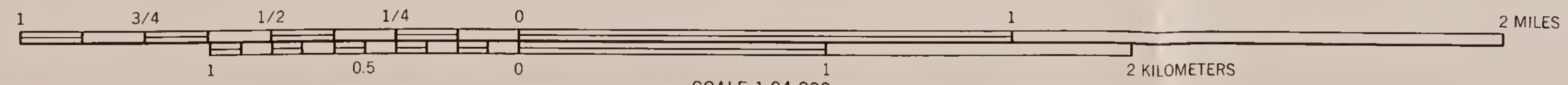
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 11

(12)

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 12





SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 12

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13

N

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 13

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 14

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SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 15

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 15

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 16

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 16

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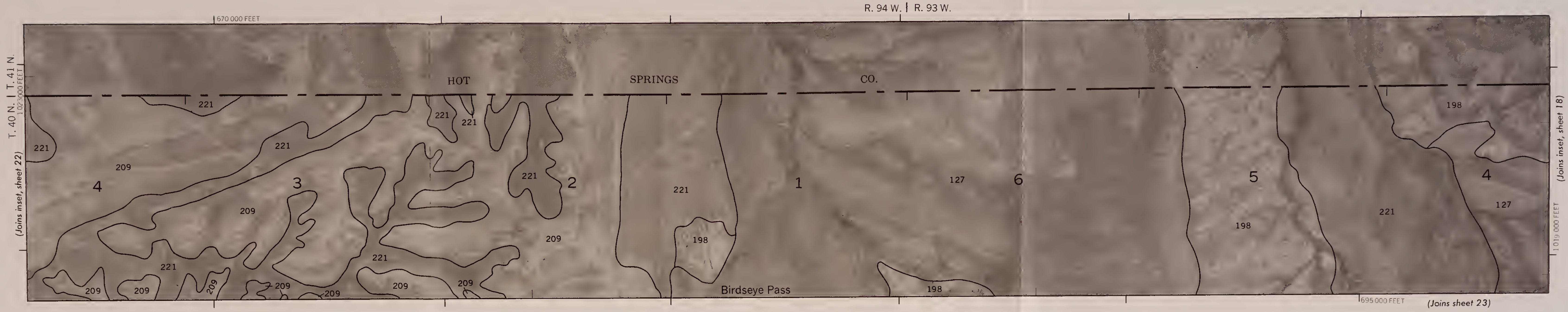

4000 AND 5000-FOOT GRID TICKS

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

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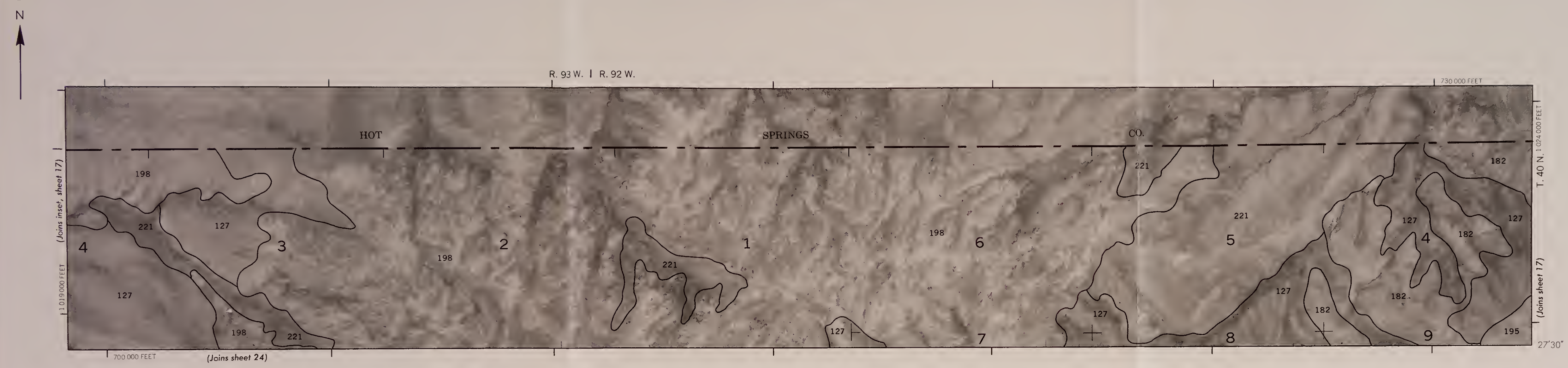
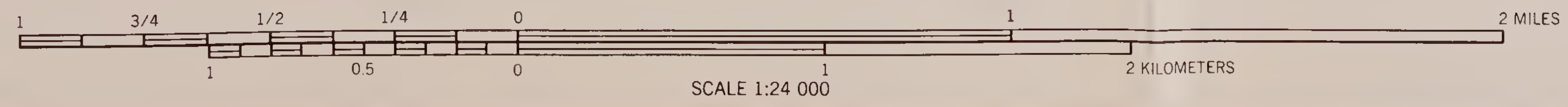
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 17

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 18





FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 18

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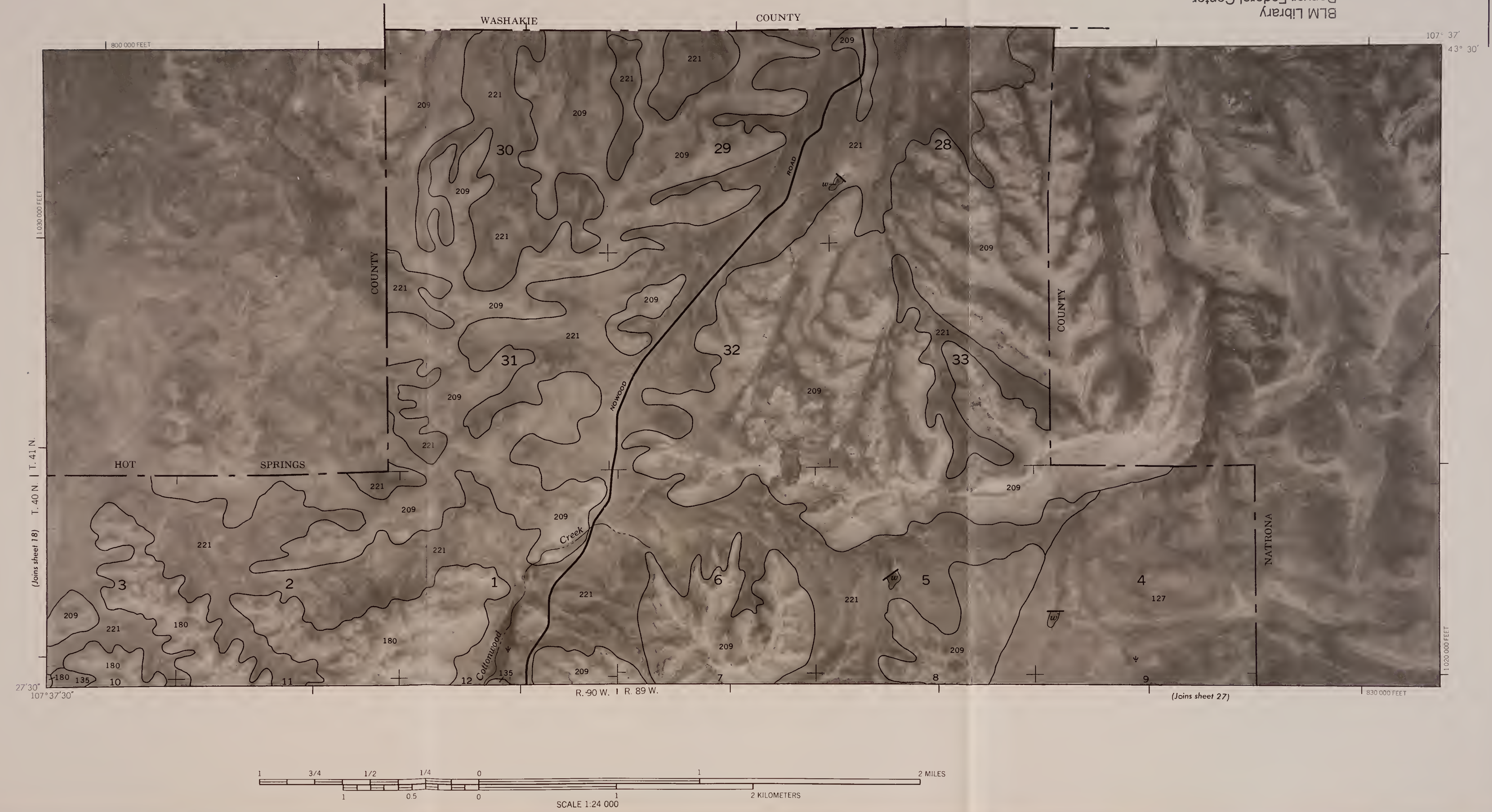
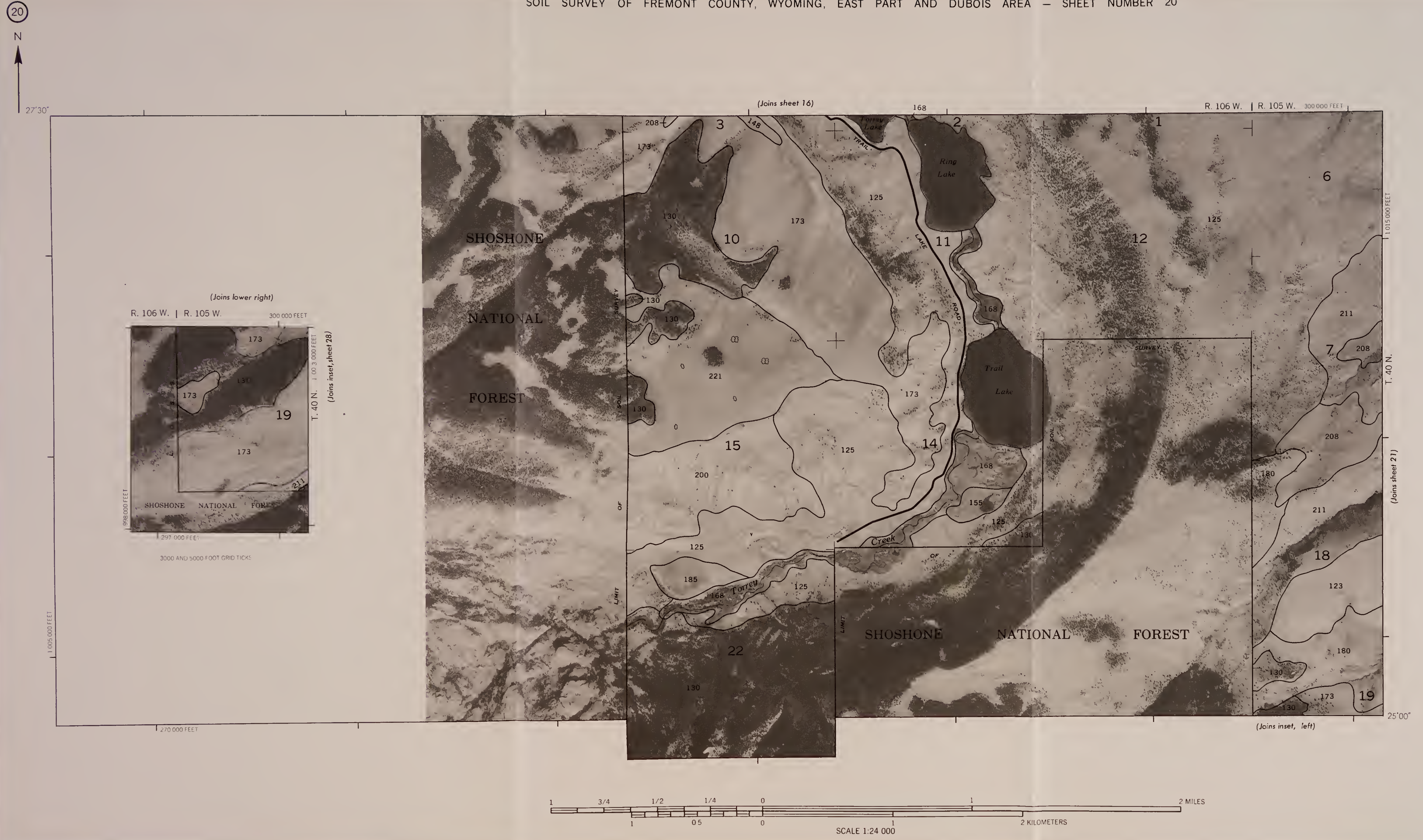
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 19





FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 20

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21

N

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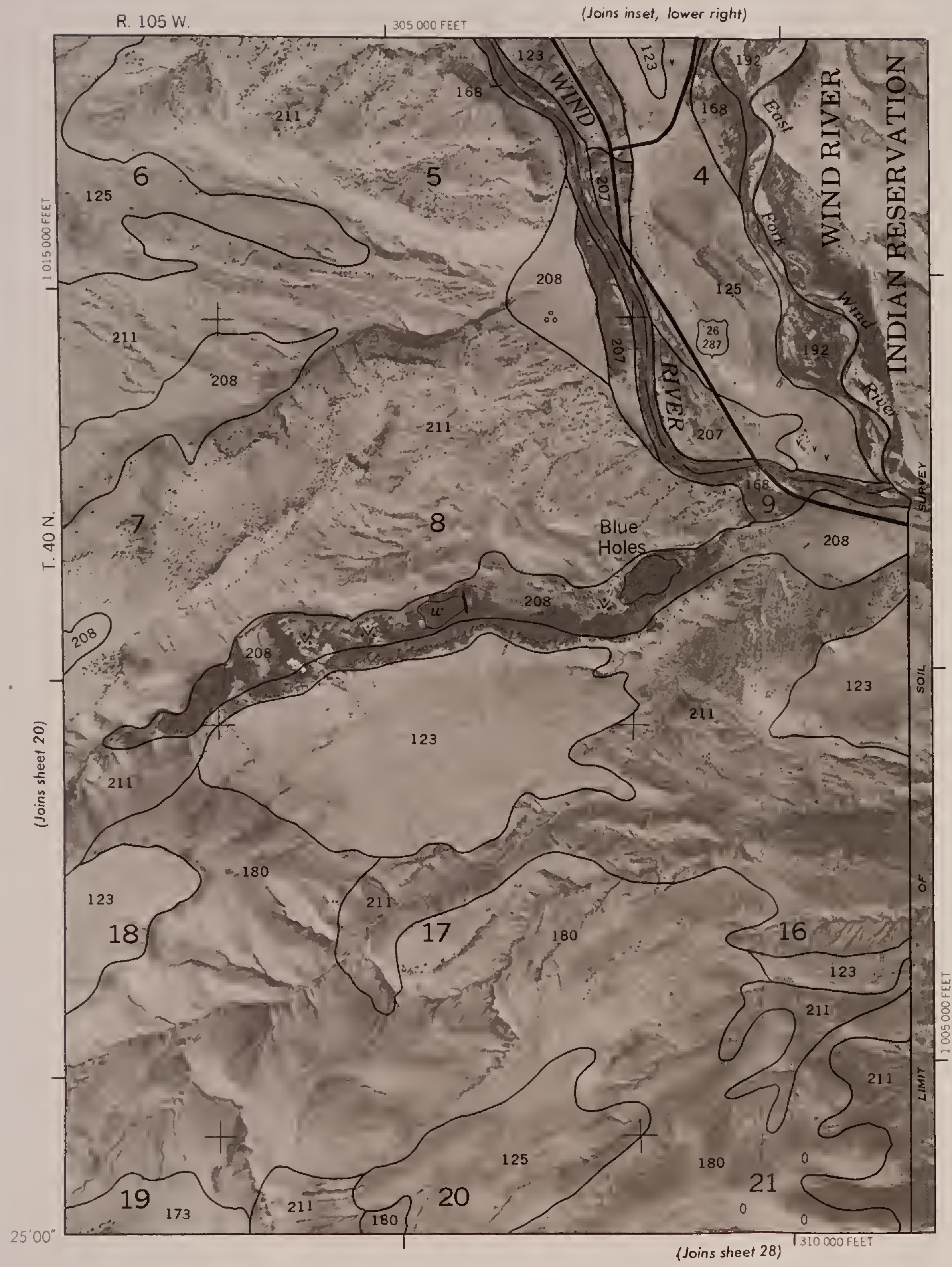
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 21



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 22

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N

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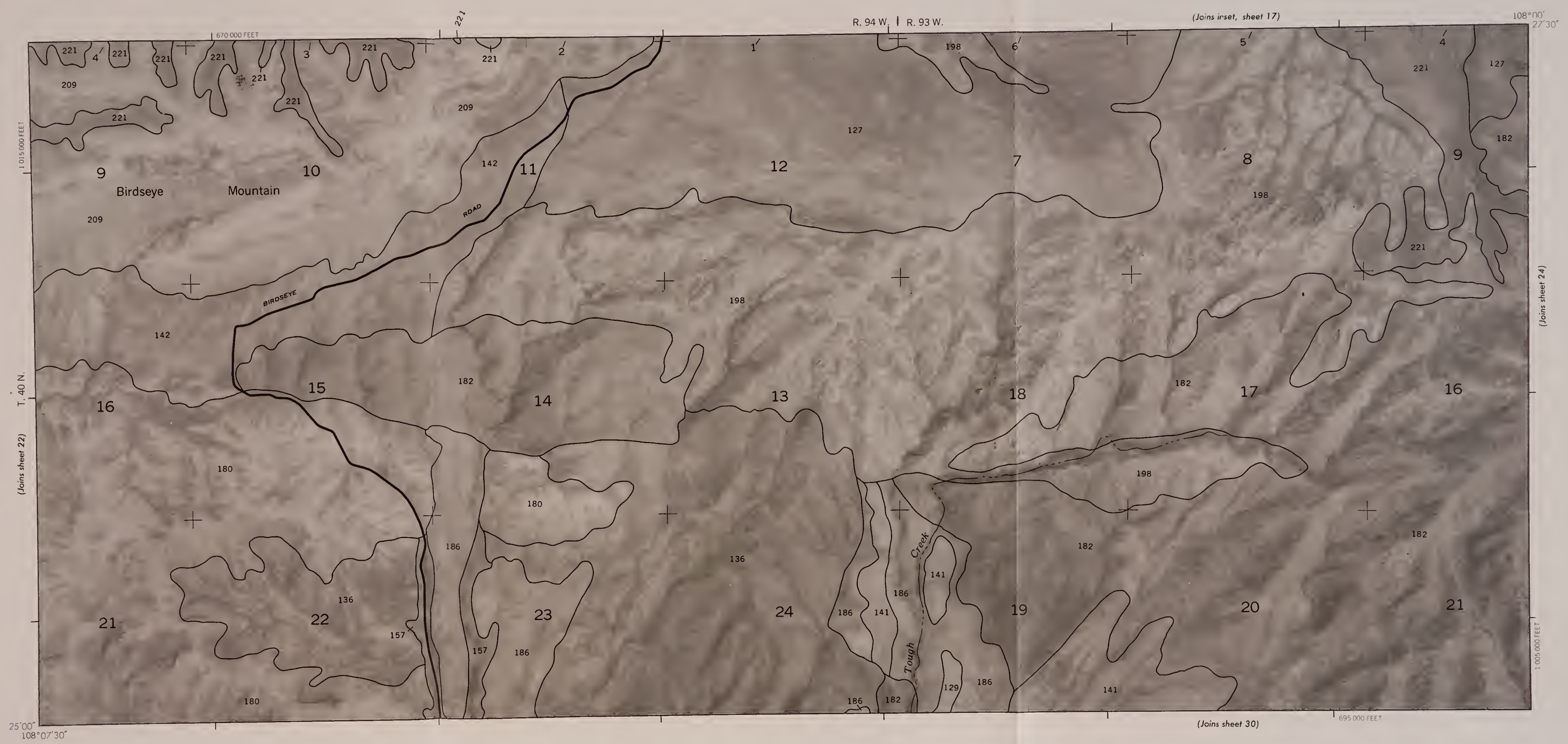
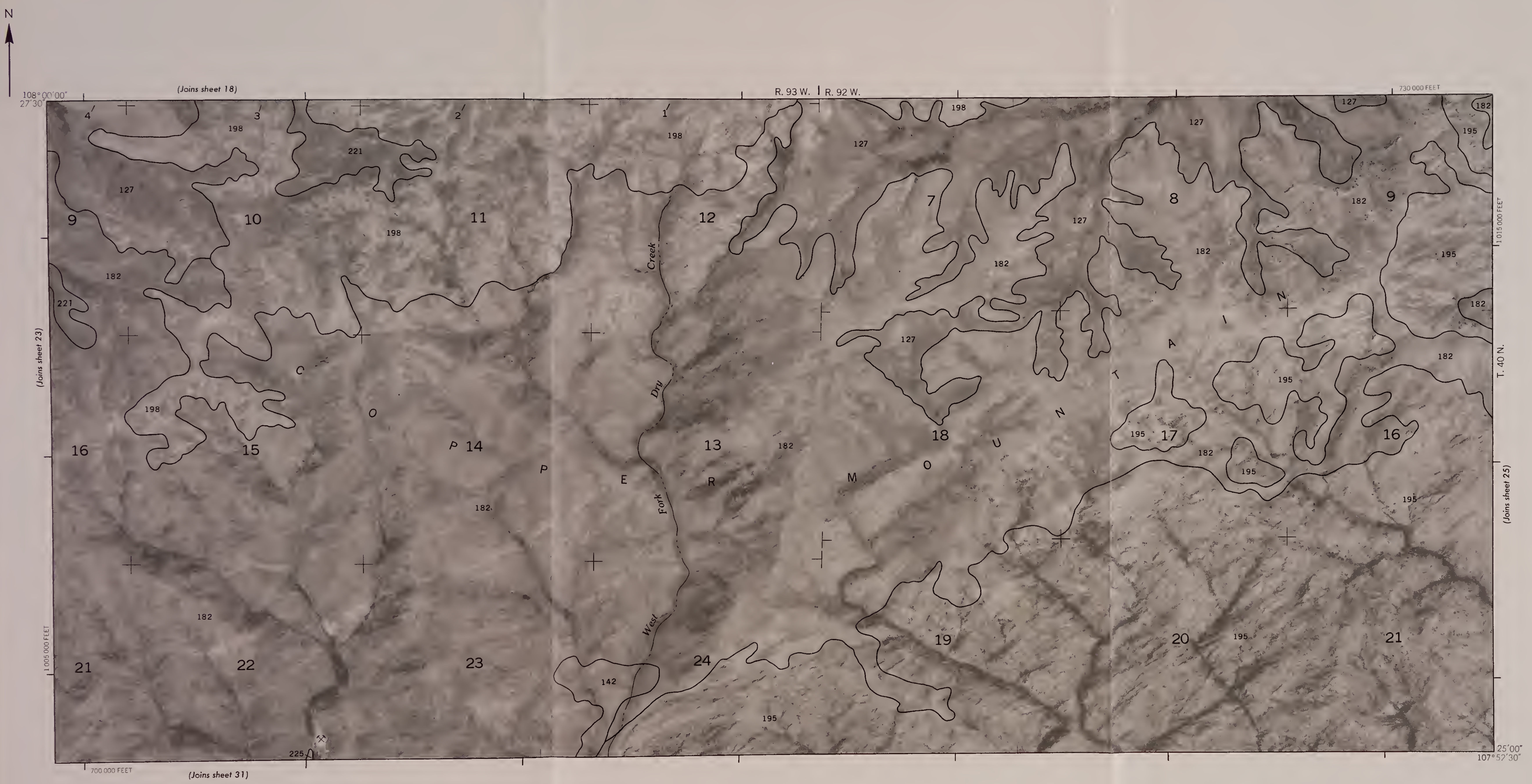
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 23



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 24

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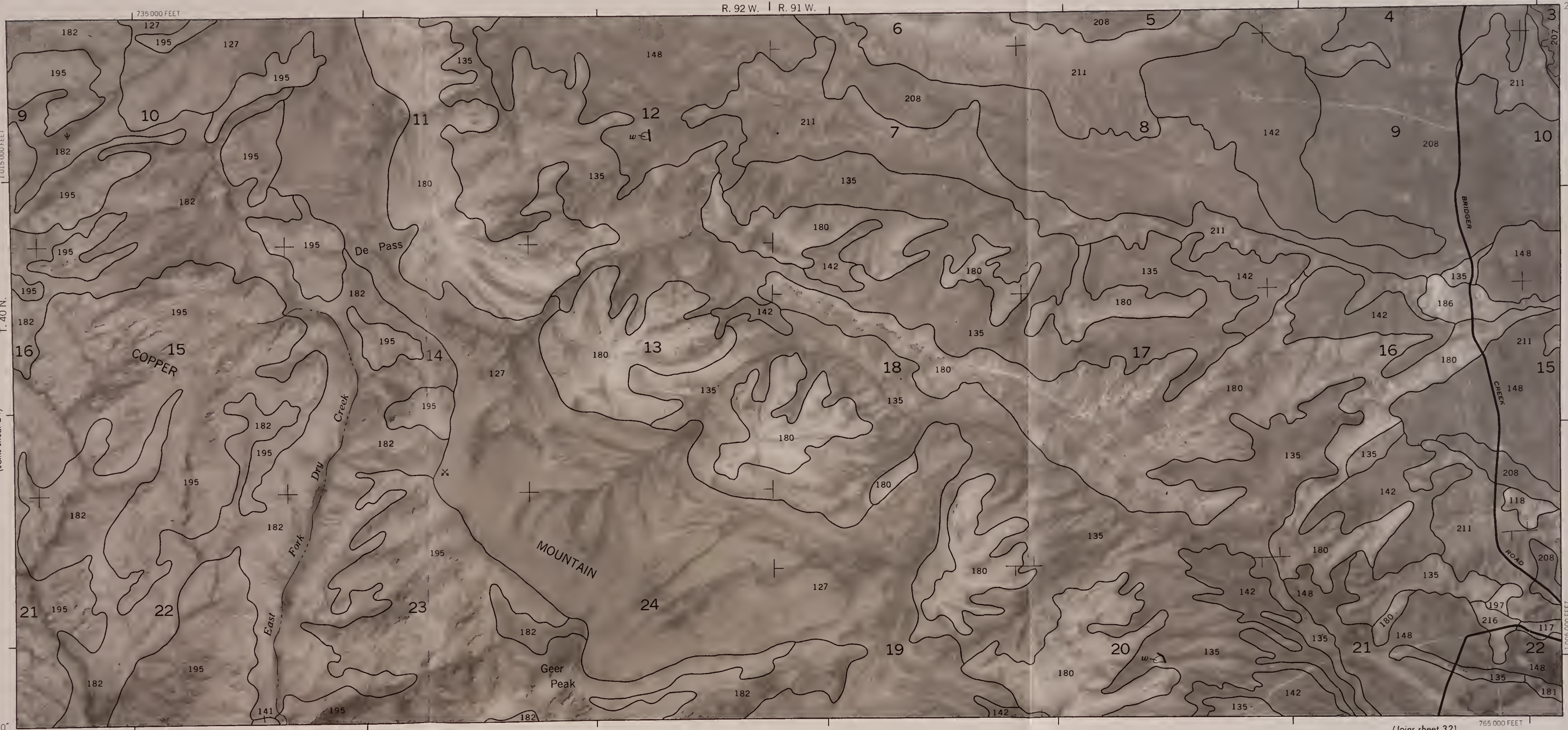
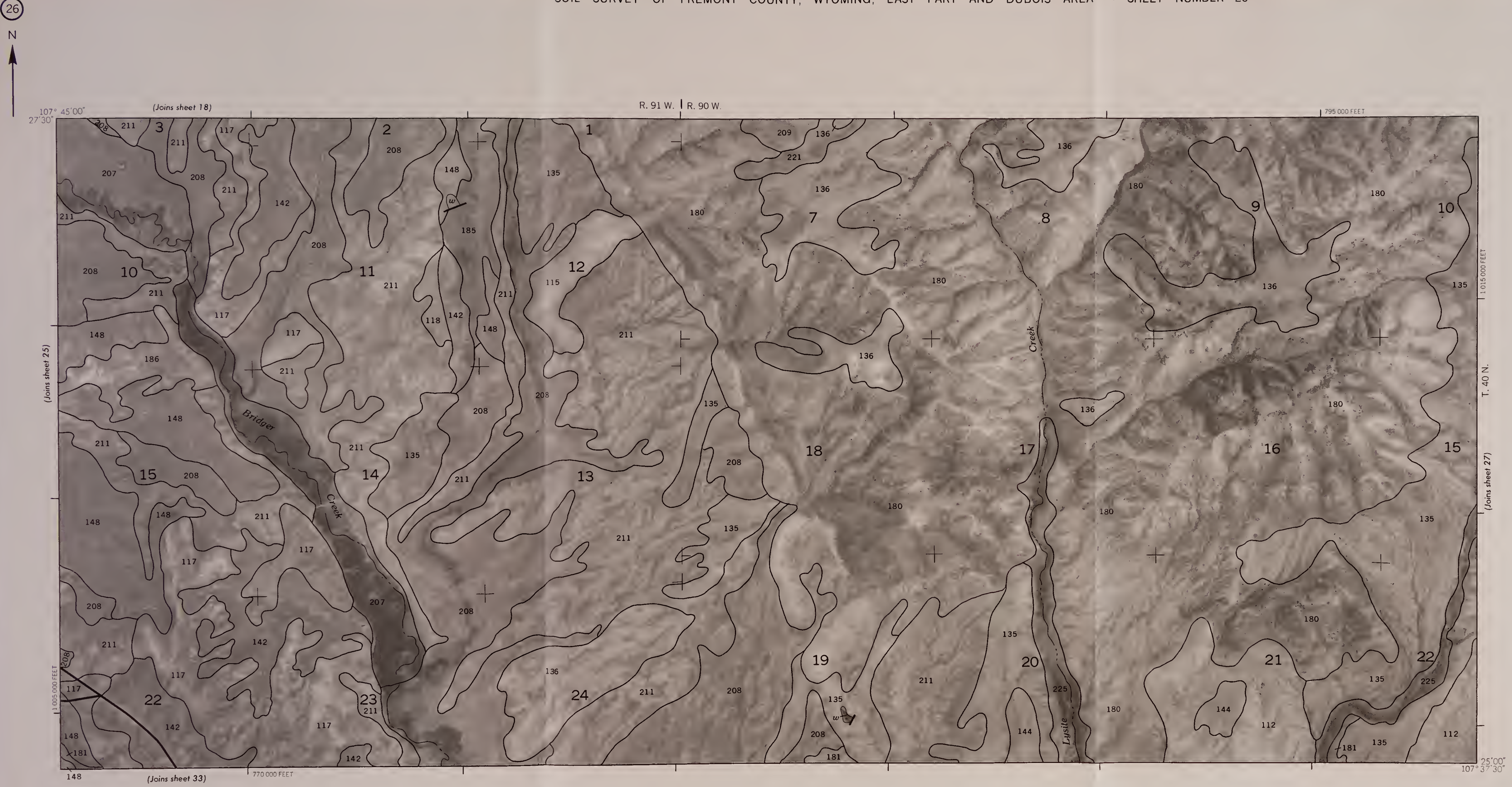
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 25

N



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 26



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 26

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 27

N

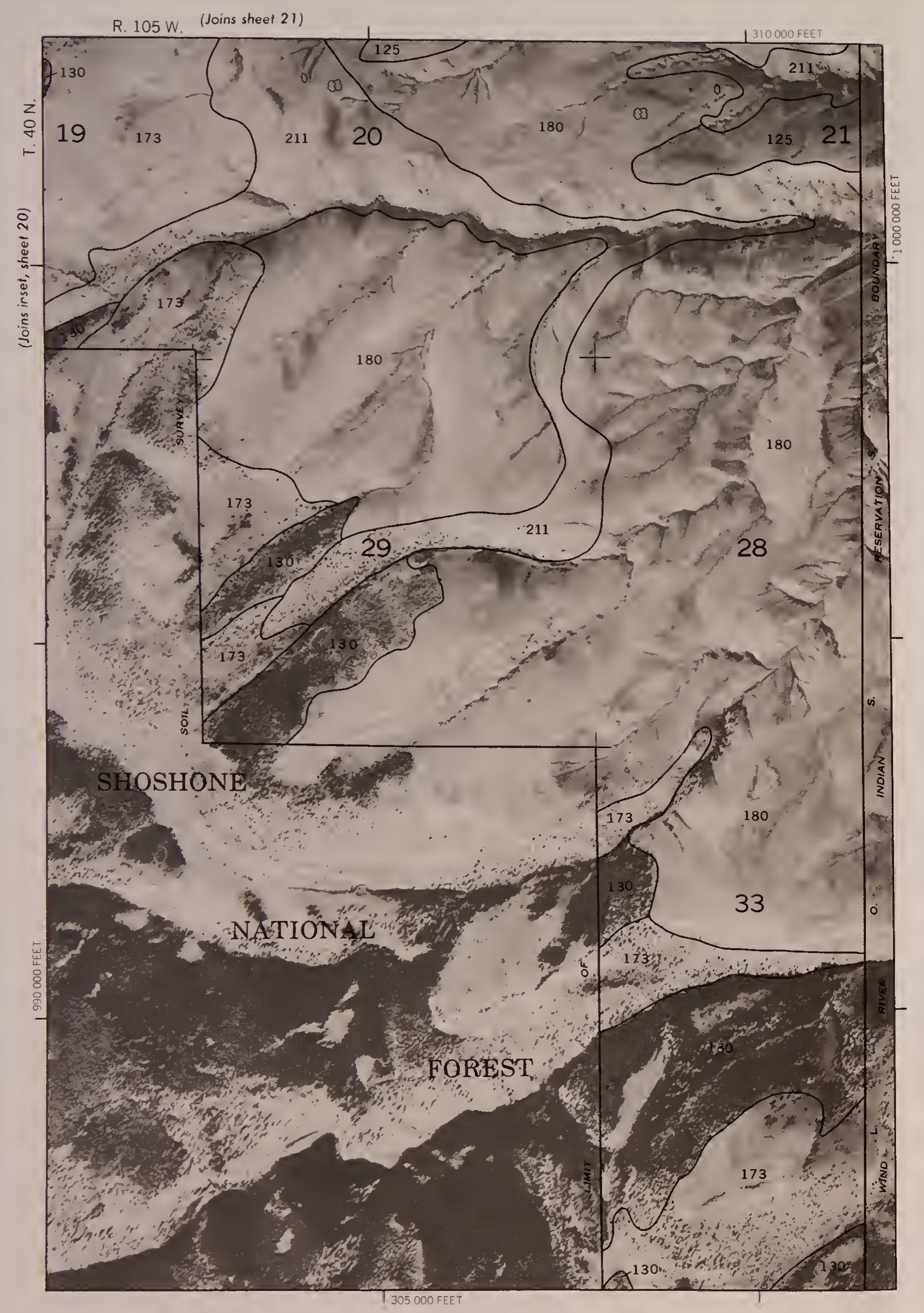
1 3/4 1/2 1/4 0 1 2 MILES

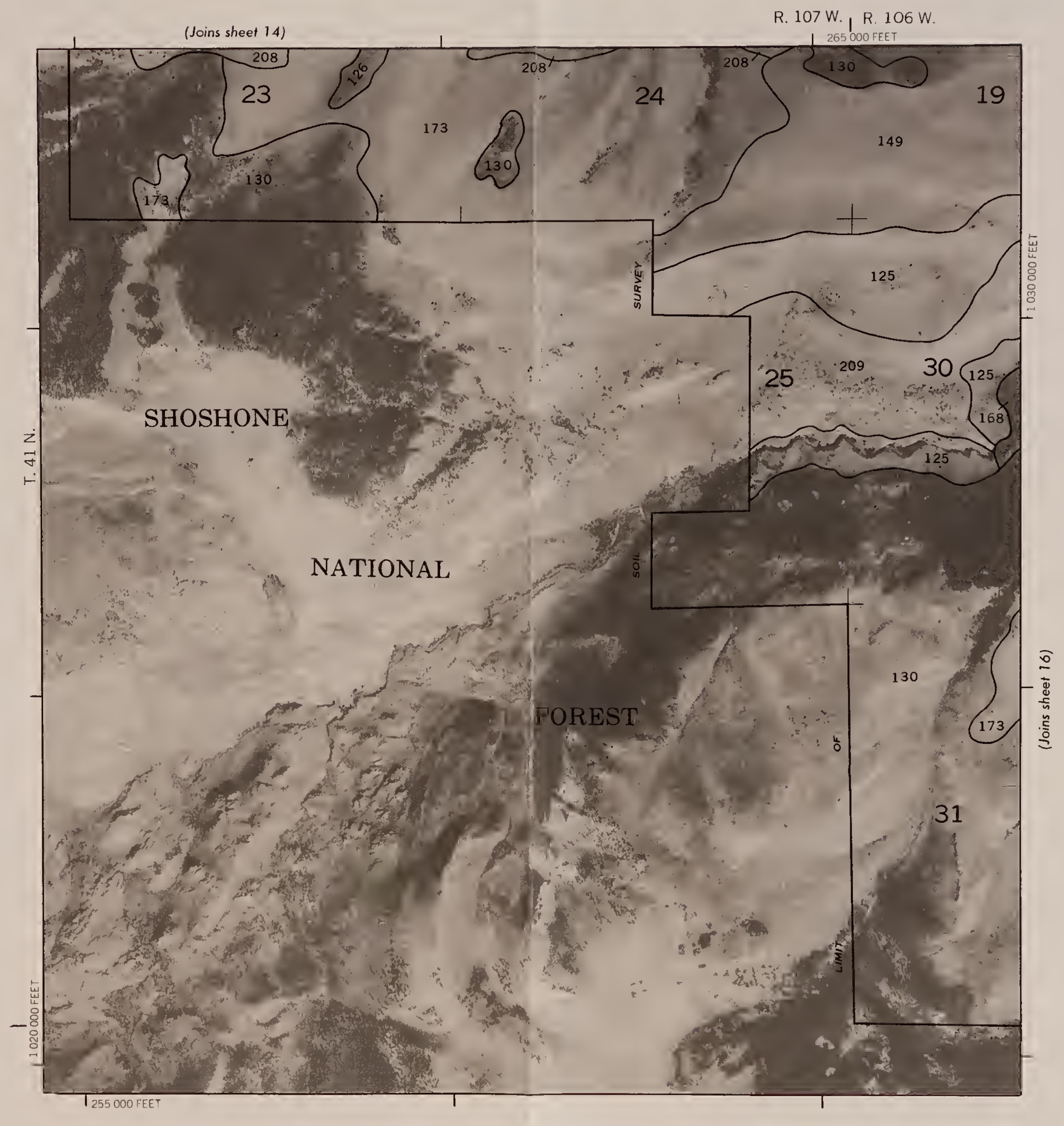
1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 28

N





1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 28

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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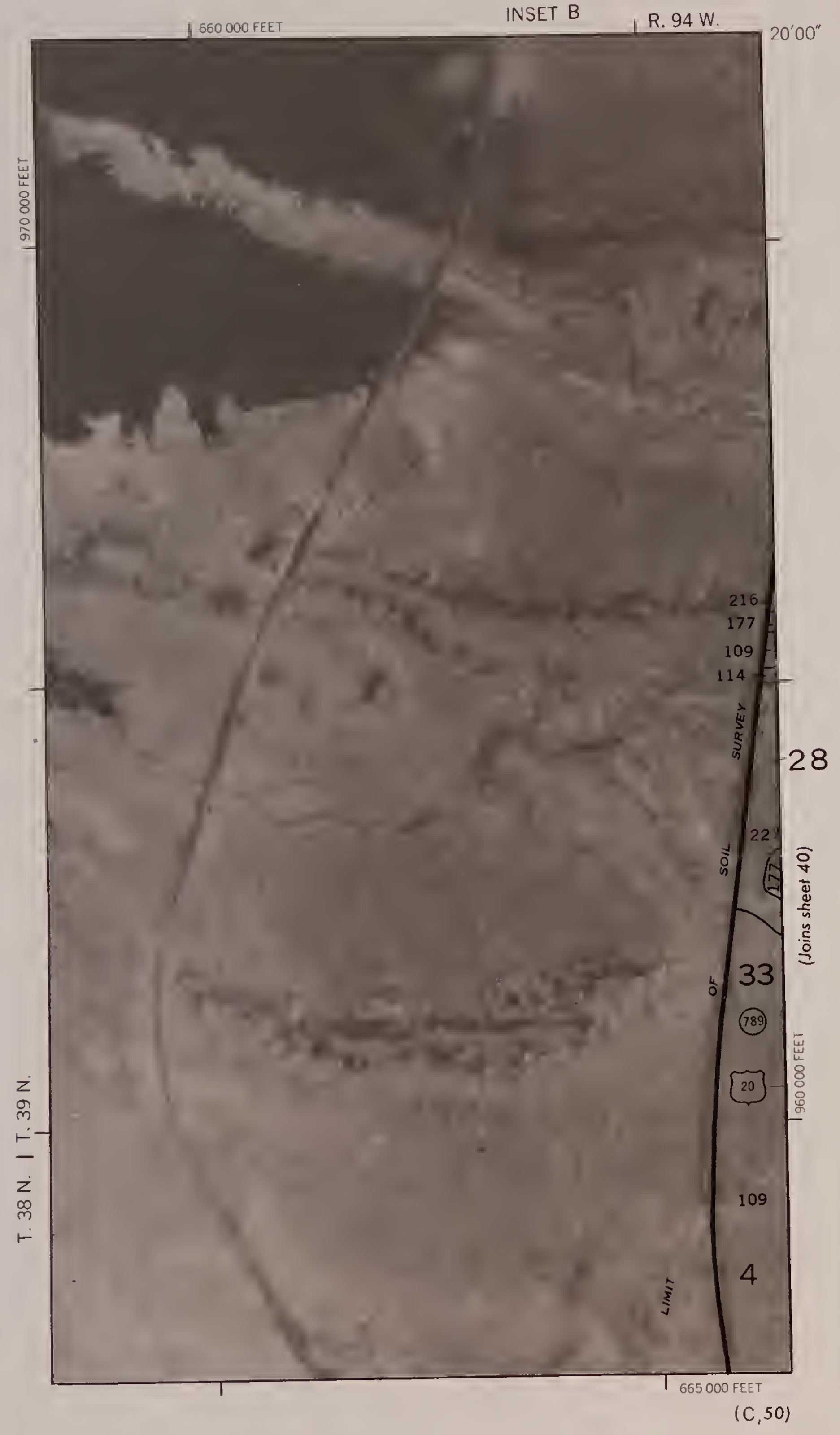
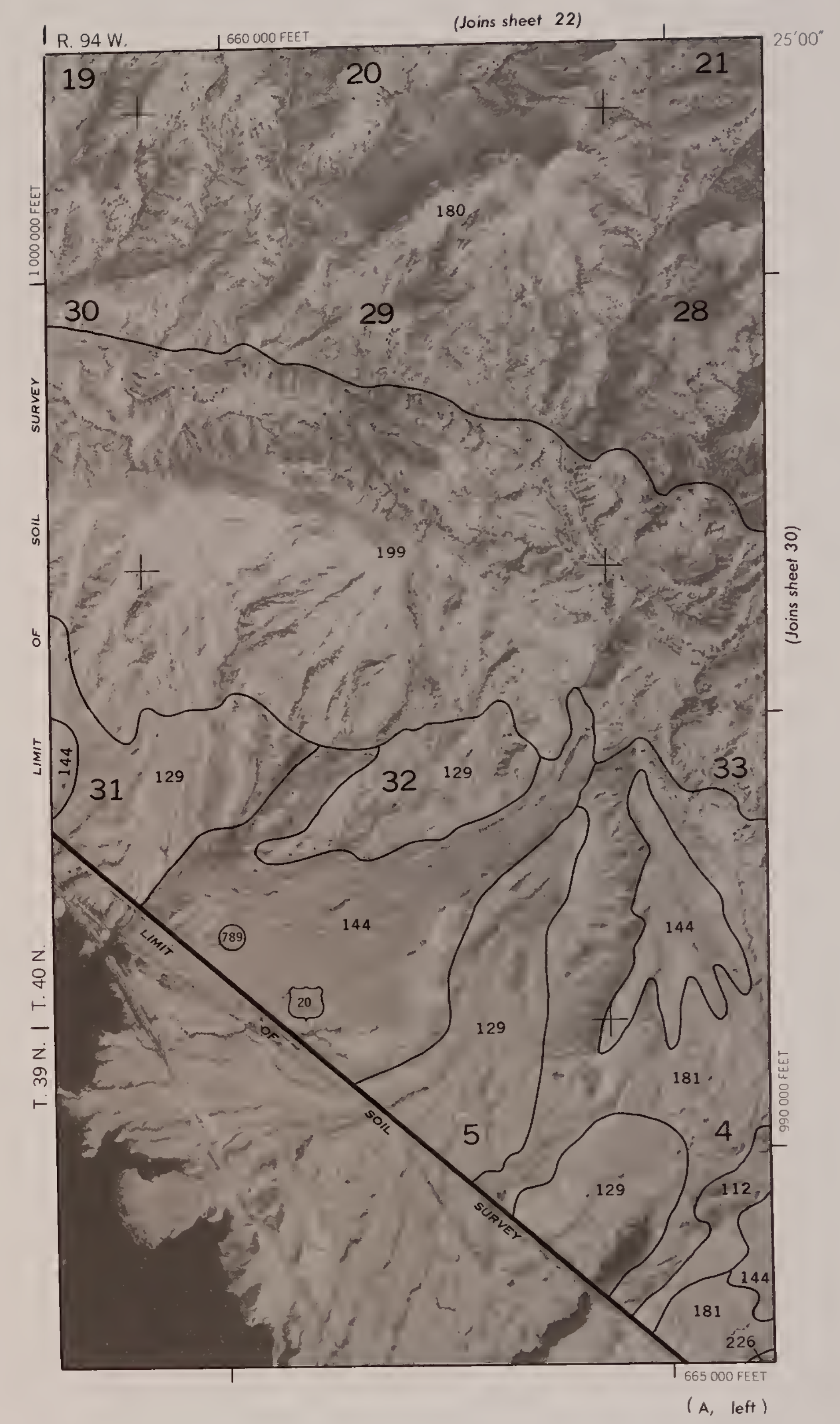
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 29

INSET B



INSET A (Joins lower right)



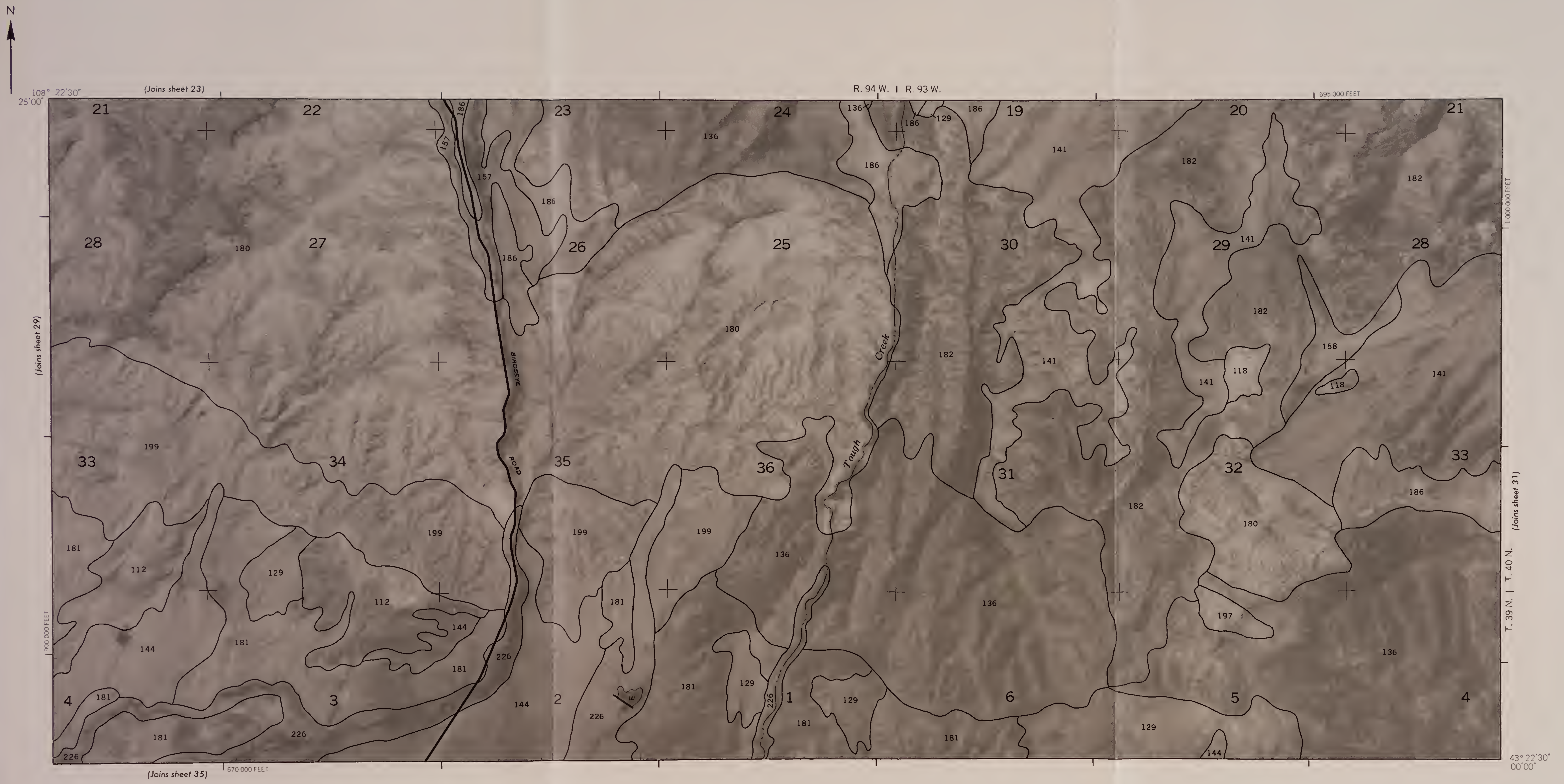
N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 30



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 30

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 31

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 32

This soil survey map was compiled by the U S Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

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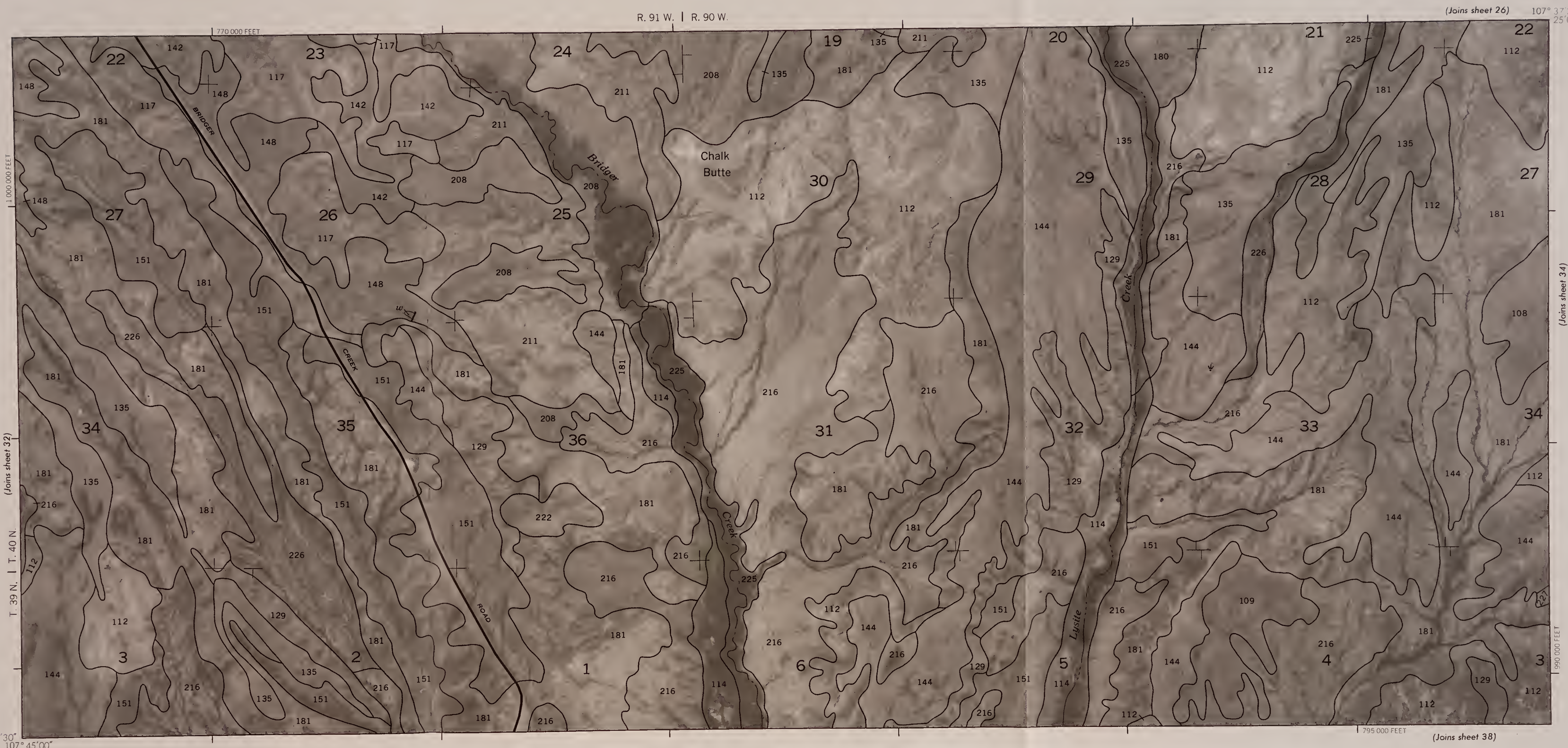
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 33

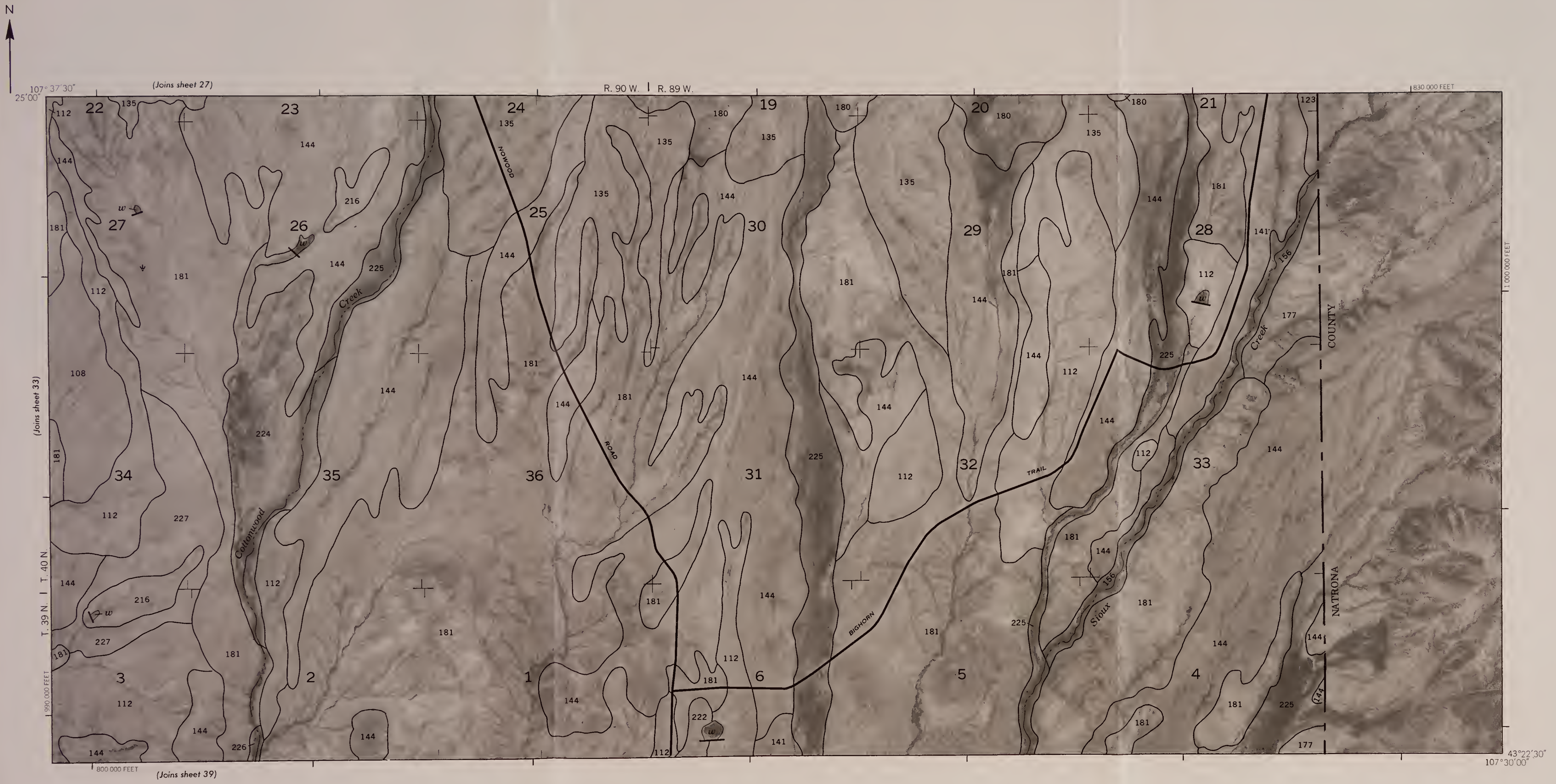


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 34



SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 34

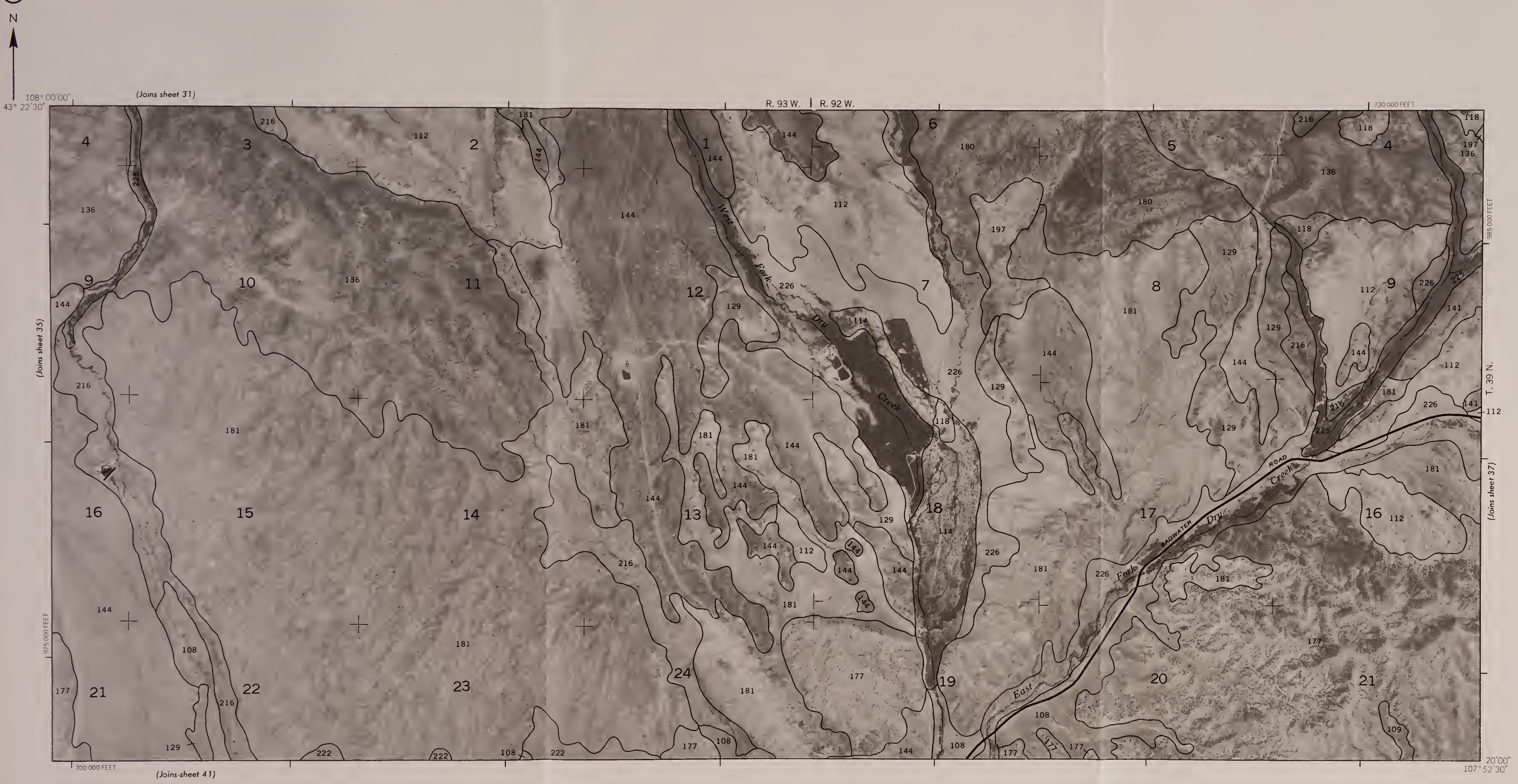
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 35

35

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000



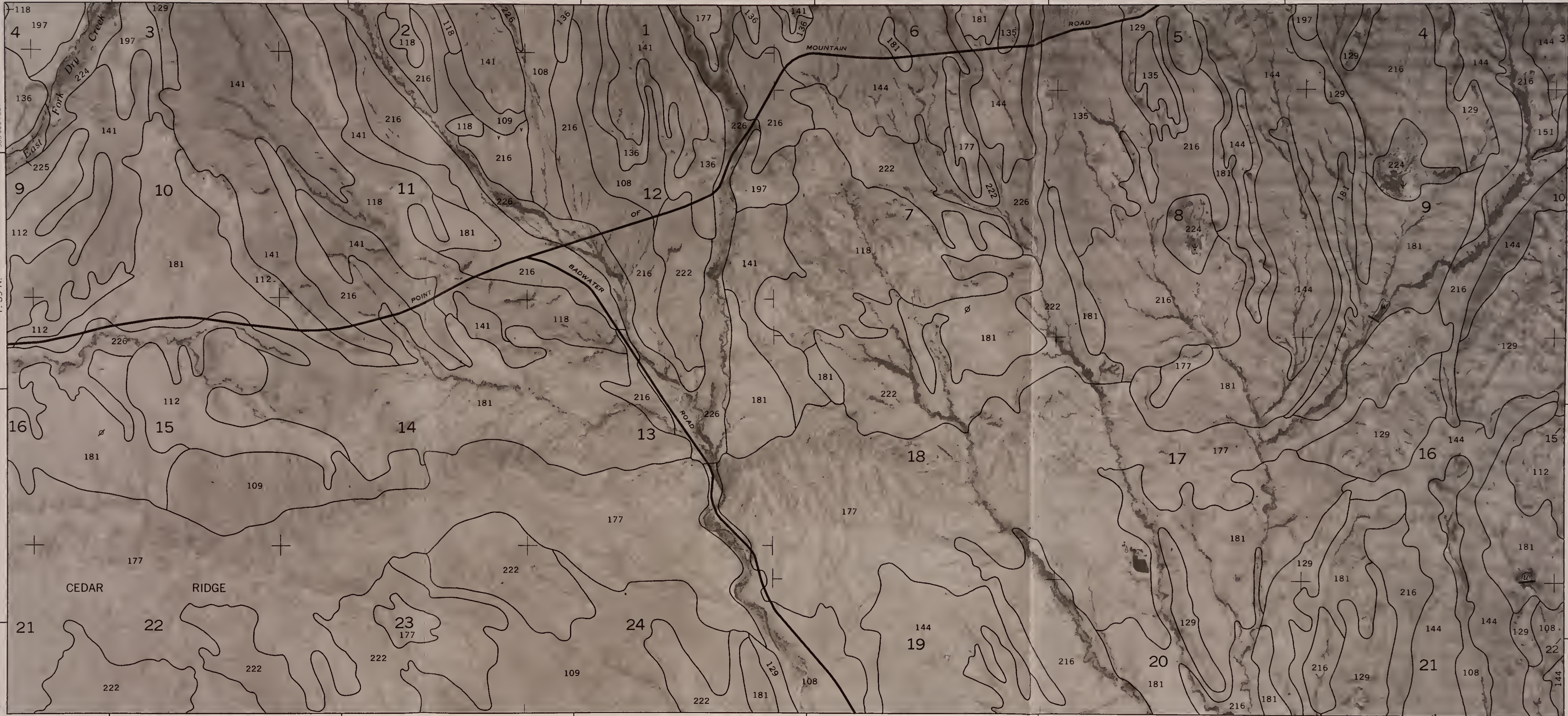
1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 36

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

37

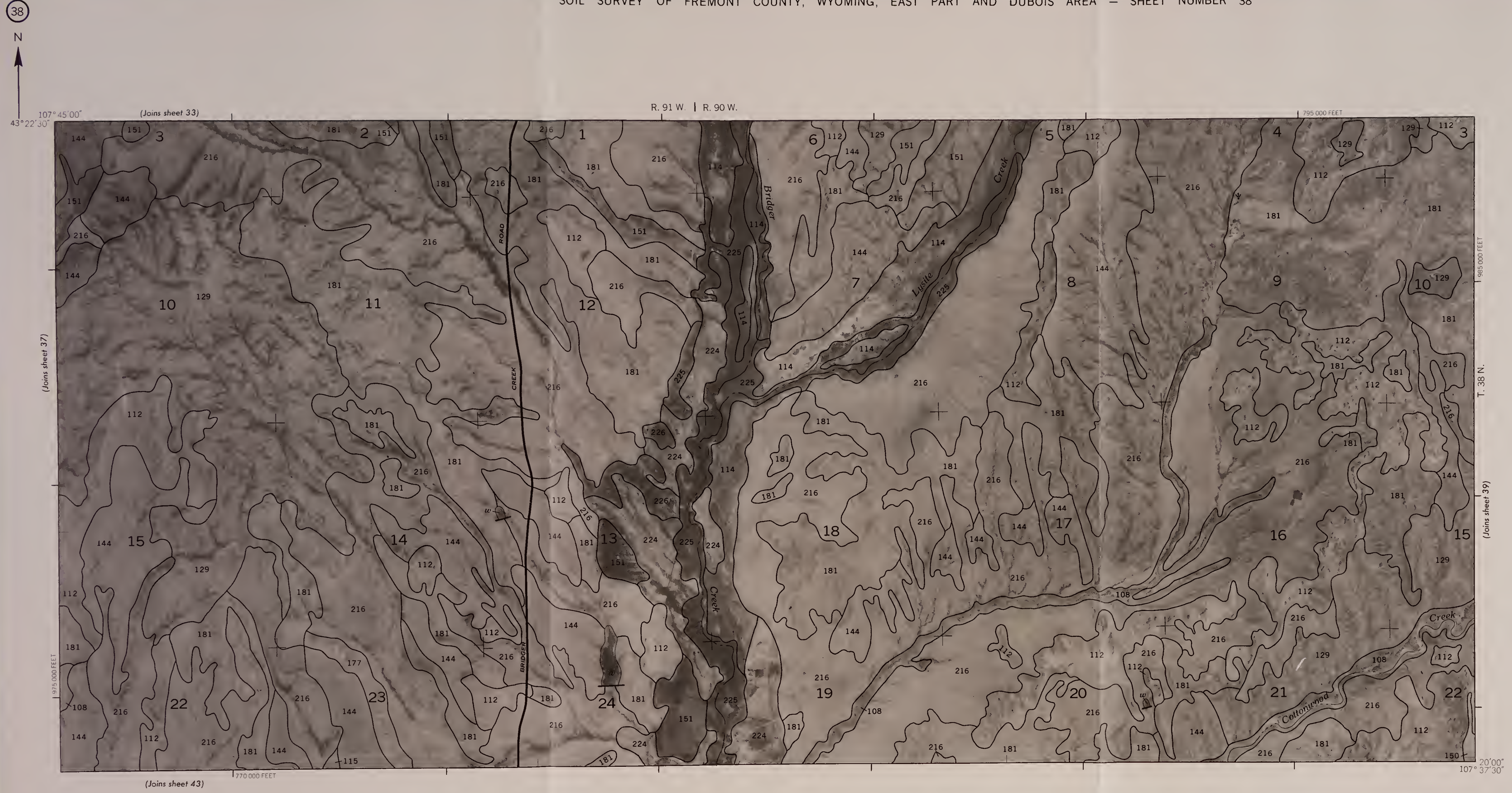
N

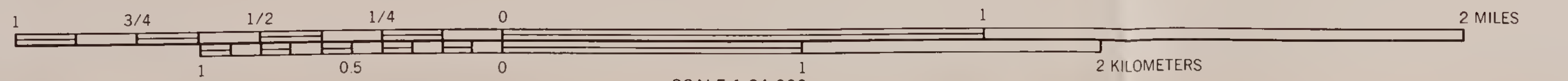


1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 38





SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 38

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

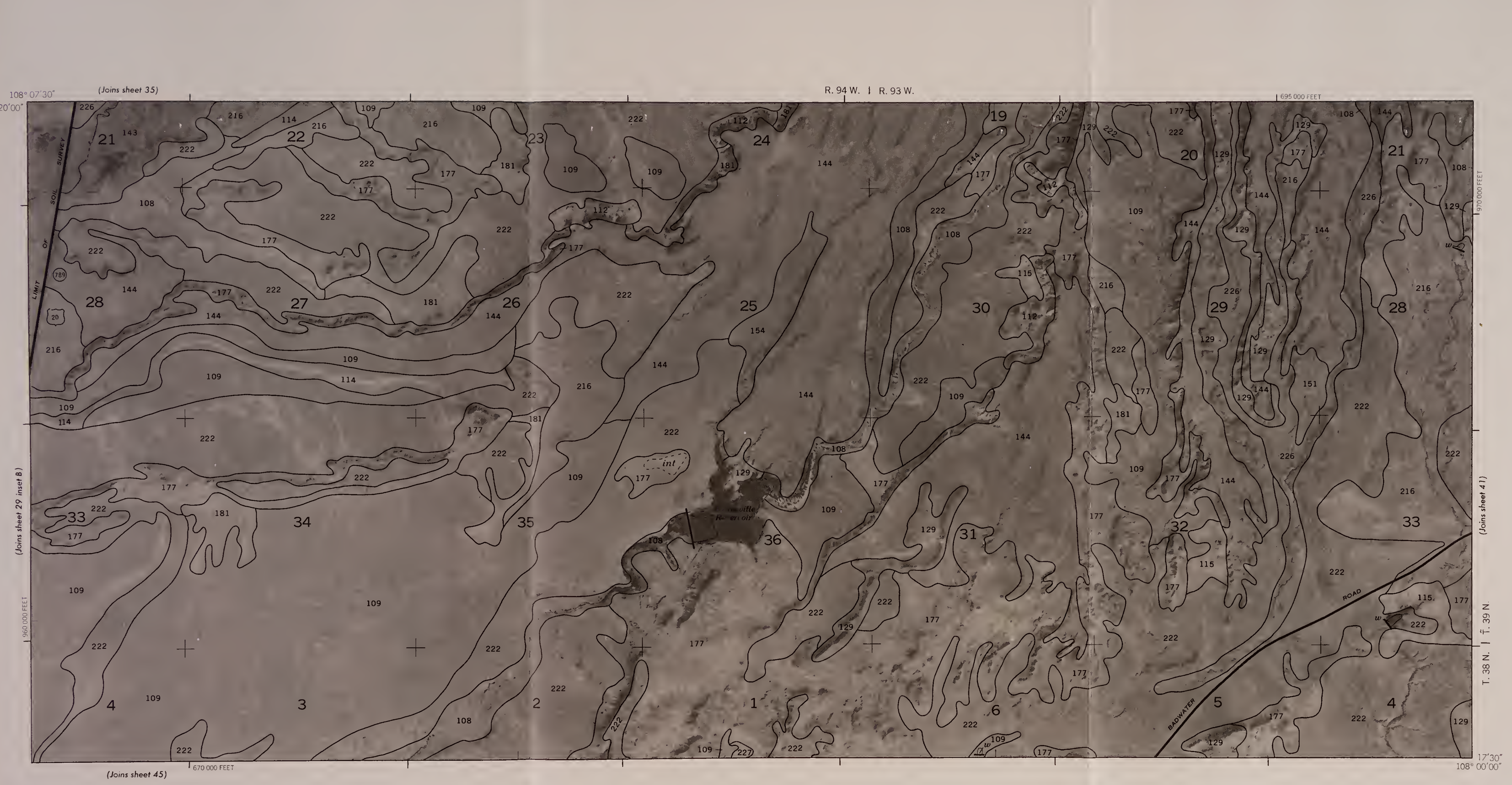
N

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 39

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 40



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 40

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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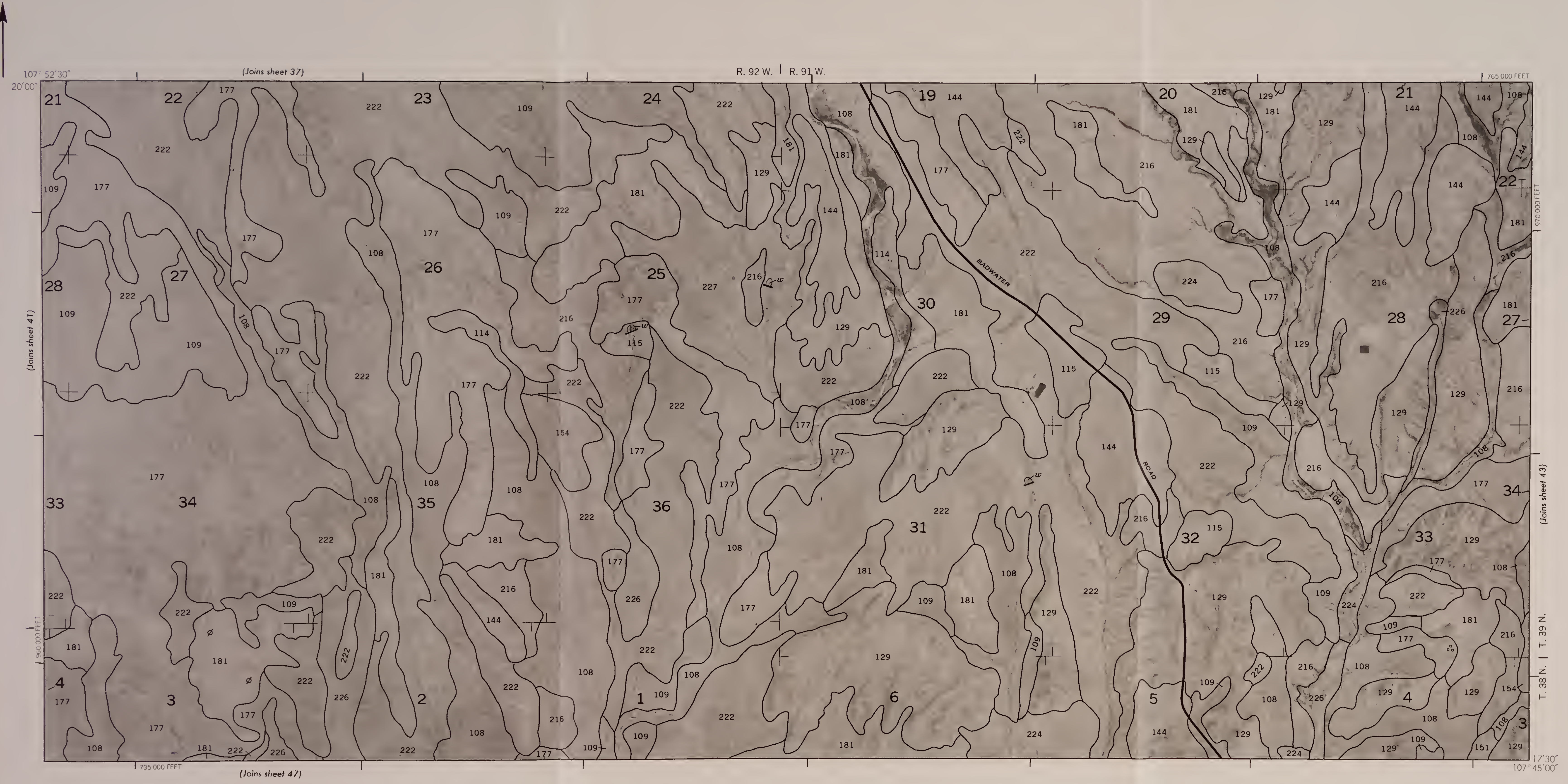
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 41

41

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 42



1 3/4 1/2 1/4 0 1 2 MILES

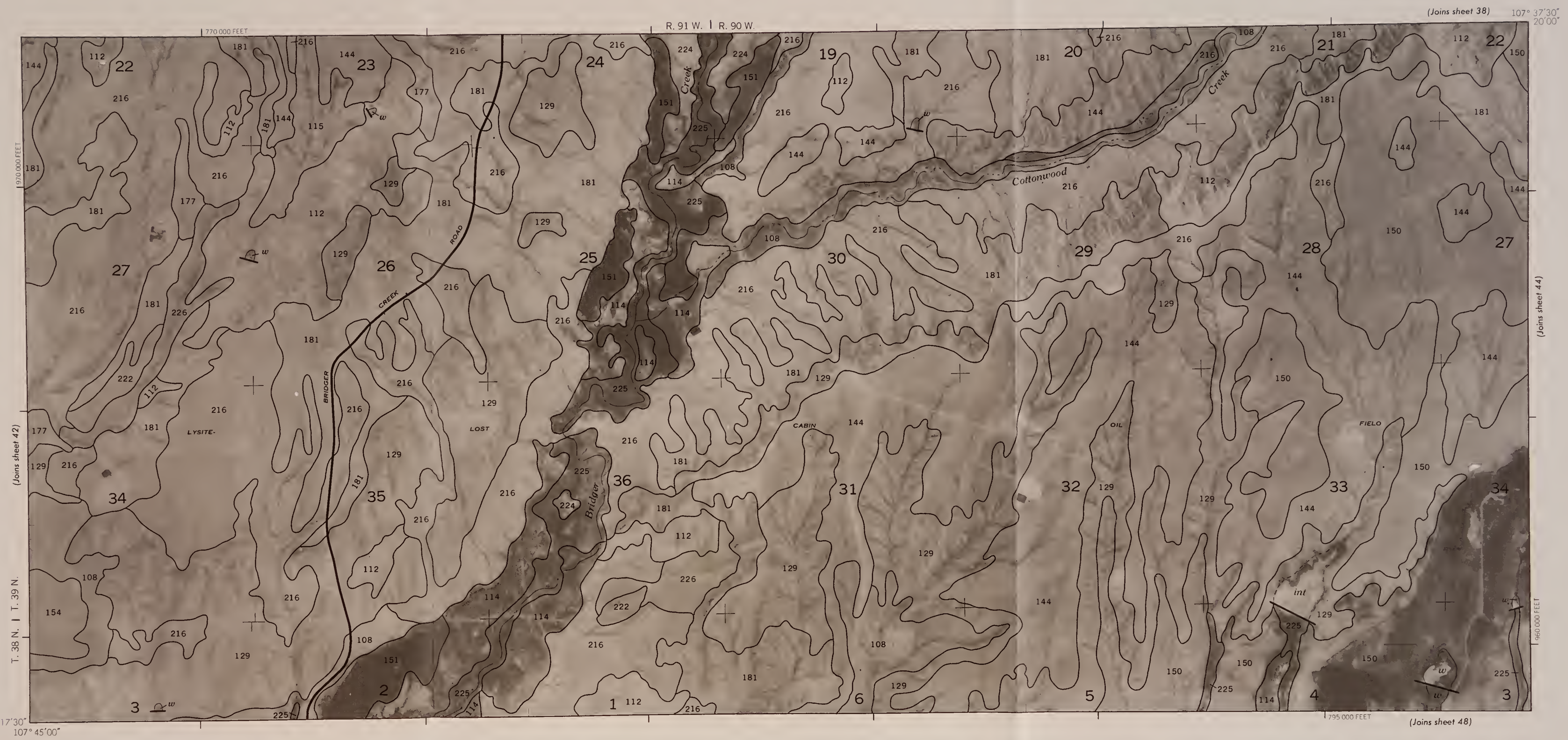
1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 42

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N



1 3/4 1/2 1/4 0 1 2 MILES

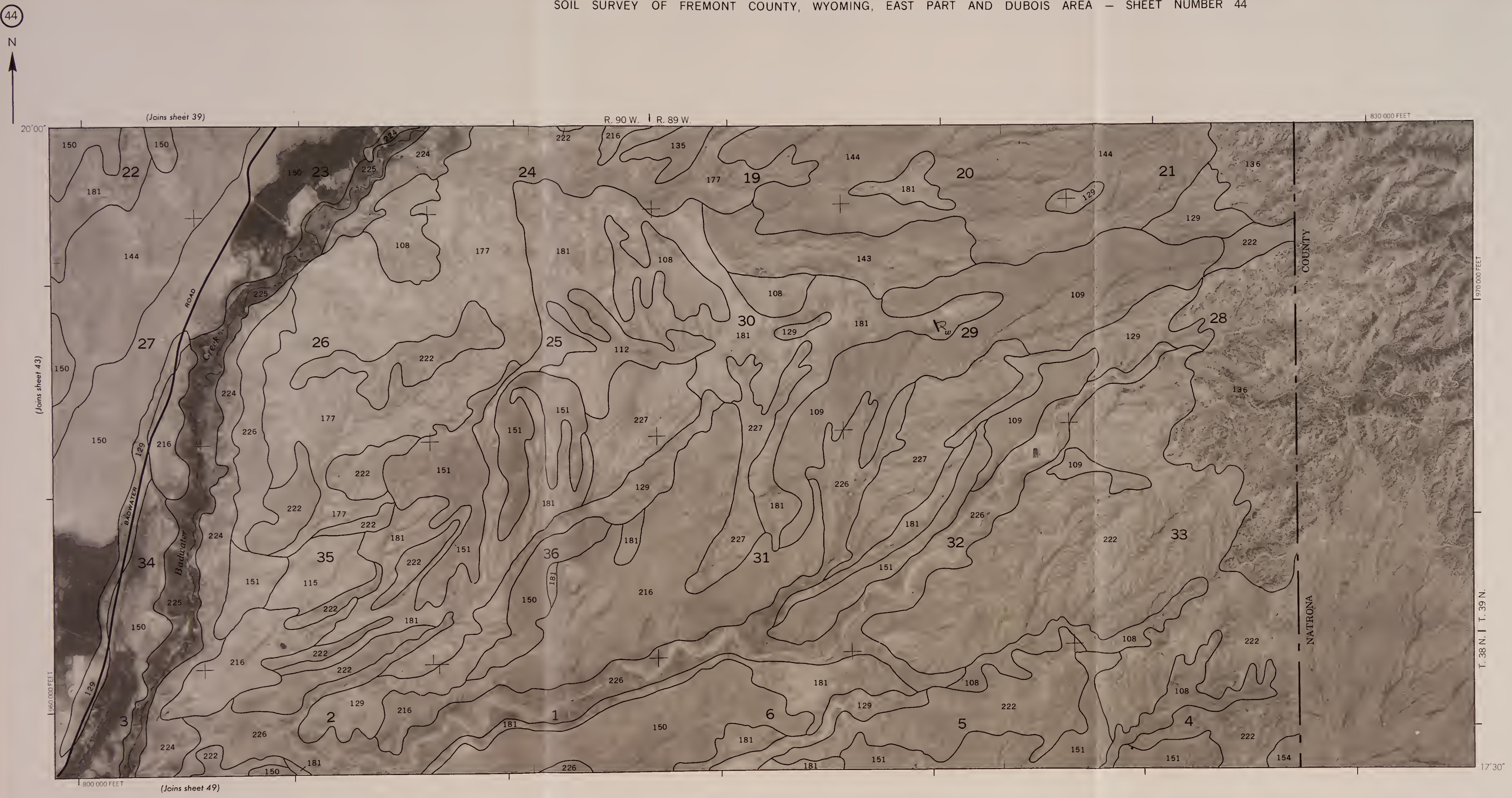
1 0.5 0 1 2 KILOMETERS

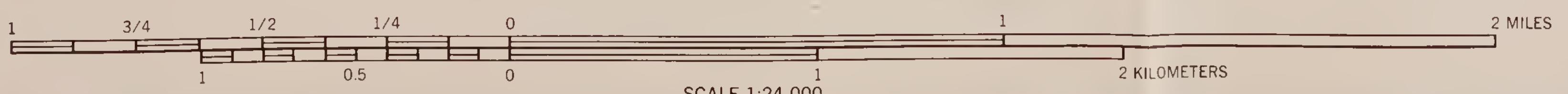
SCALE 1:24 000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 43

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 44





SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 44

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 45

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 46

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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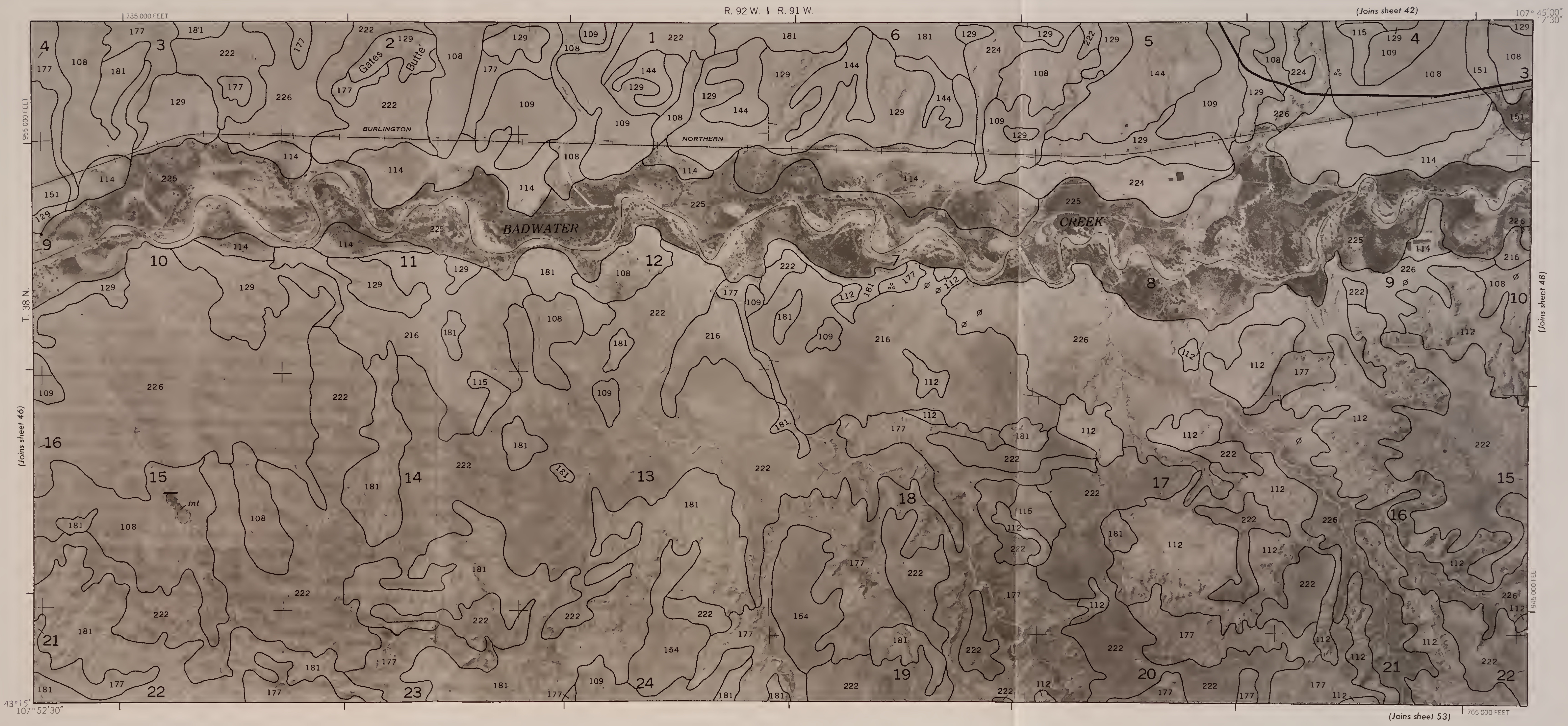
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 47

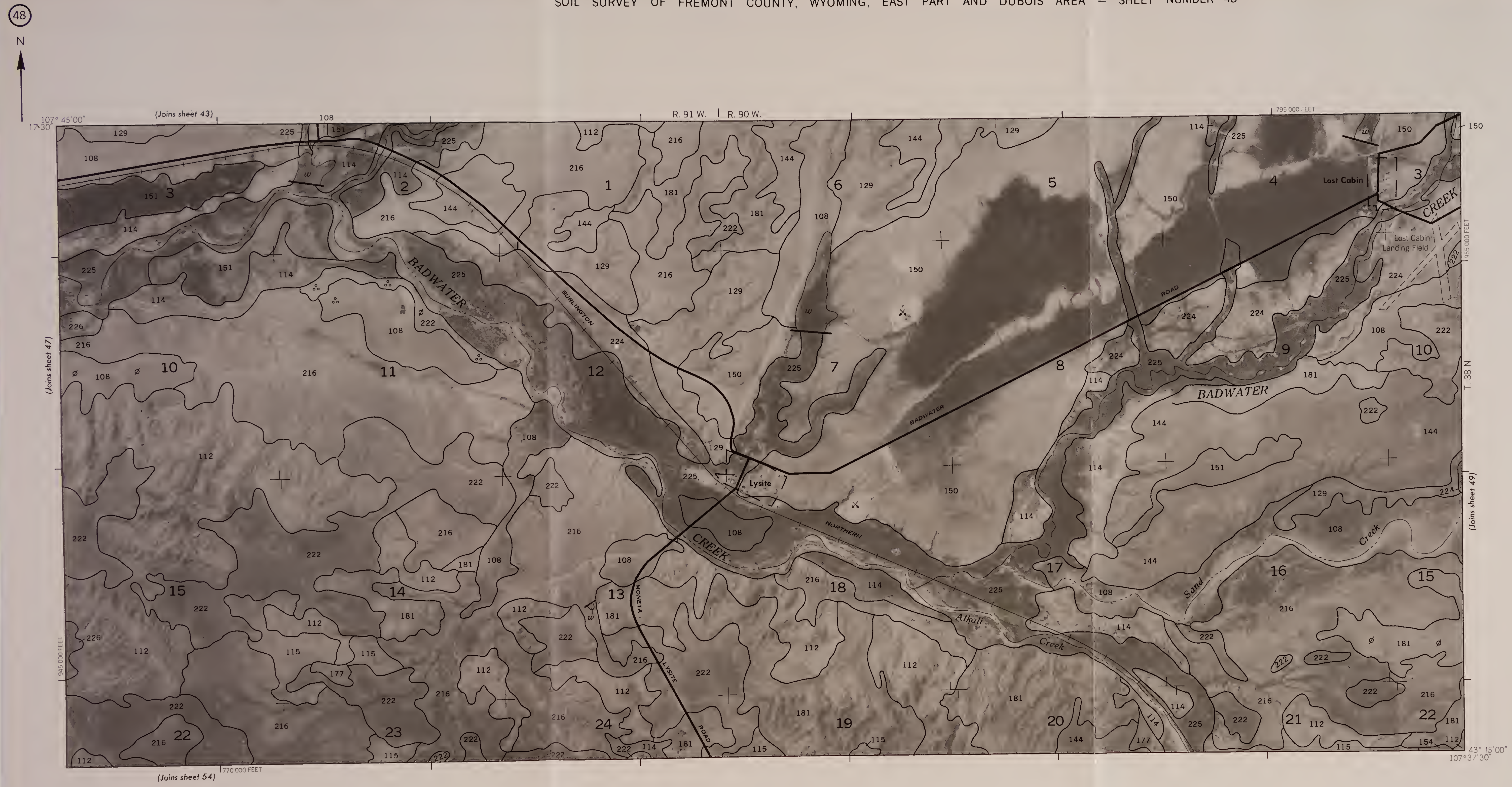
N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 48

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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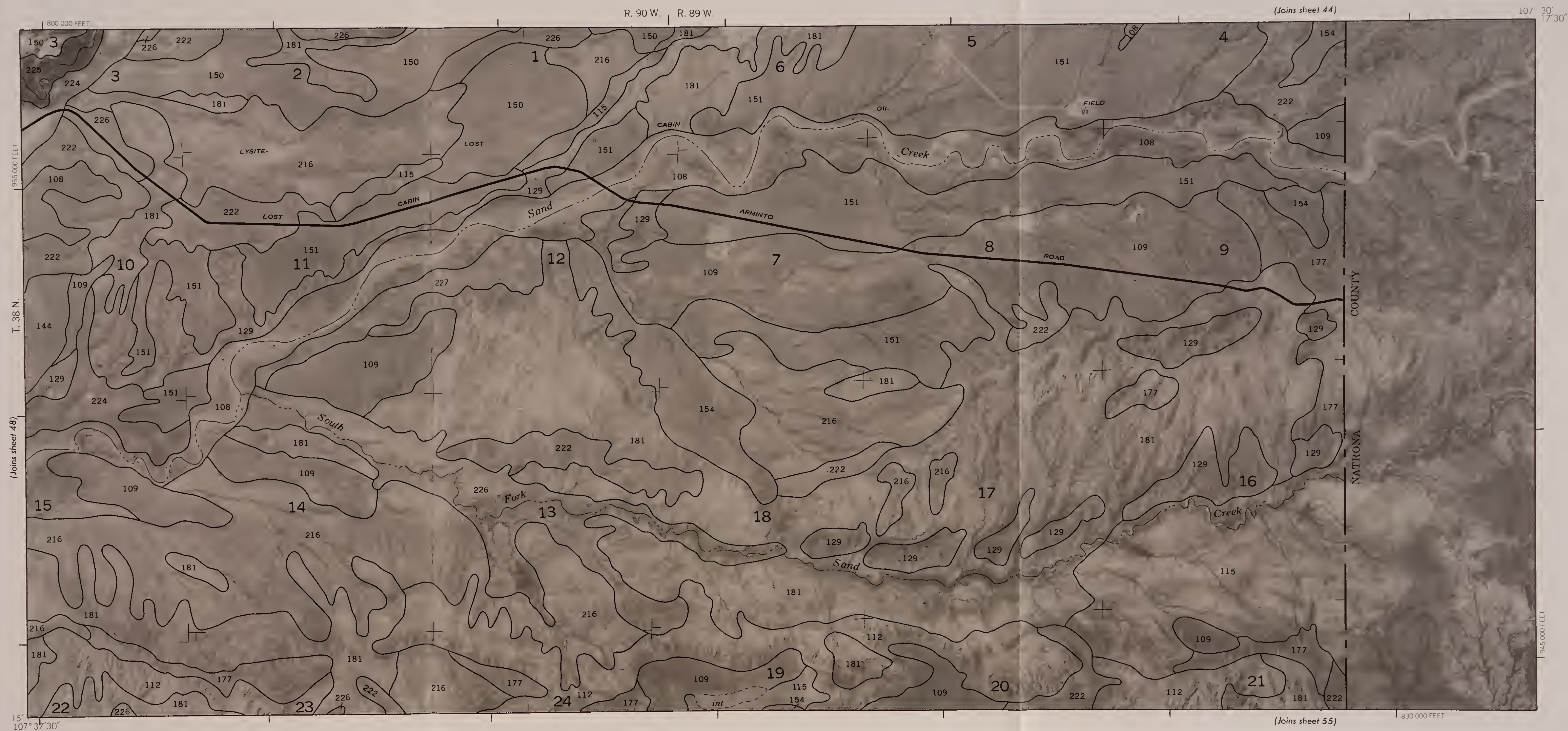
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 49

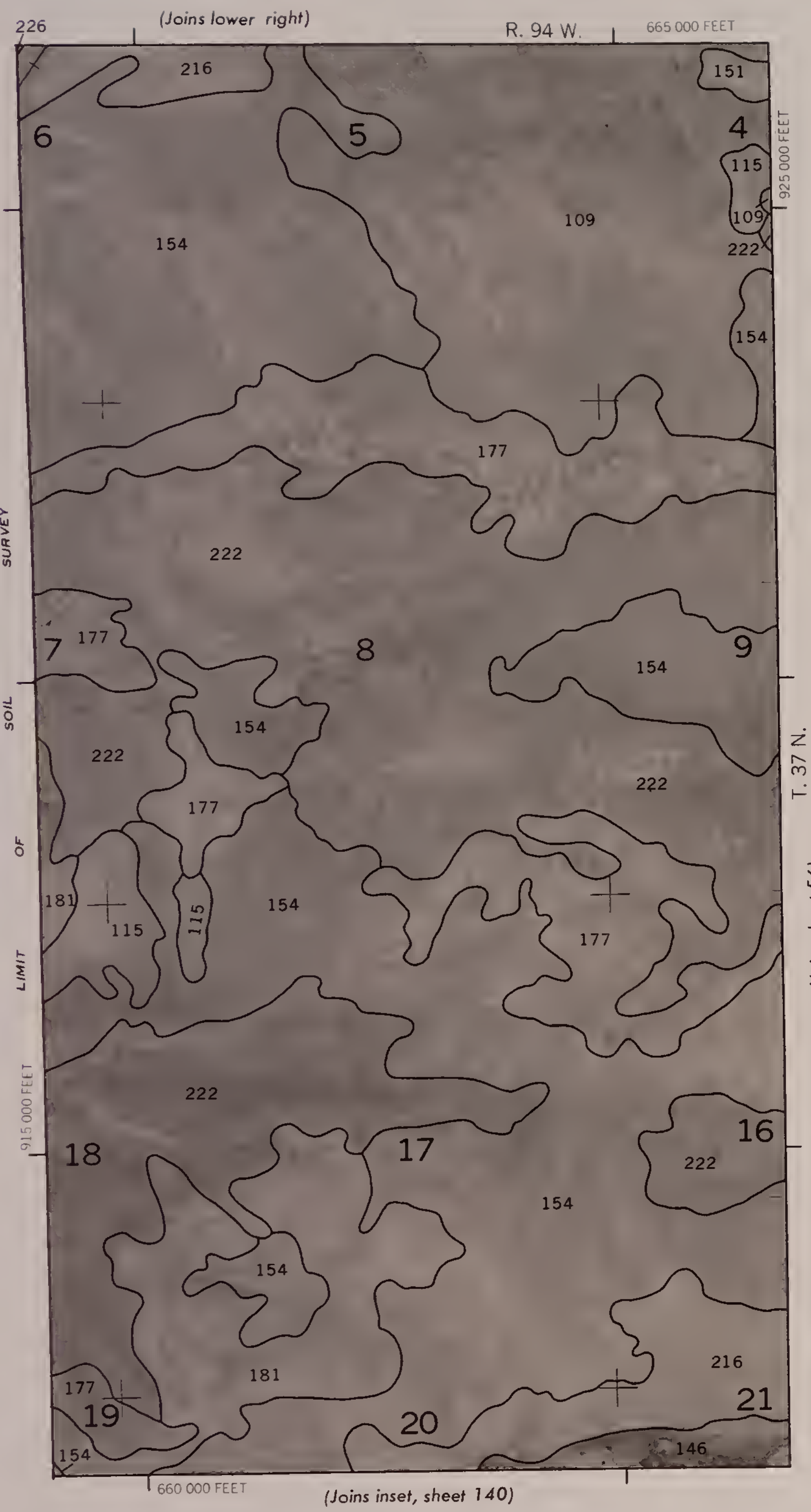


1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

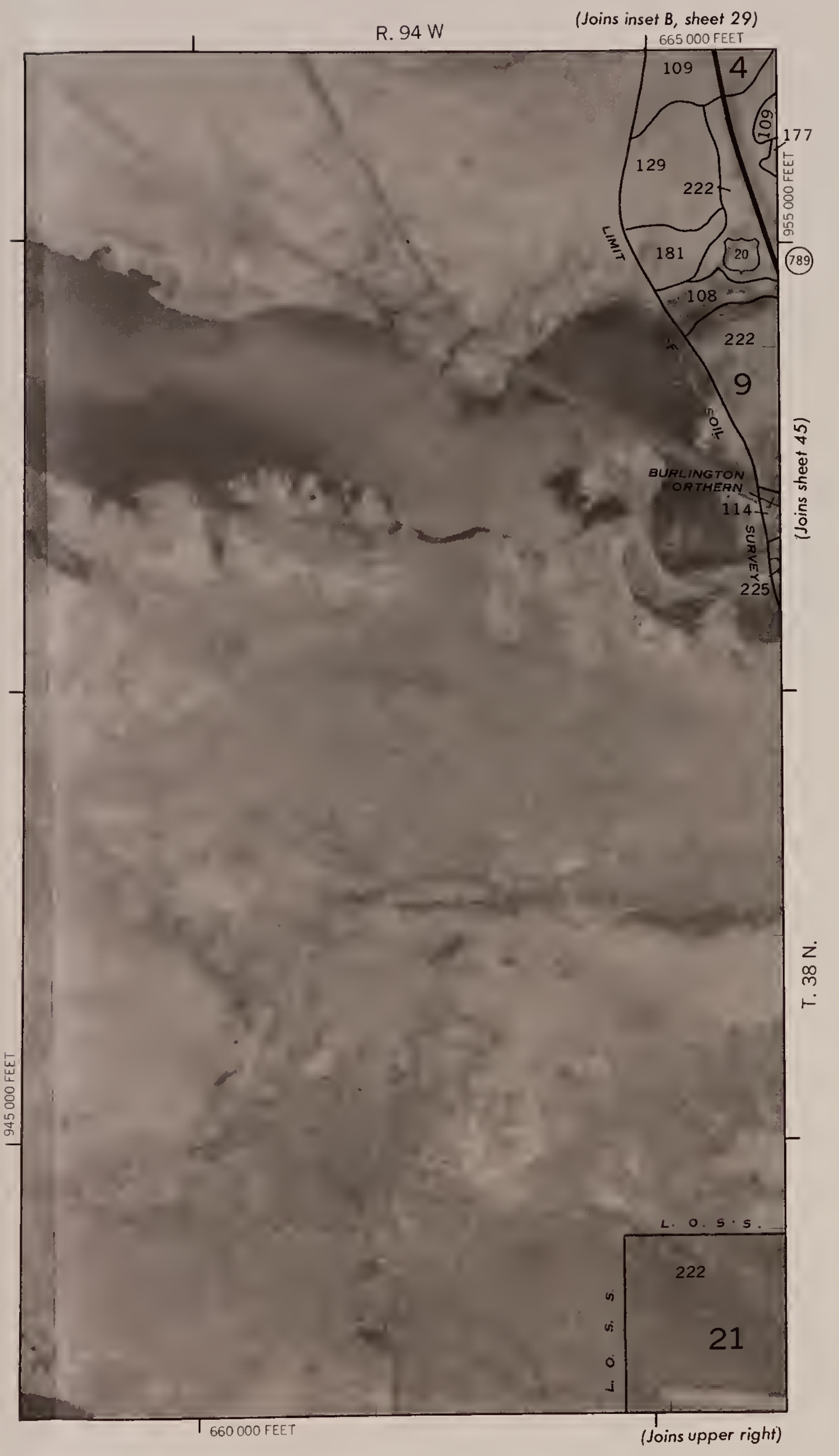
50

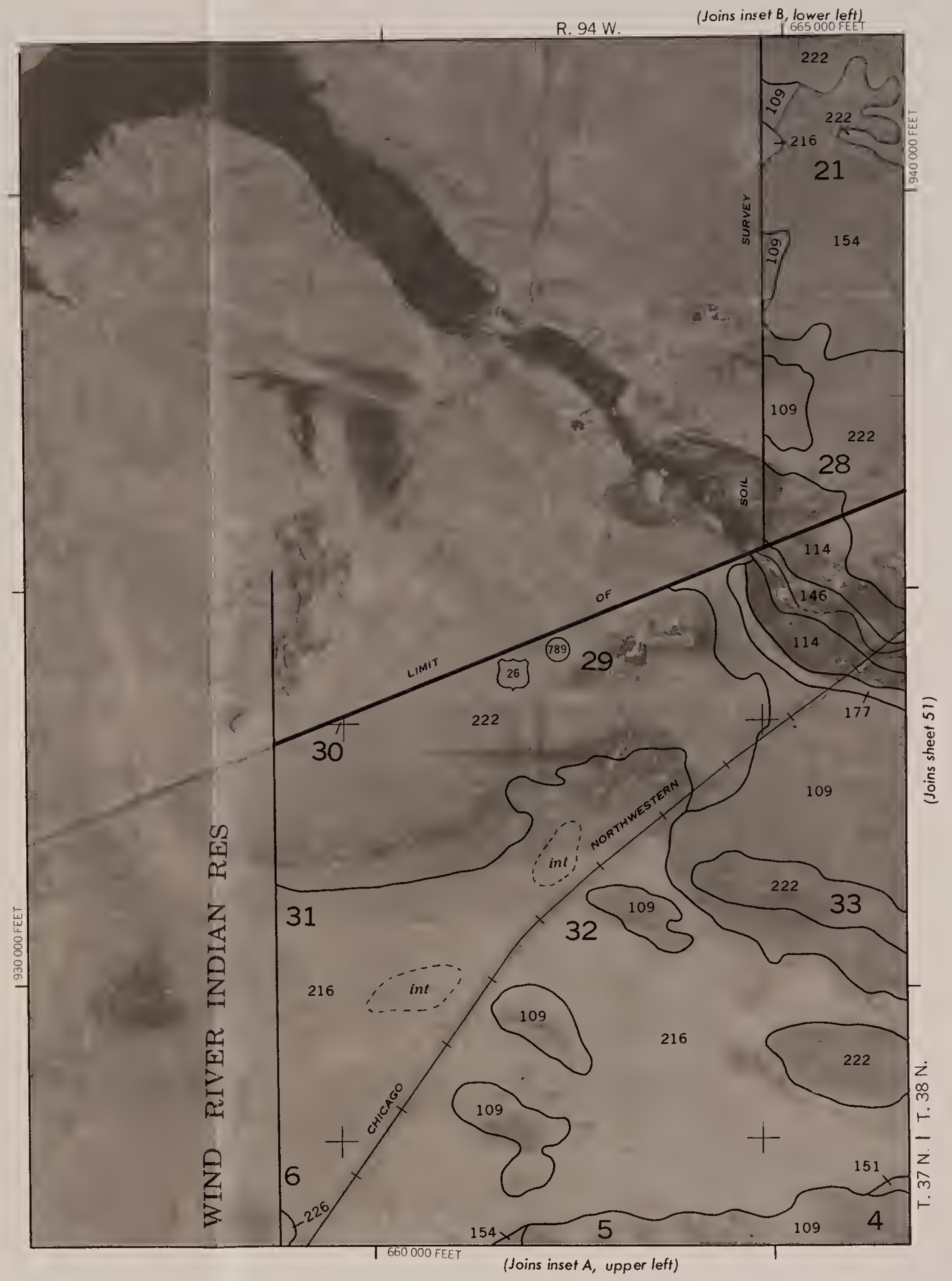
N

INSET A



INSET B





1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 50

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 51

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 52

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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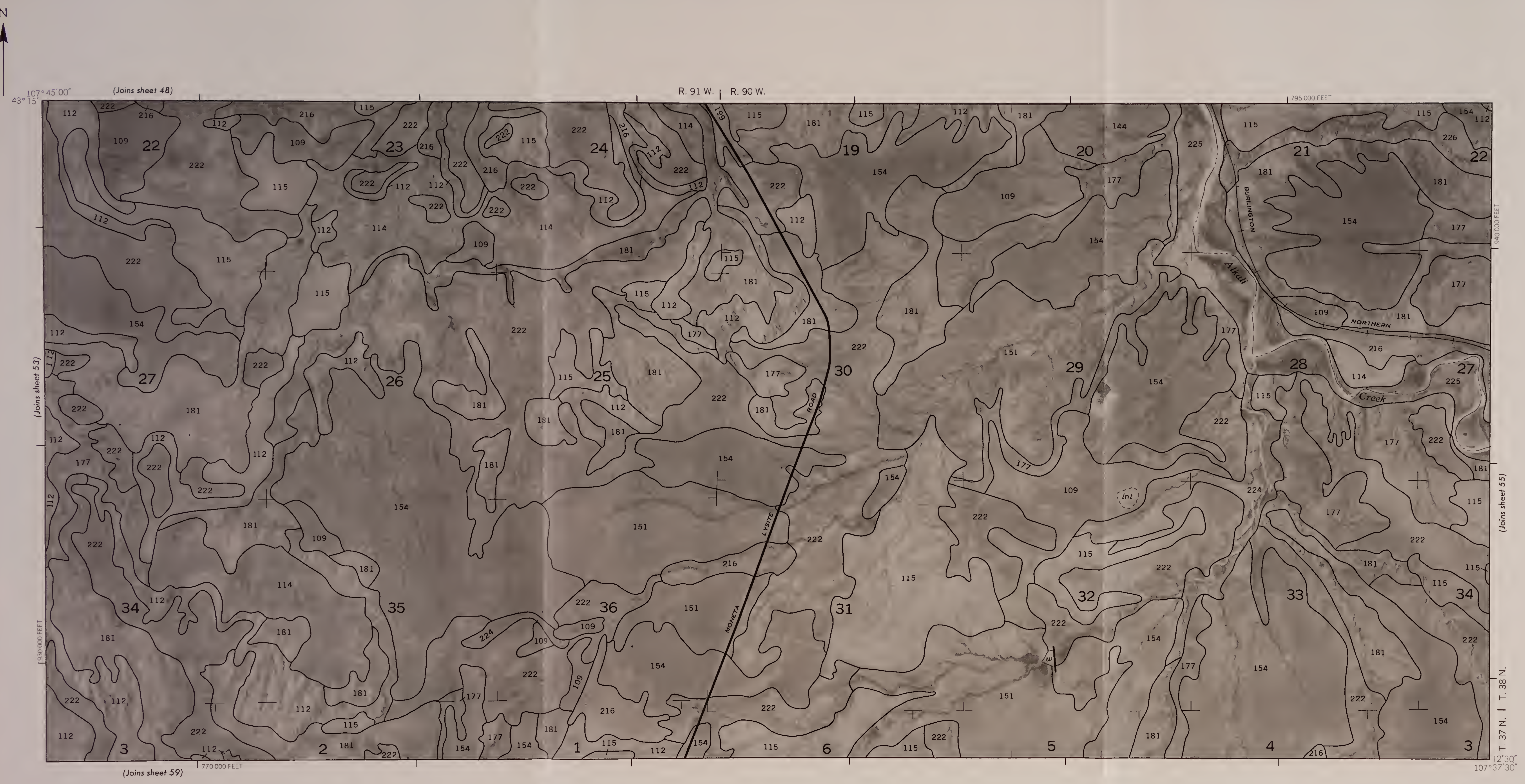
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 53

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 54



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 54

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 55

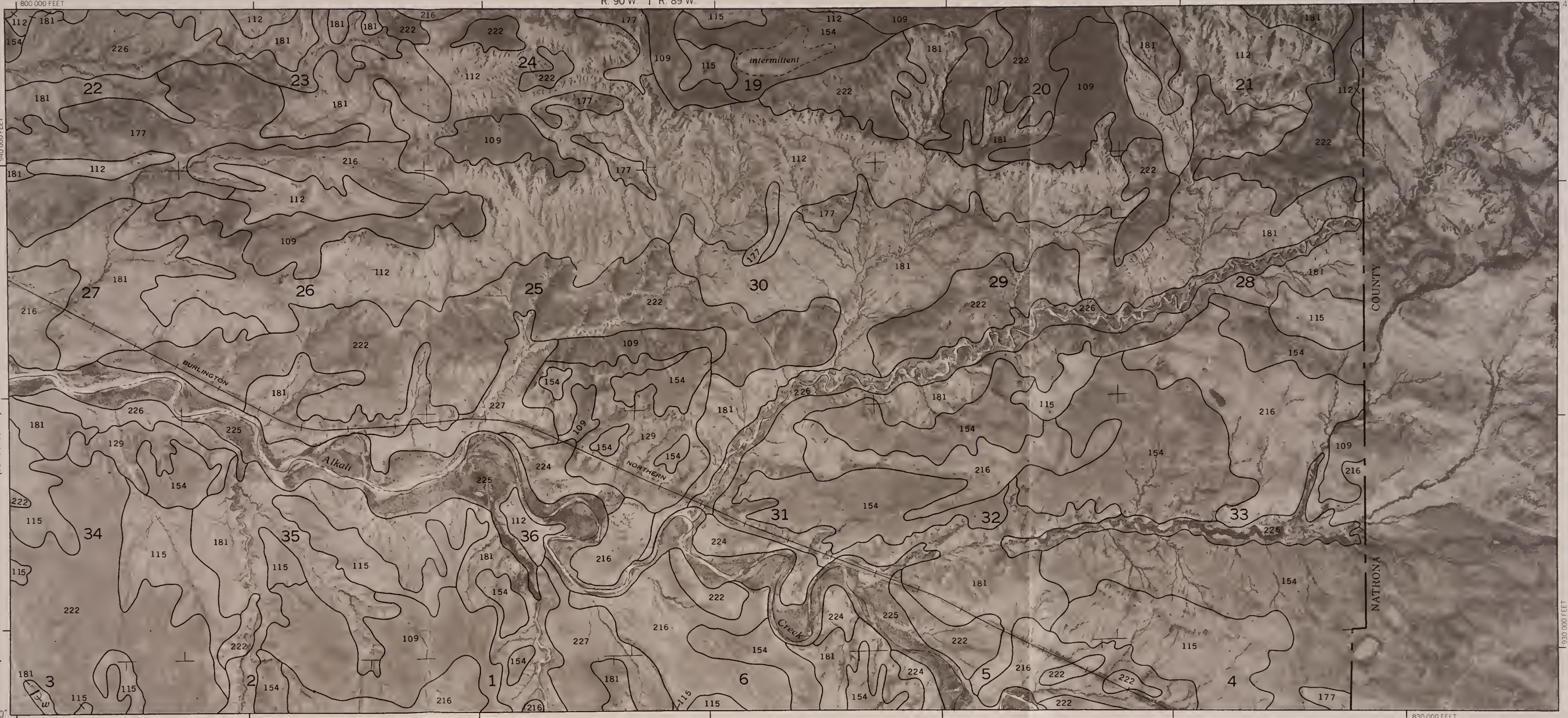
(Joins sheet 49)

800 000 FEET   R. 90 W. | R. 89 W.   107°30'00" 43°15'00"

940 000 FEET

(Joins sheet 54)

T. 37 N. | T. 38 N.



12'30" 107°37'30"

(Joins sheet 60)

830 000 FEET

930 000 FEET

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 56

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 56

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

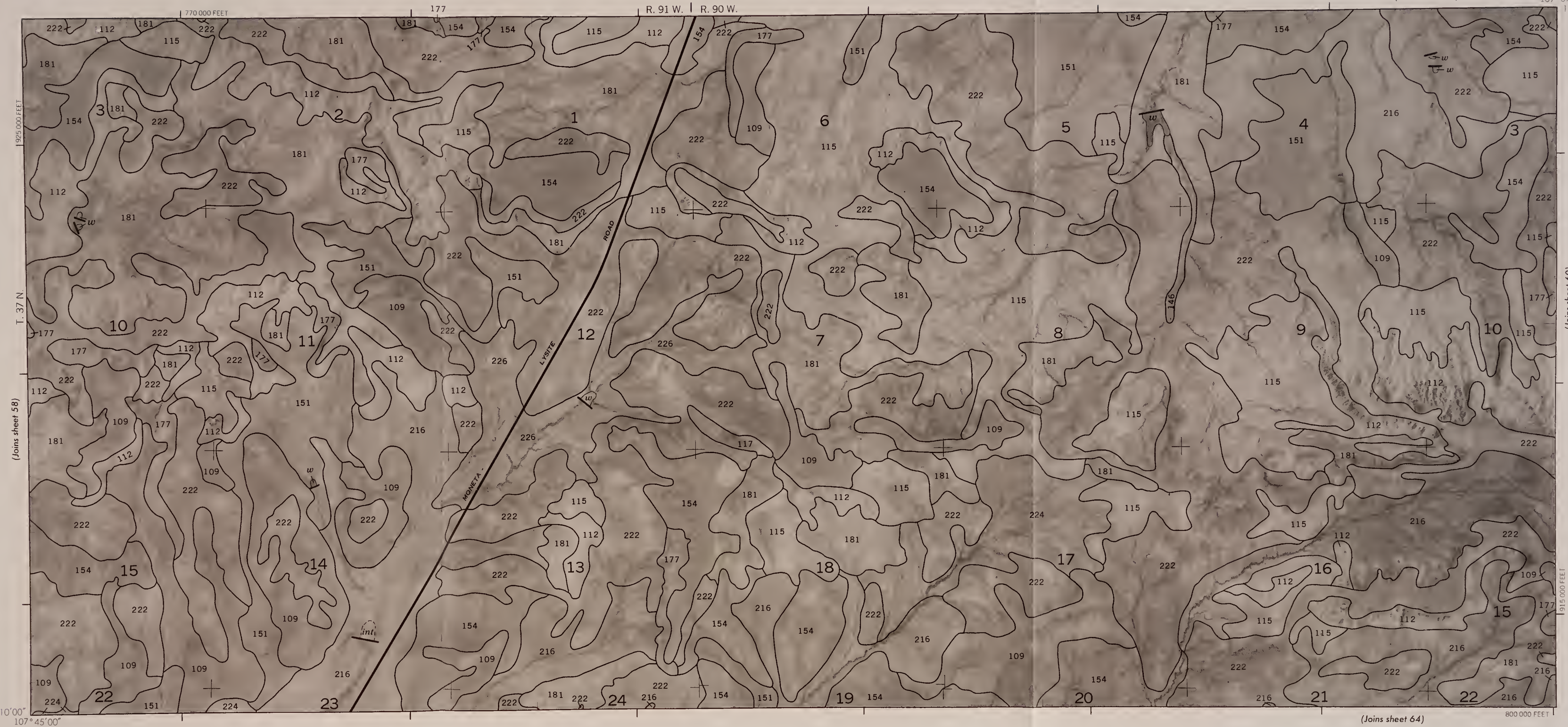
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 57

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 58

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 59



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 60

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 60

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 61

1 3/4 1/2 1/4 0 1 2 MILES

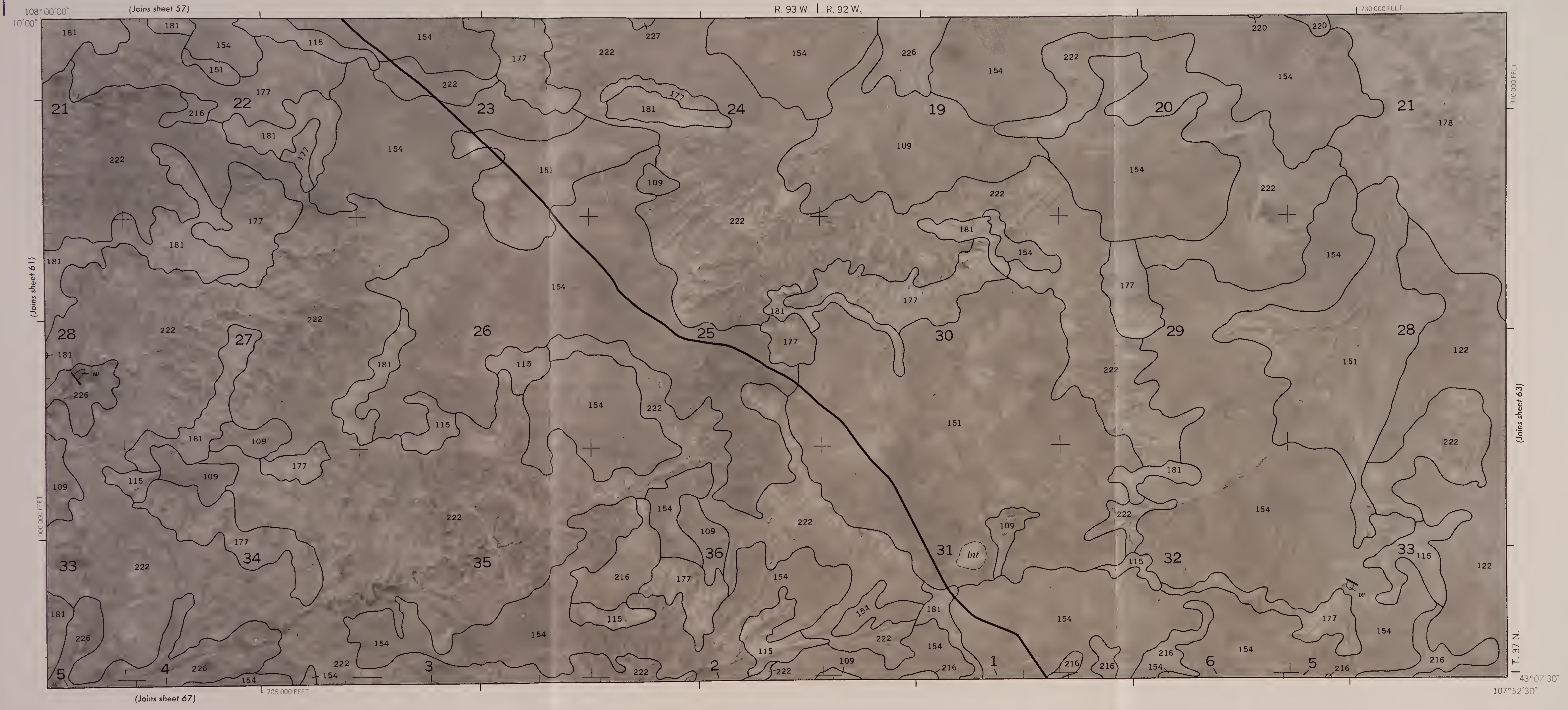
1 0.5 0 1 2 KILOMETERS

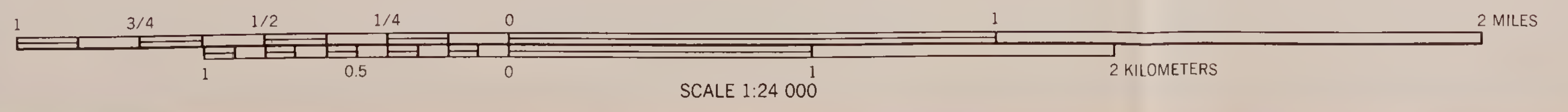
SCALE 1:24 000

(62)

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 62

N



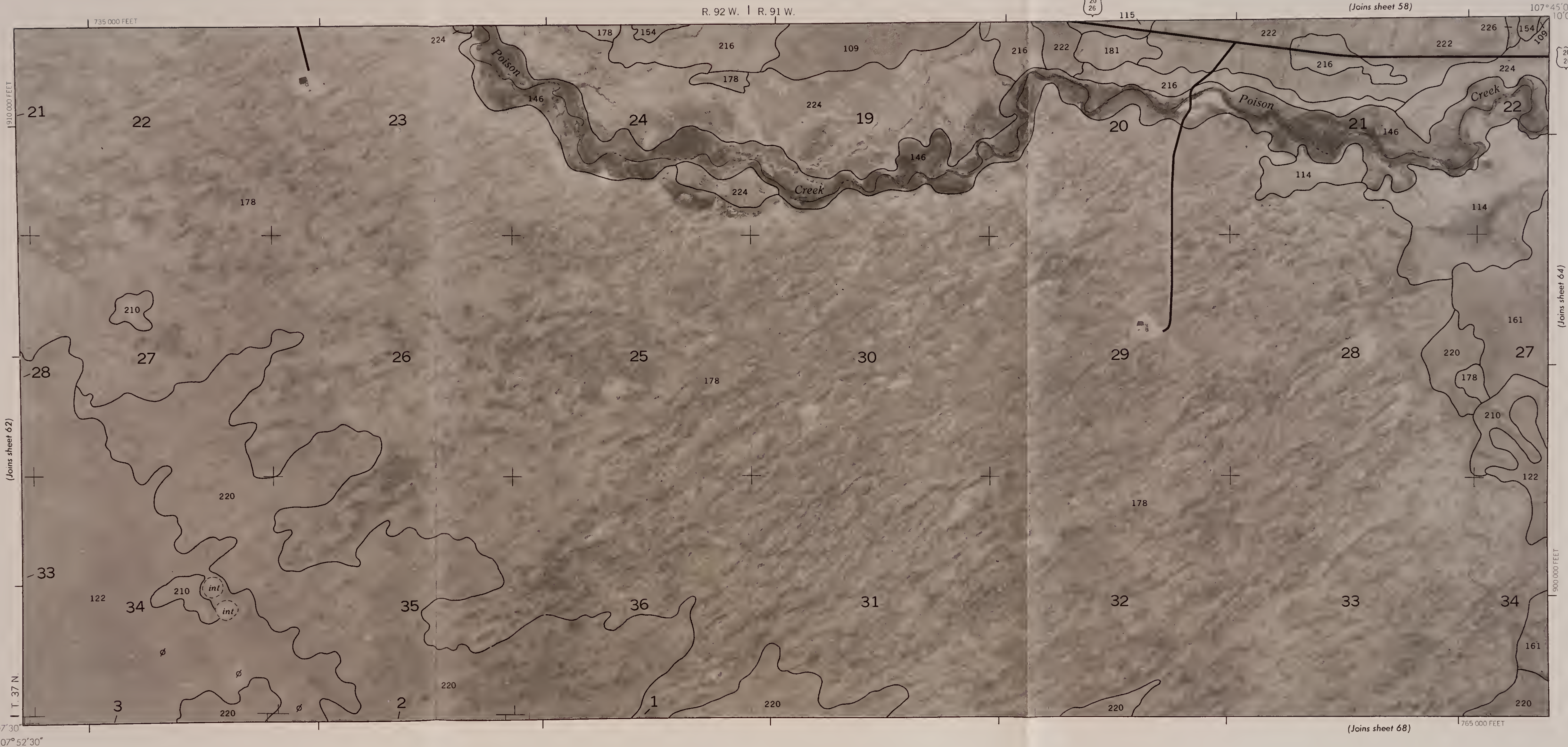


FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 62

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

63

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 63

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 64

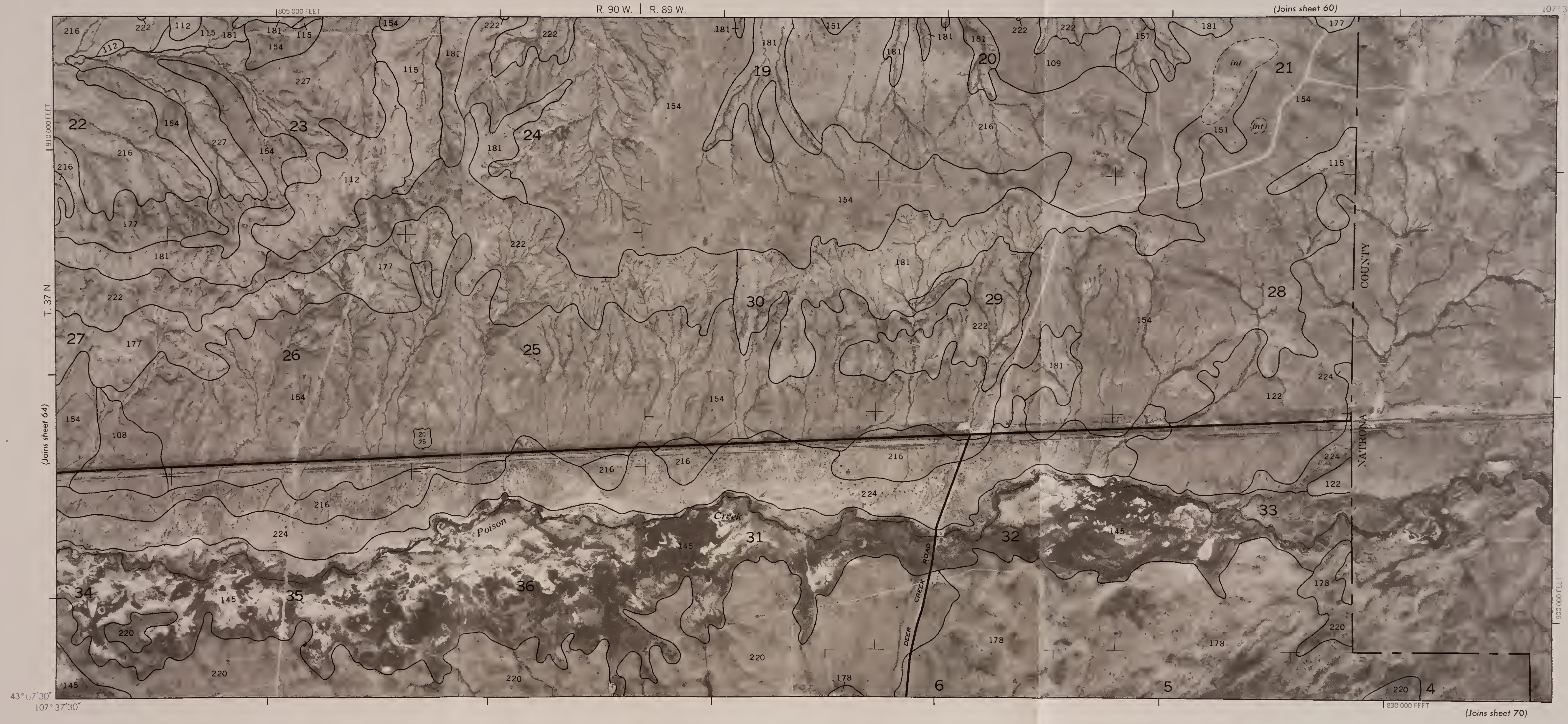
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 64

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 65

N



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

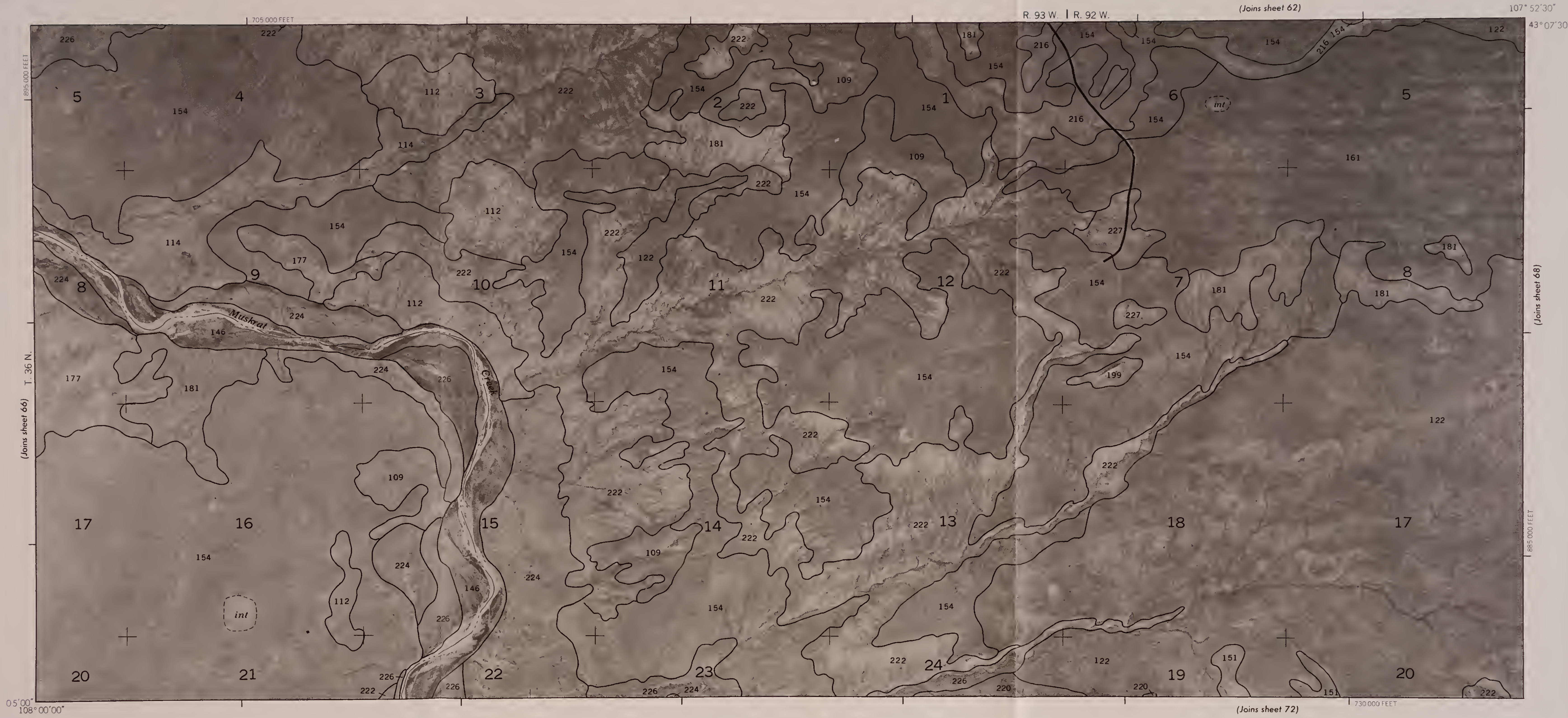
SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 66

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 66

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

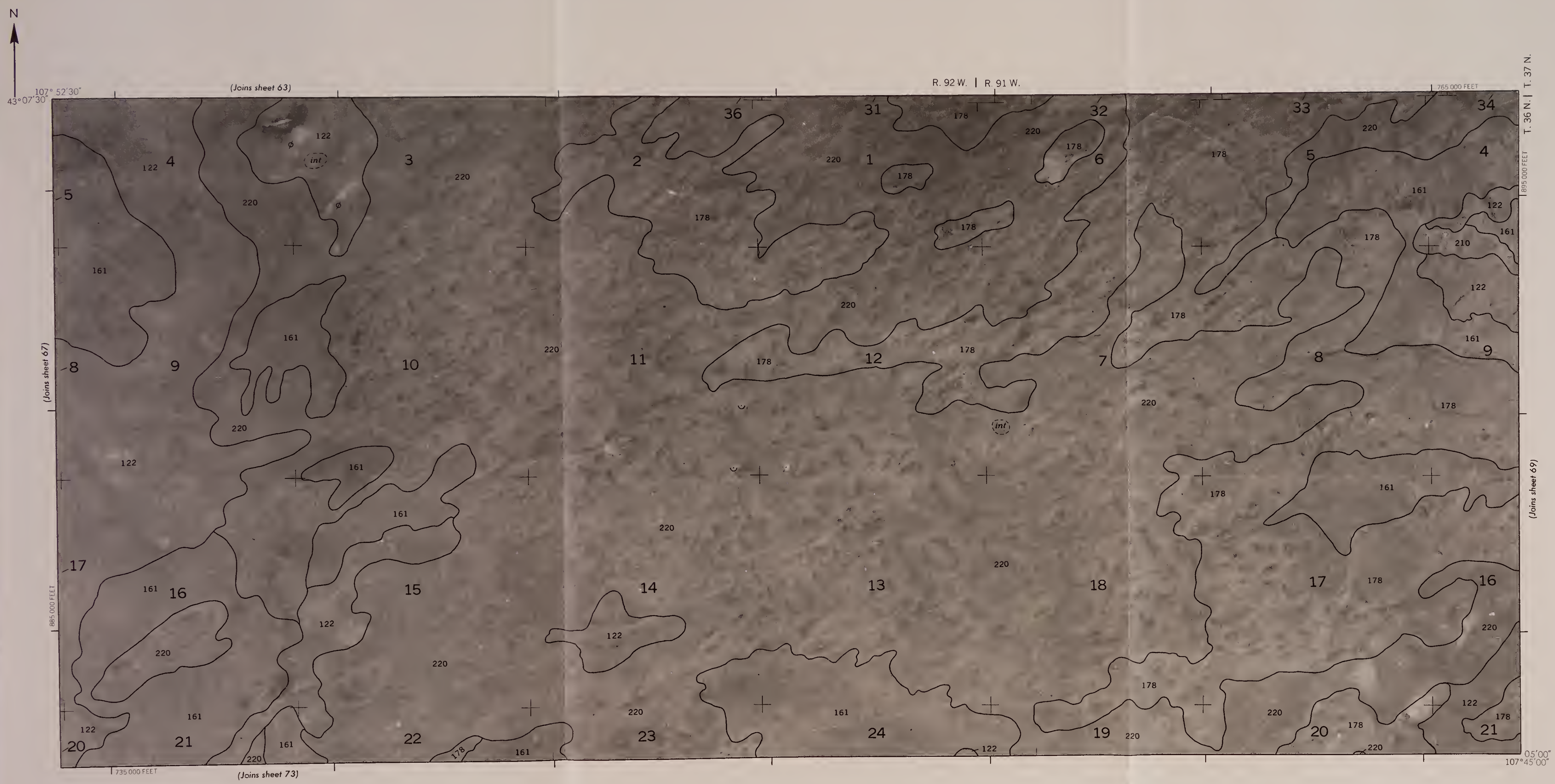
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 67



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 68

68



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

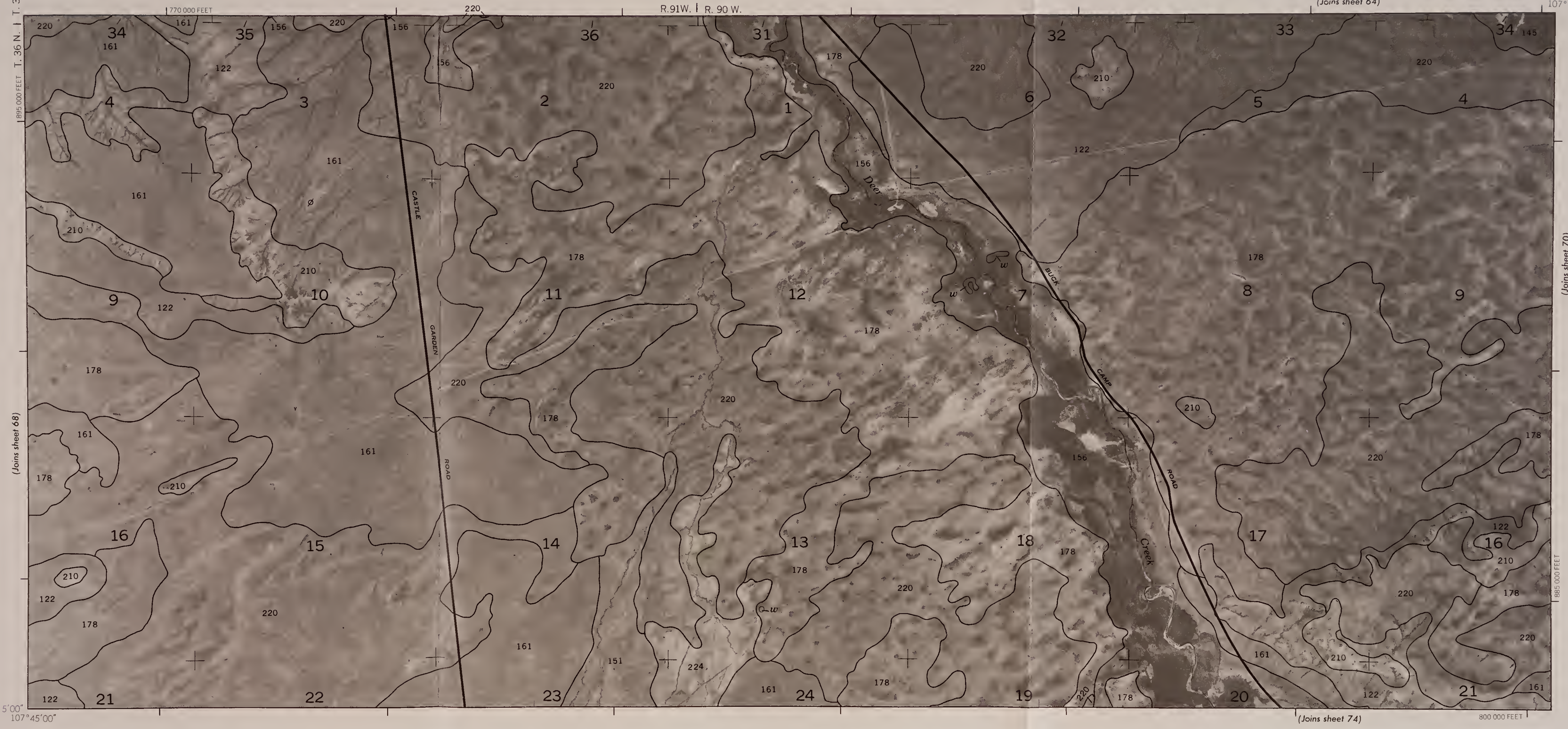
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 68

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

69

N

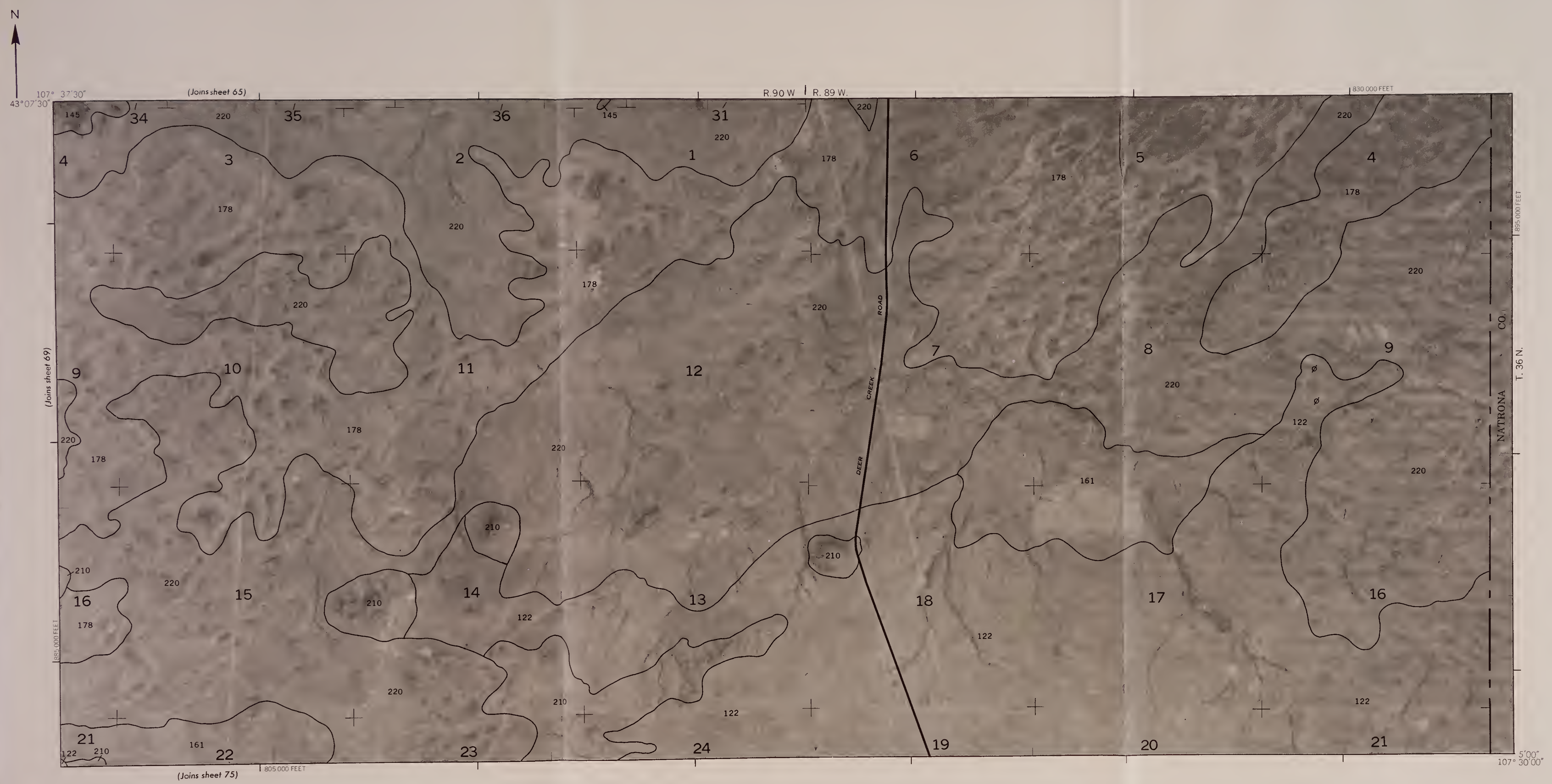


SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 69

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 70



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 70

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

71

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 71

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 72

N

1 3/4 1/2 1/4 0 1 2 MILES

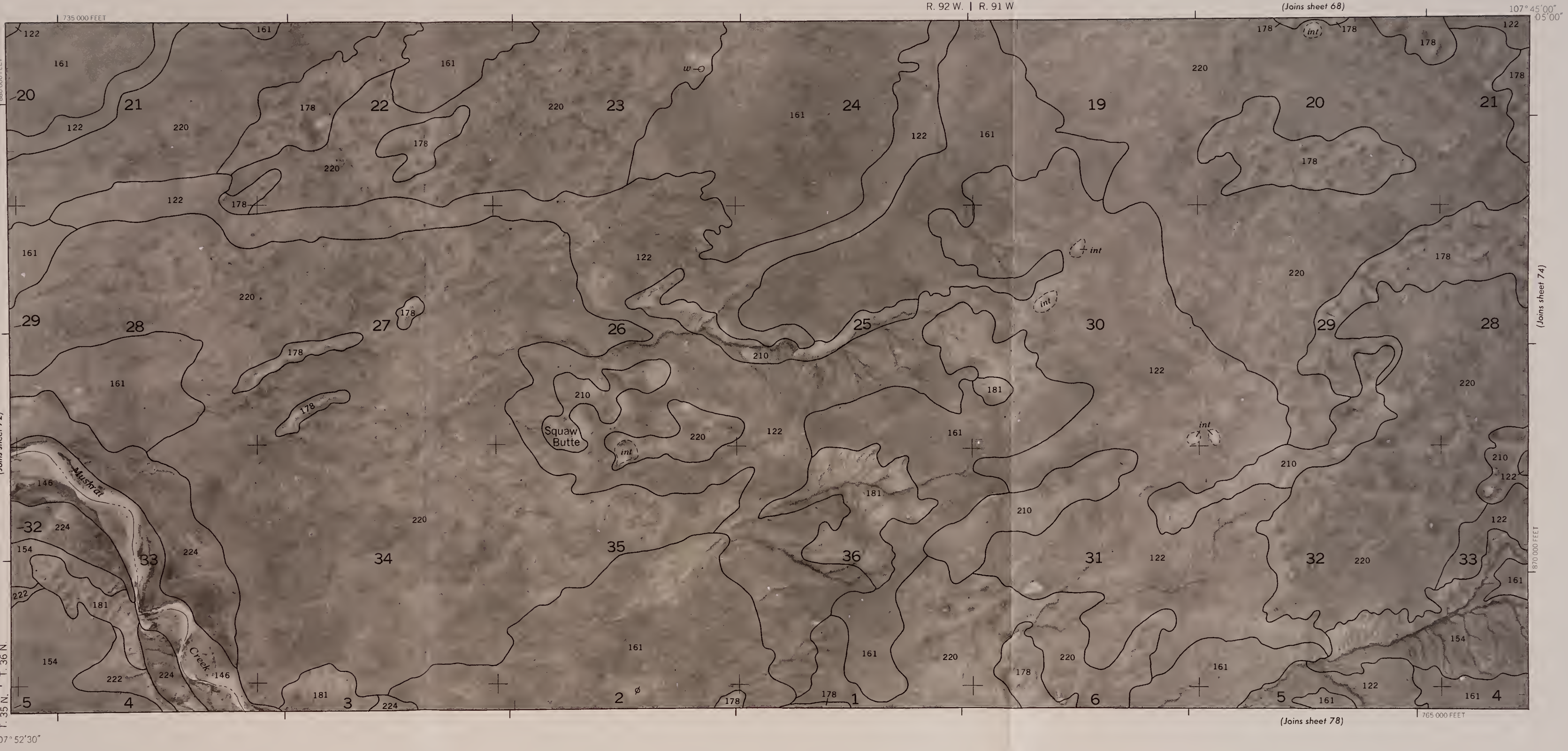
1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 72

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N



1 3/4 1/2 1/4 0 1 2 MILES

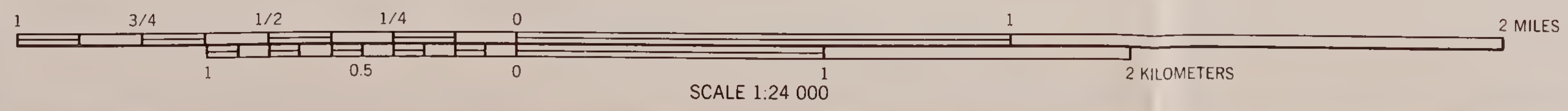
1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 73

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 74



FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 74

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 75

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 76

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 76

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

77

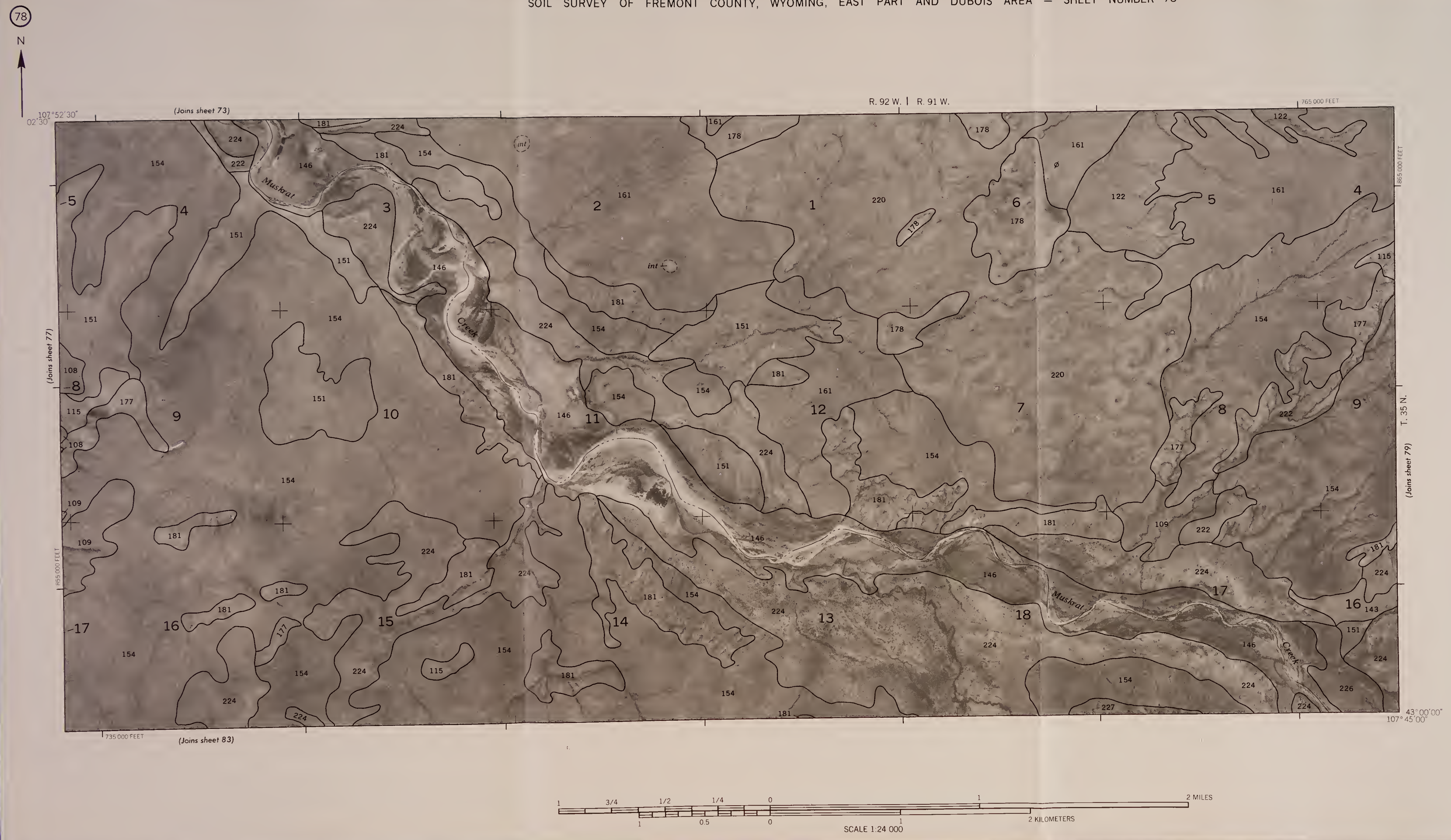
N

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 77

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 78



FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 78

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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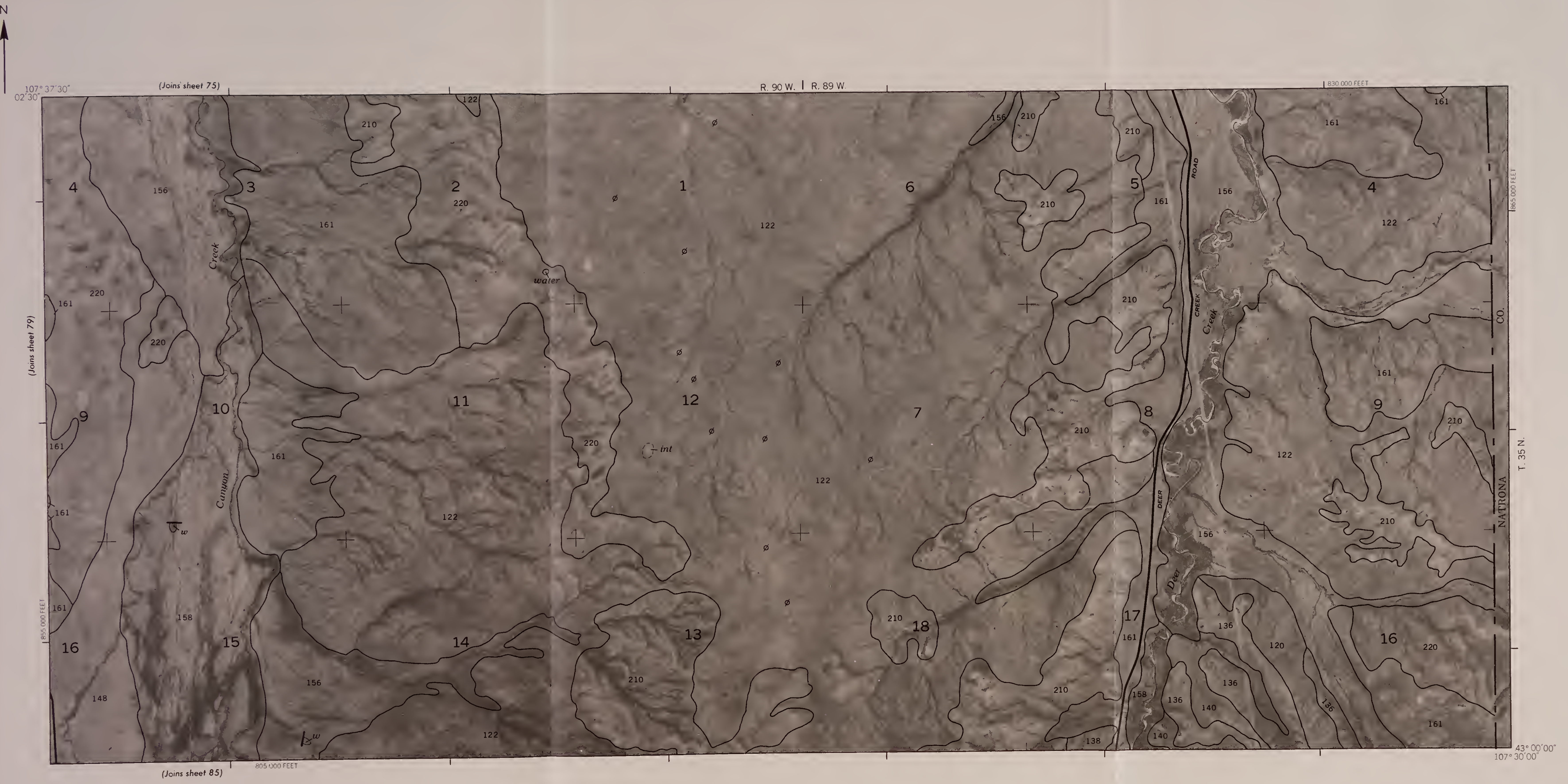
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 79

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 80



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 80

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 81

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 82

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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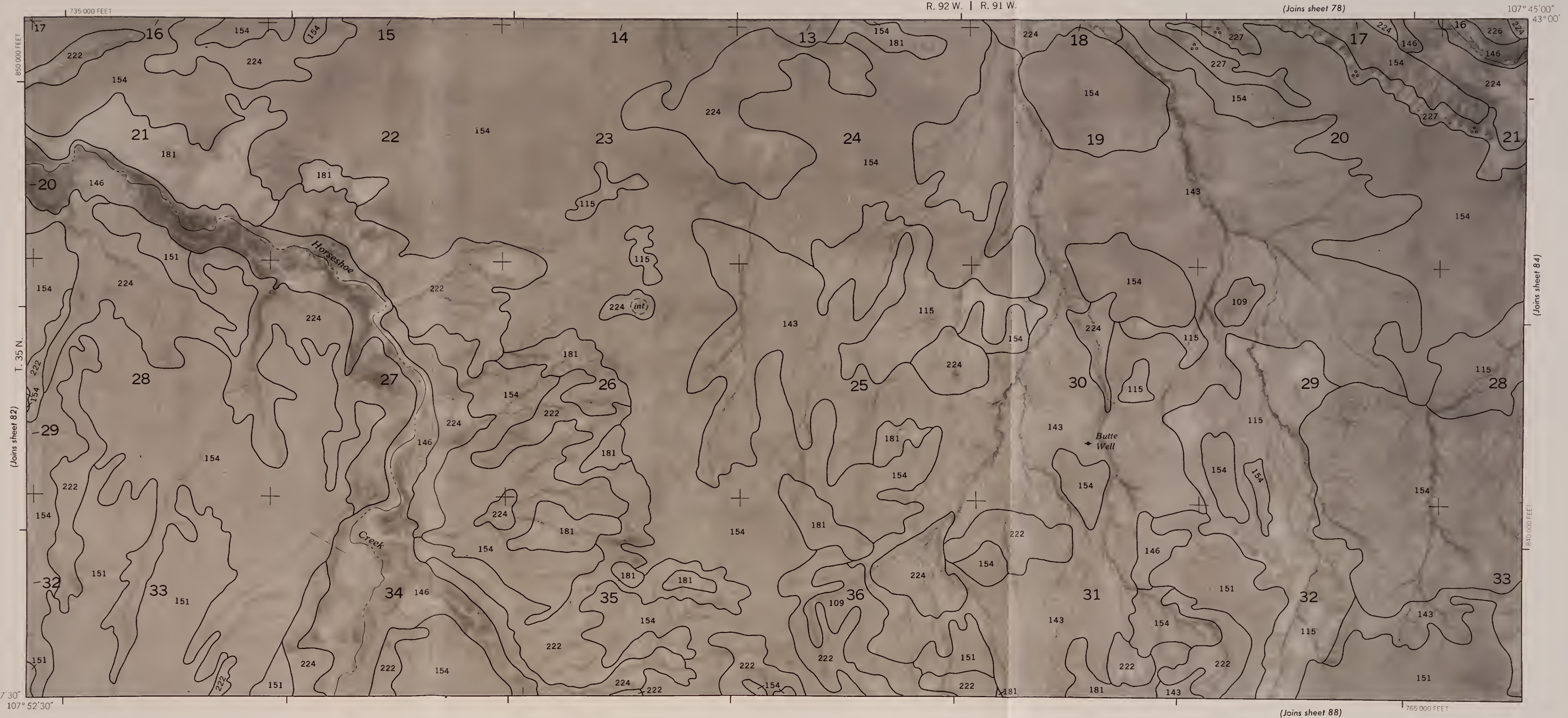
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 83

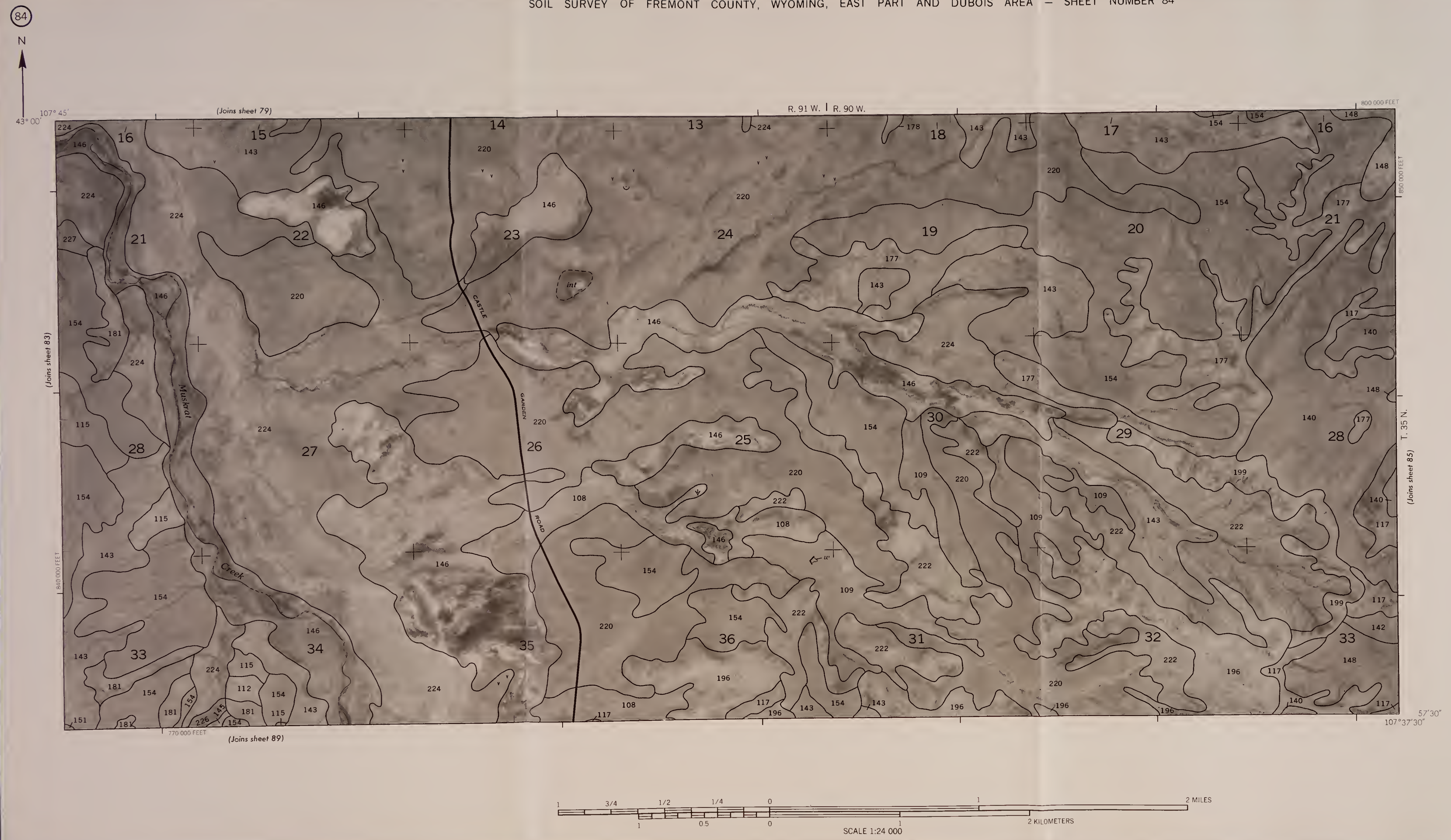
N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000



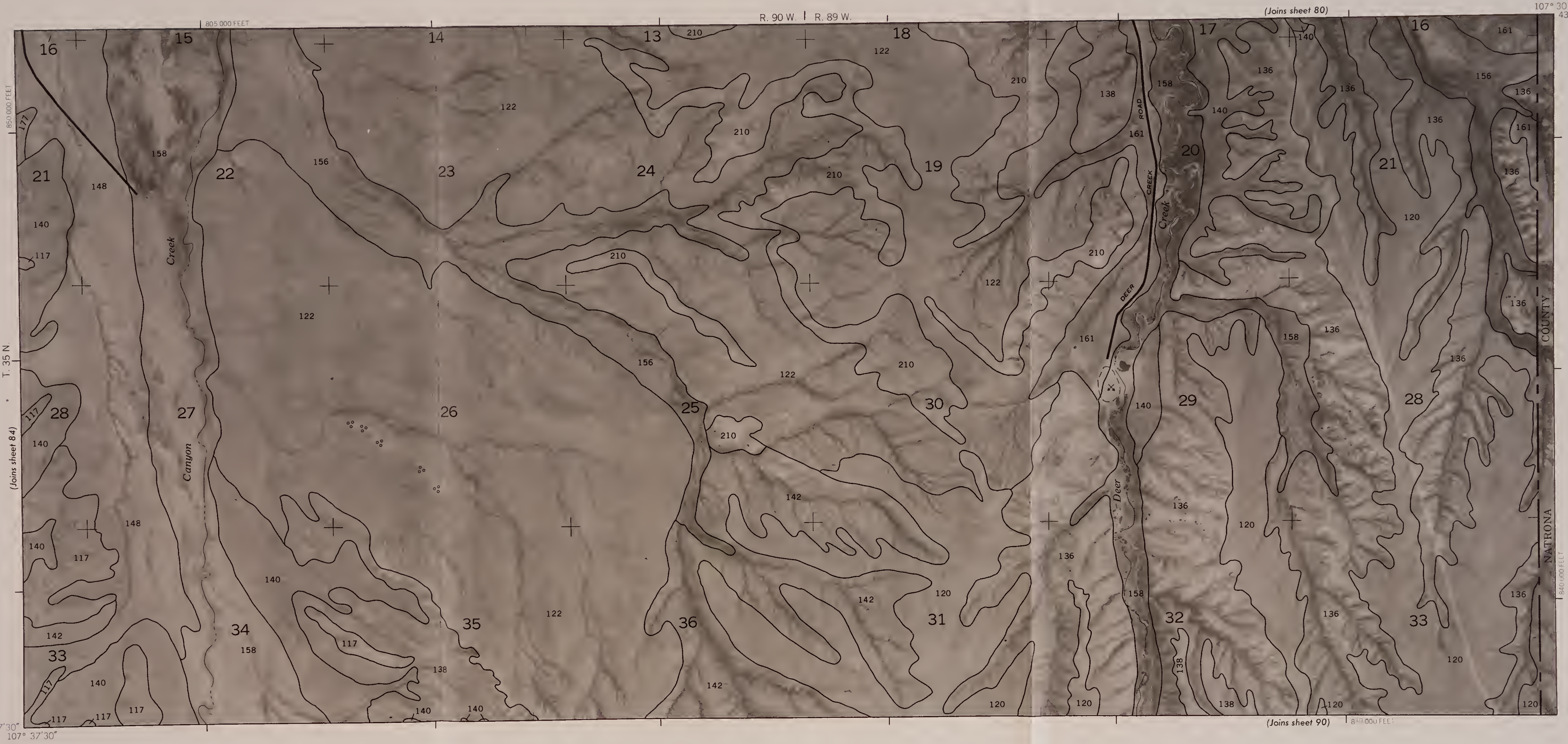
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 84

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies

Coordinate grid ticks and land division corners, if shown, are approximately positioned

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 85



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

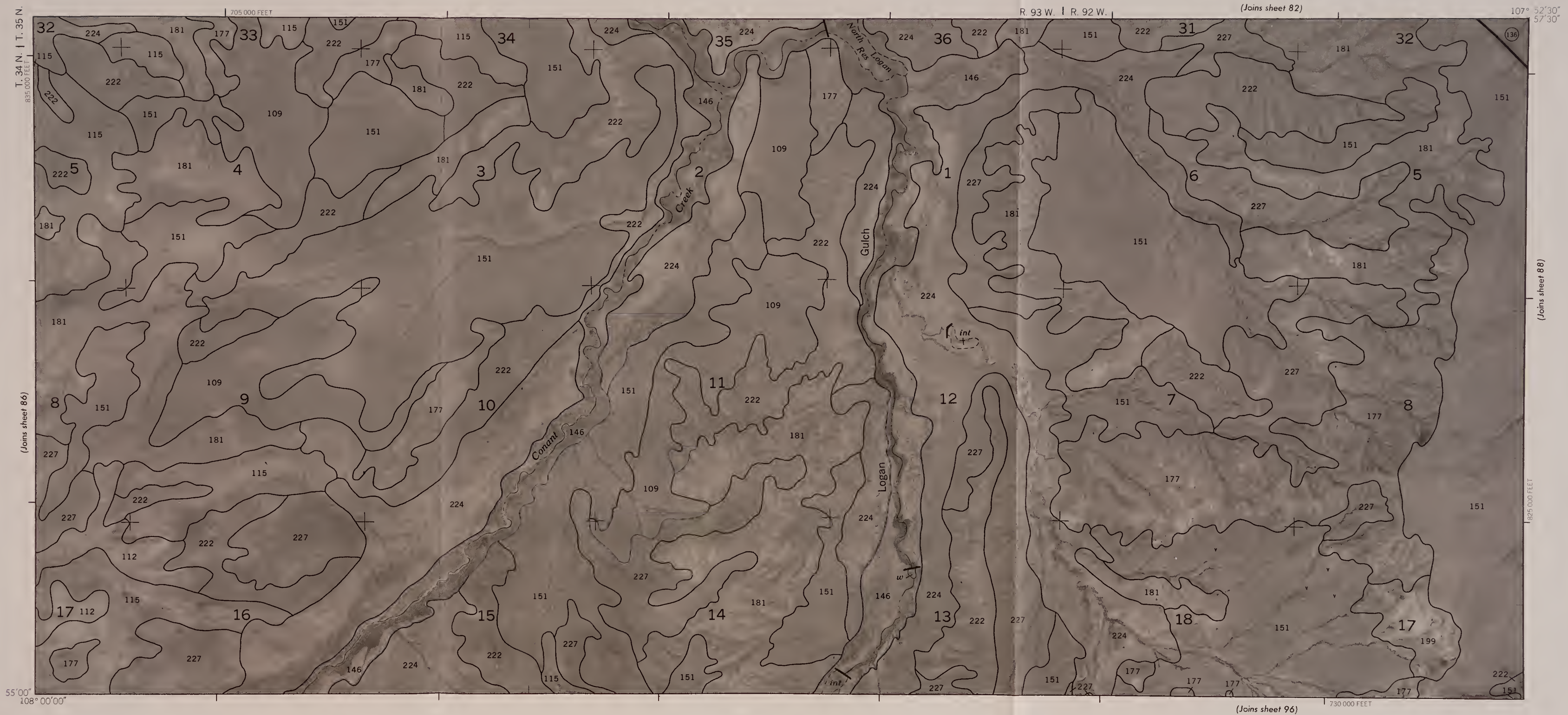
(86)

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 86

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 86

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

N



1 3/4 1/2 1/4 0 1 2 MILES

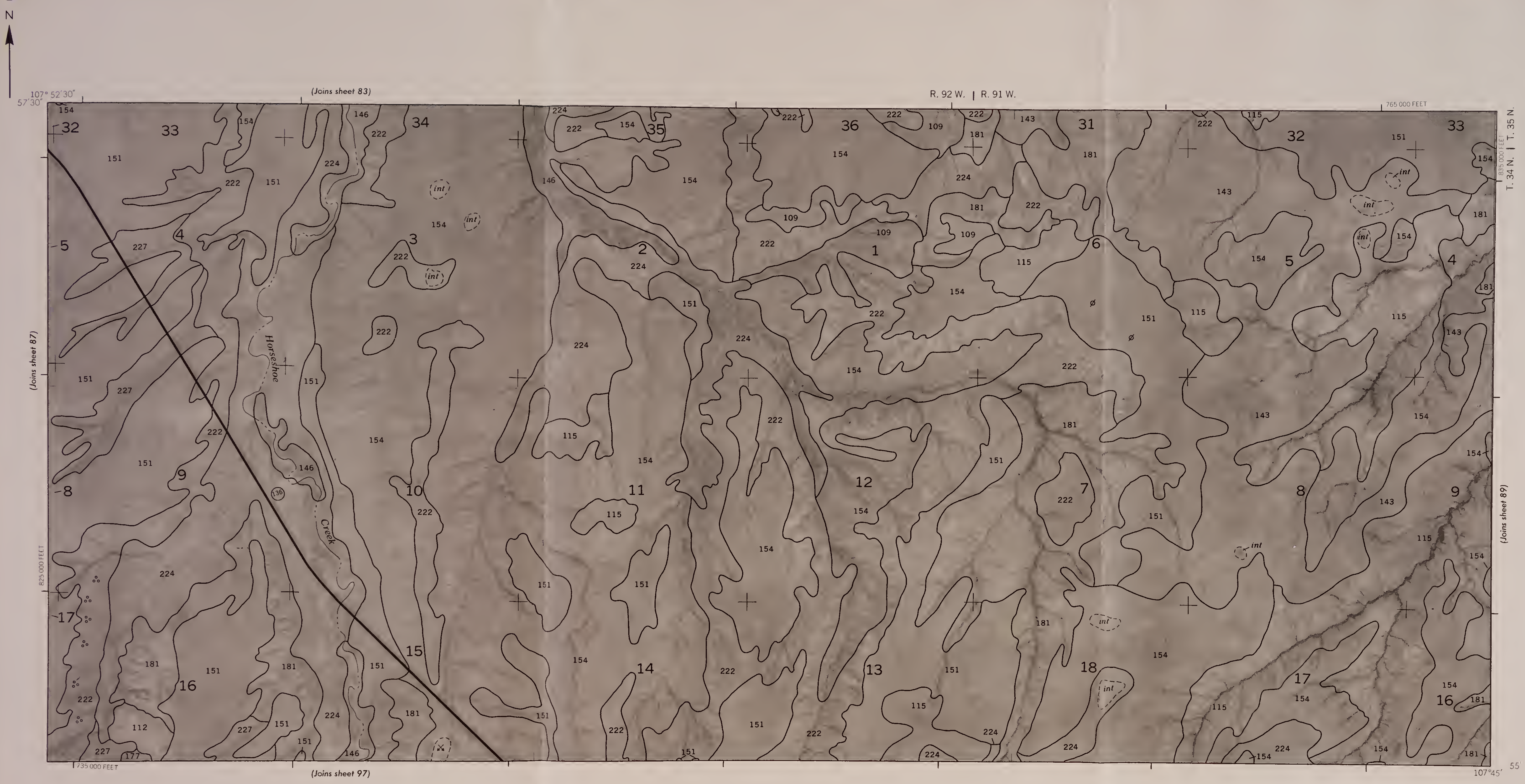
1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 87

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 88



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 88

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 89

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 90

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 90

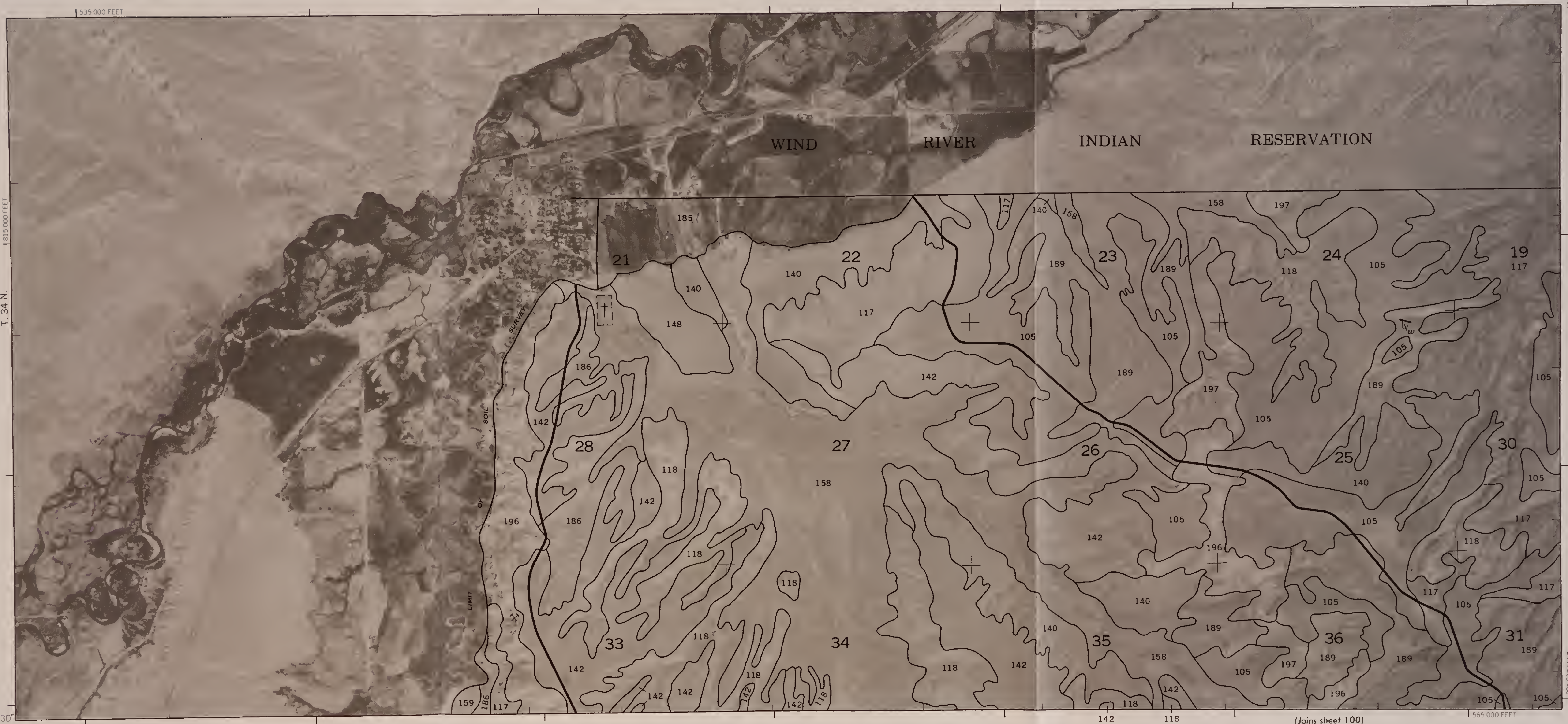
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 91

91

N

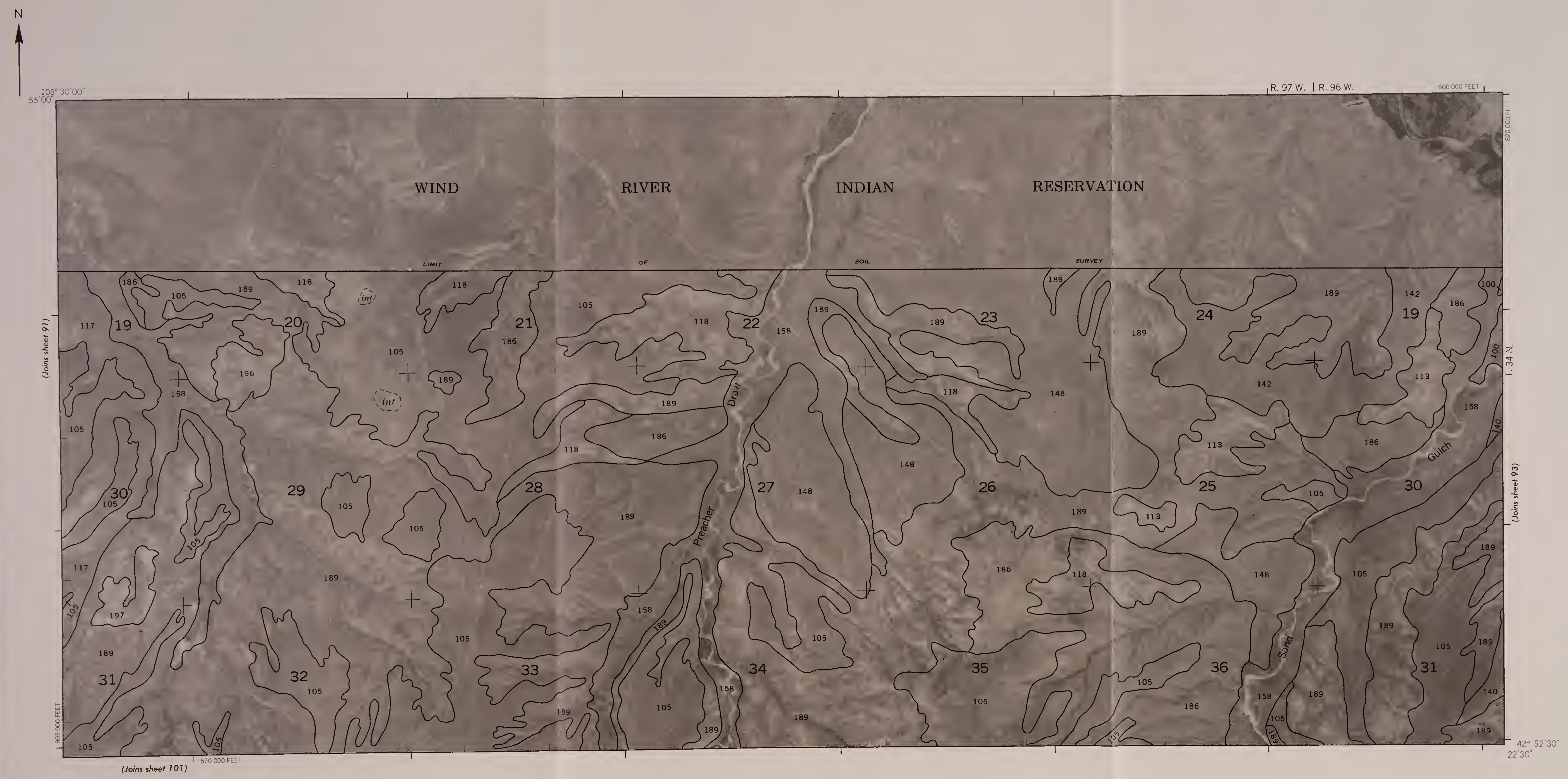


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 92



SCALE 1:24 000

PREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 92

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

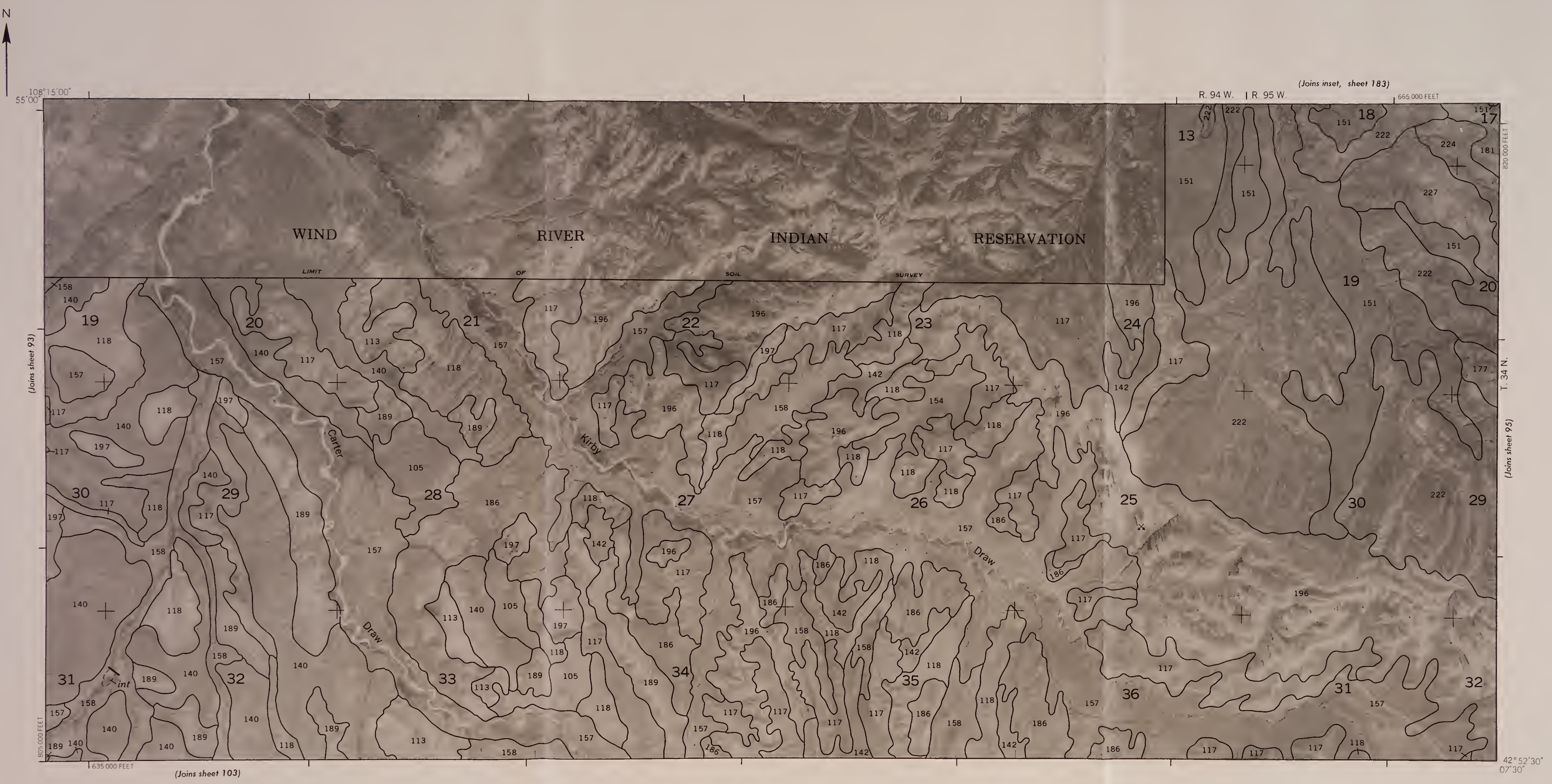
N

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 93

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 94



SCALE 1:24 000

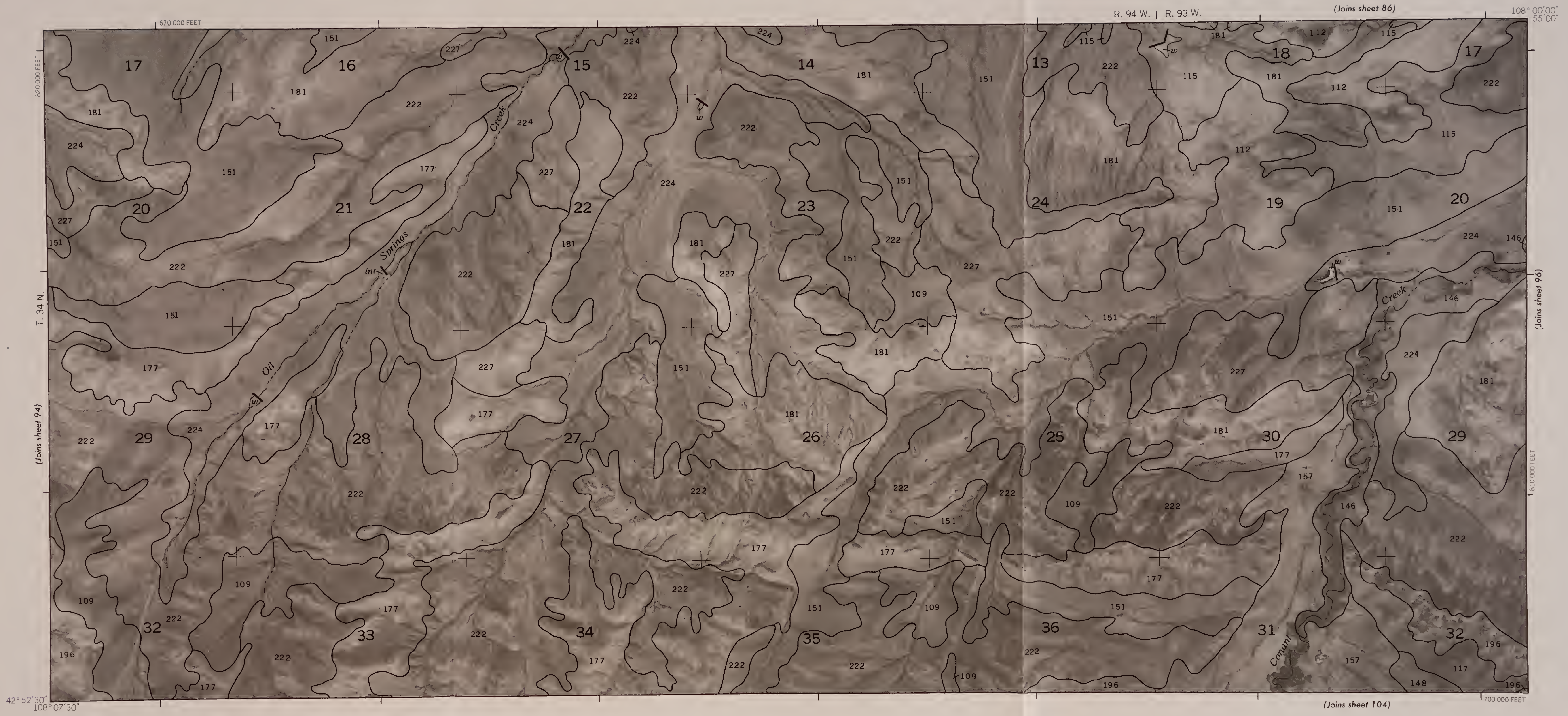
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 94

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

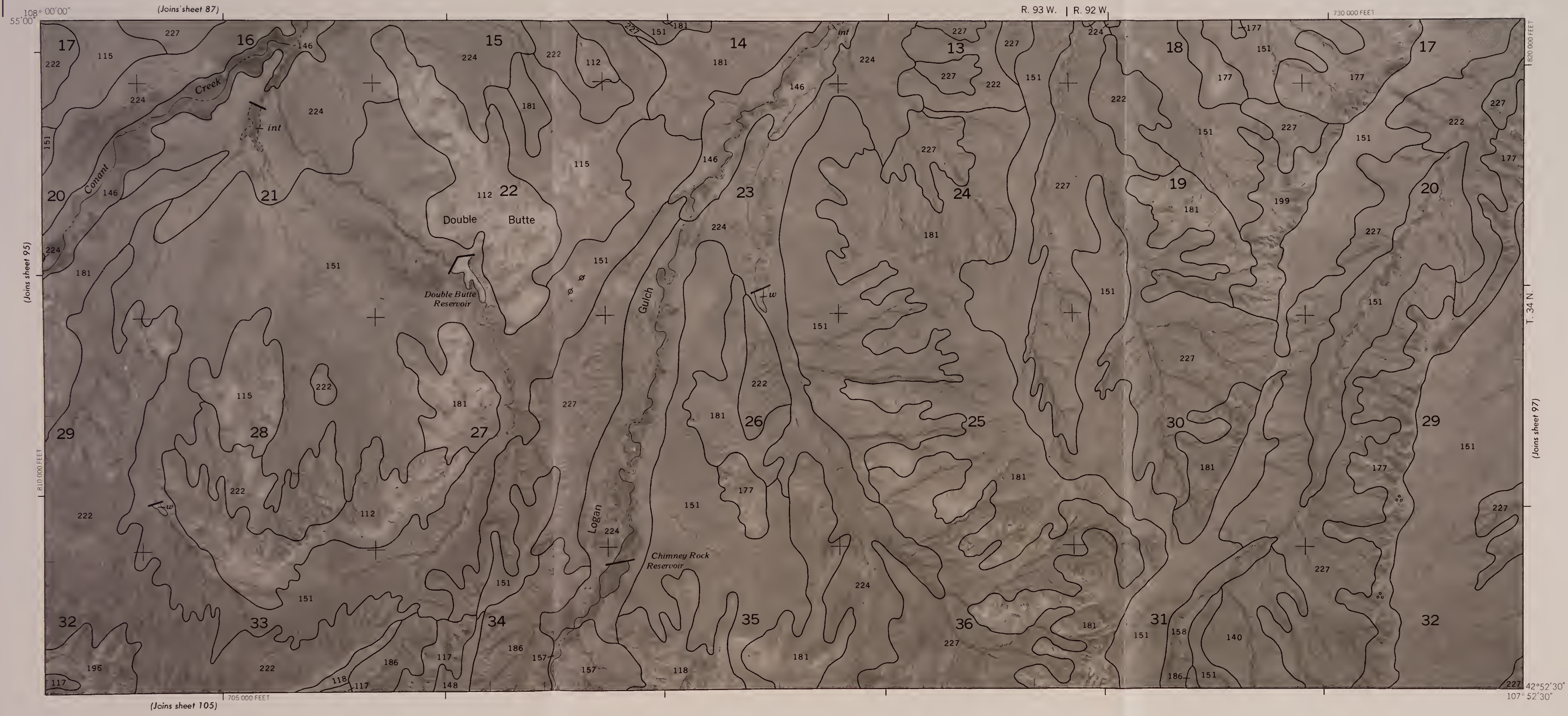


1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 95

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 96



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 96

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 97

97

1 3/4 1/2 1/4 0 1 2 MILES

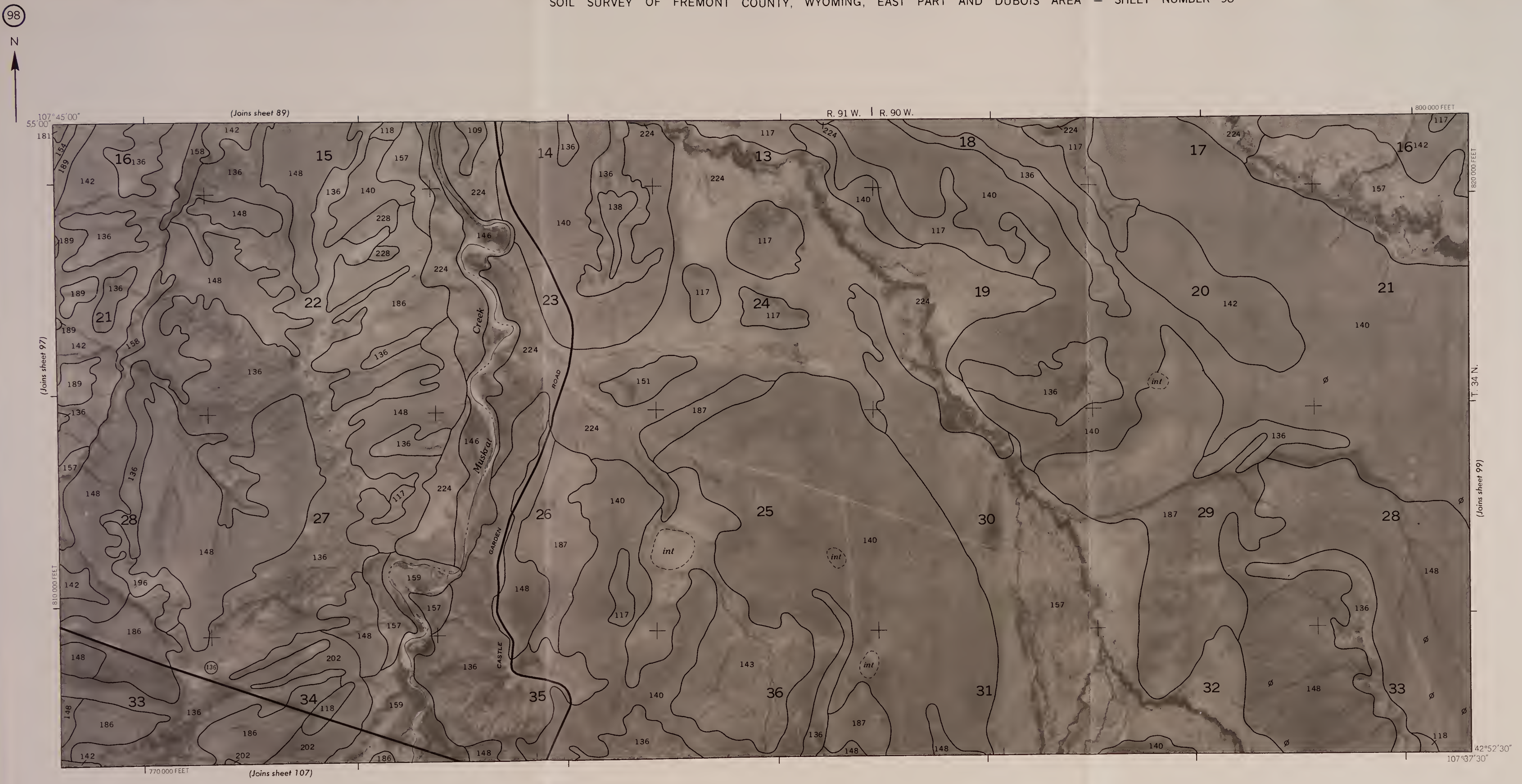
1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 97

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 98



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 98

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 99

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 100

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 100

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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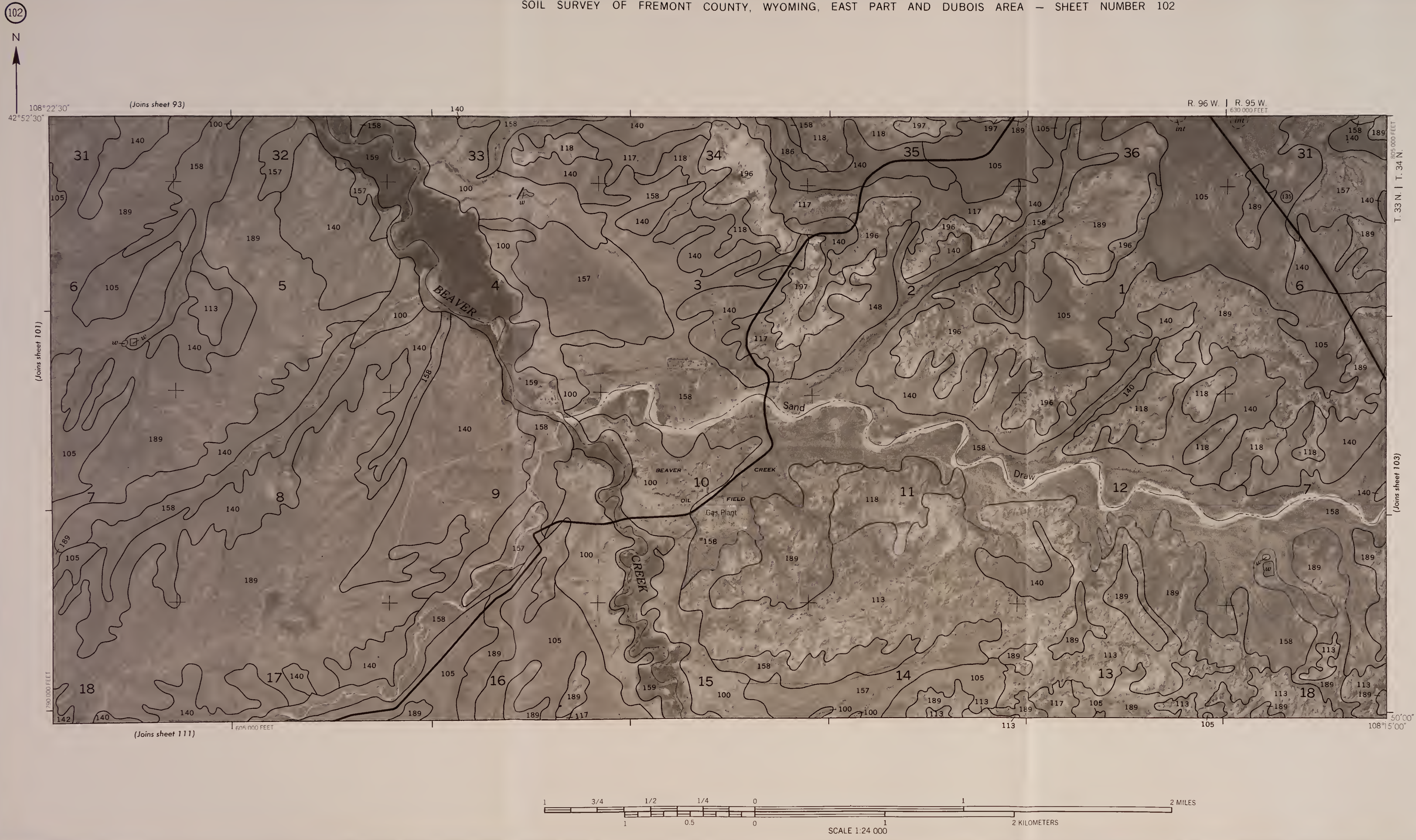
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 101

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 102



FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 102

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

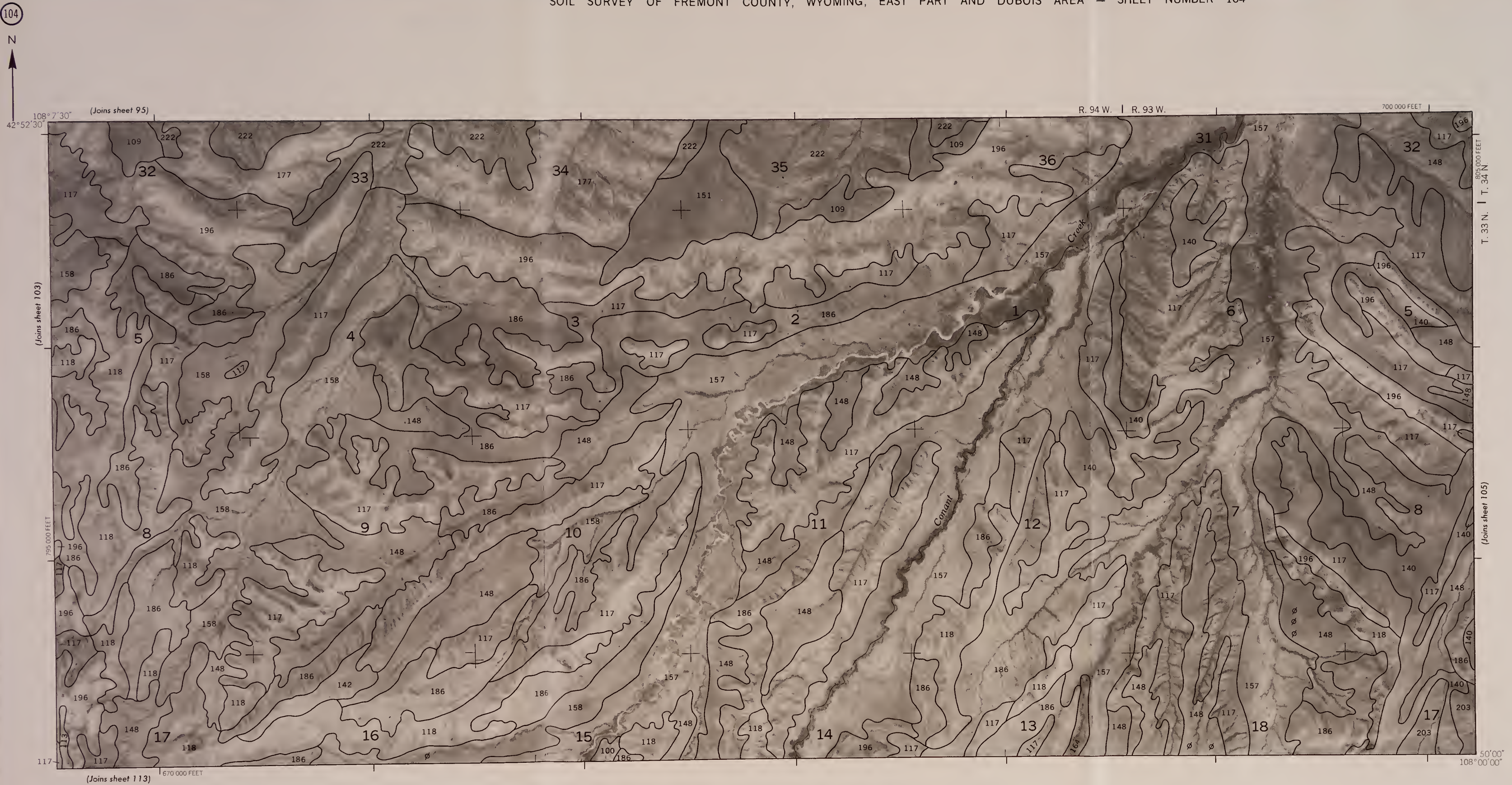
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 103

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 104



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

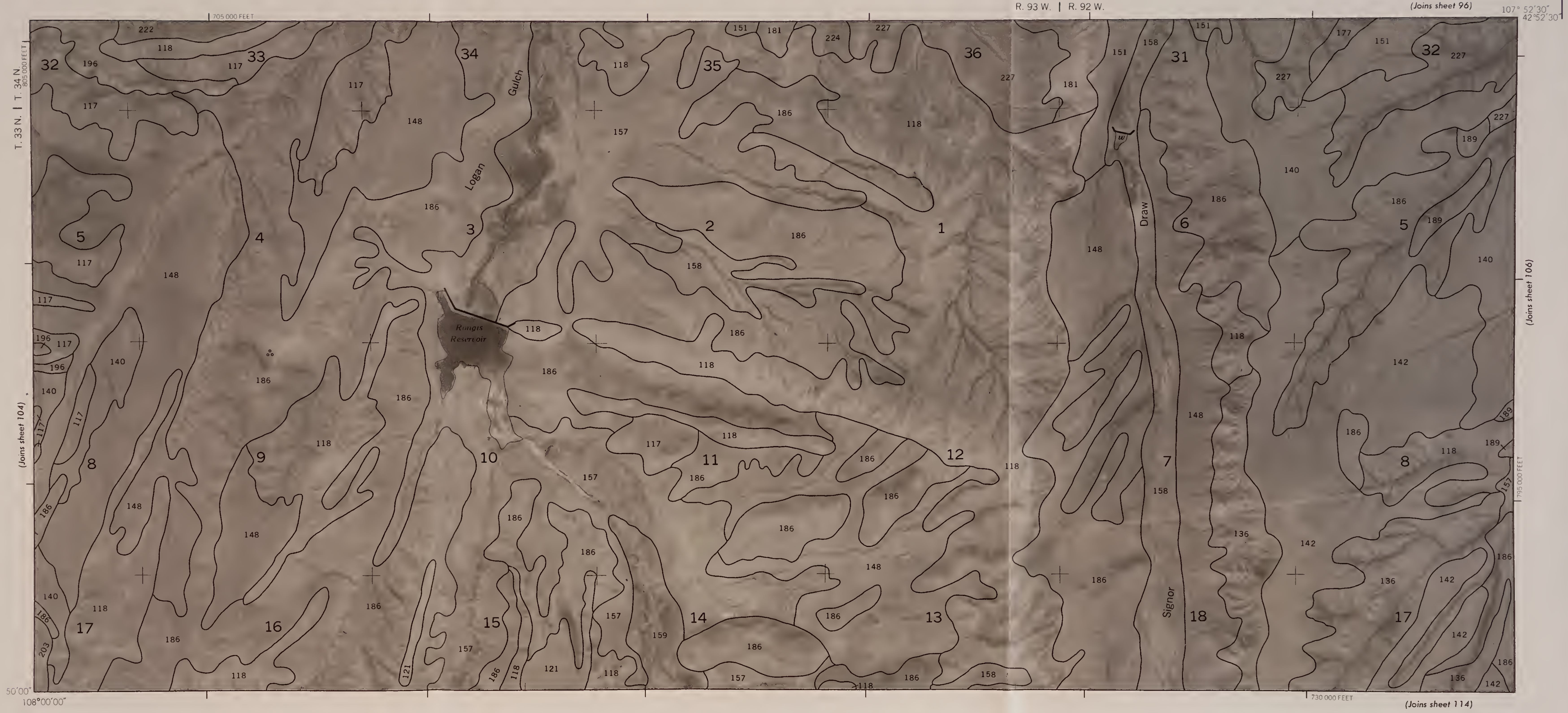
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 104

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

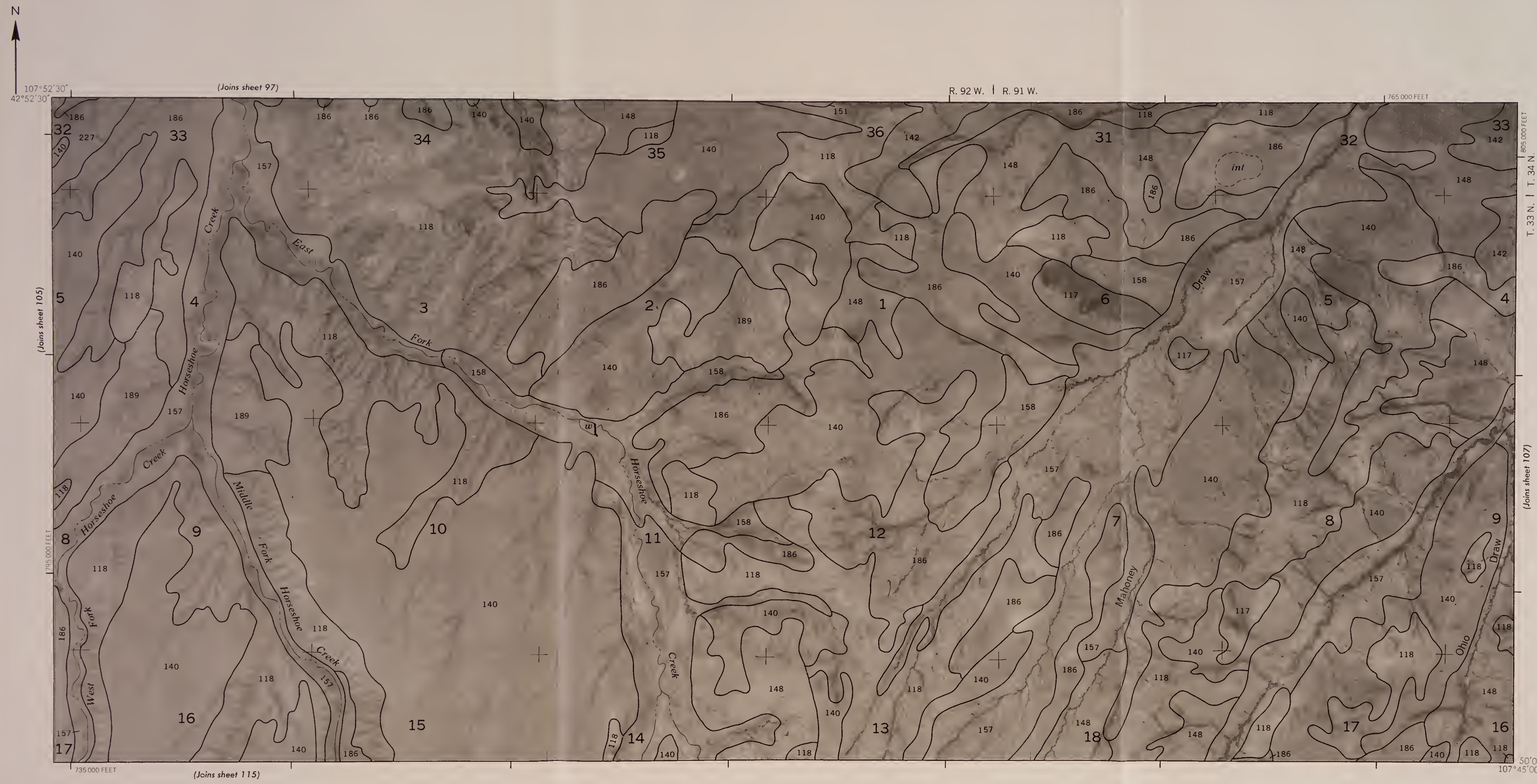
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 105



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 106



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 106

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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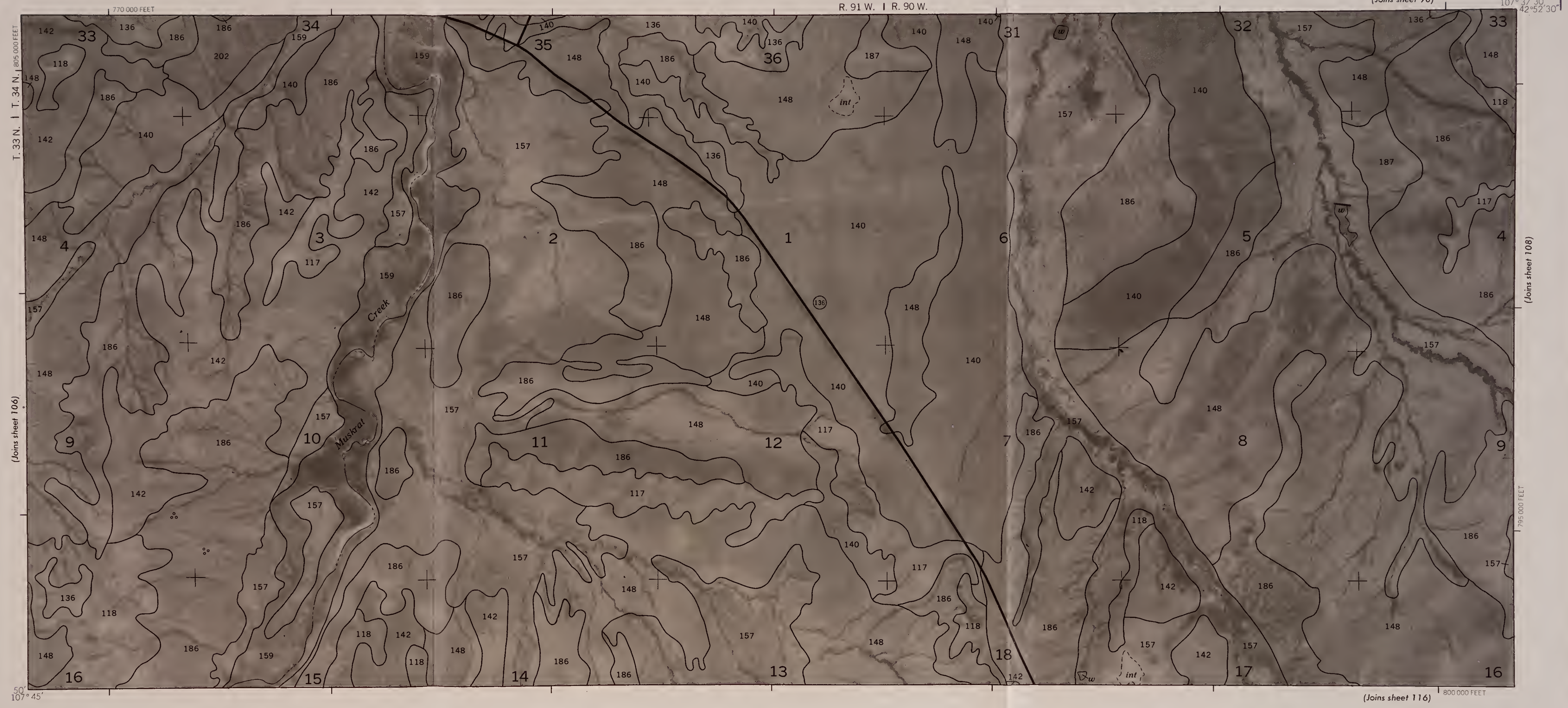
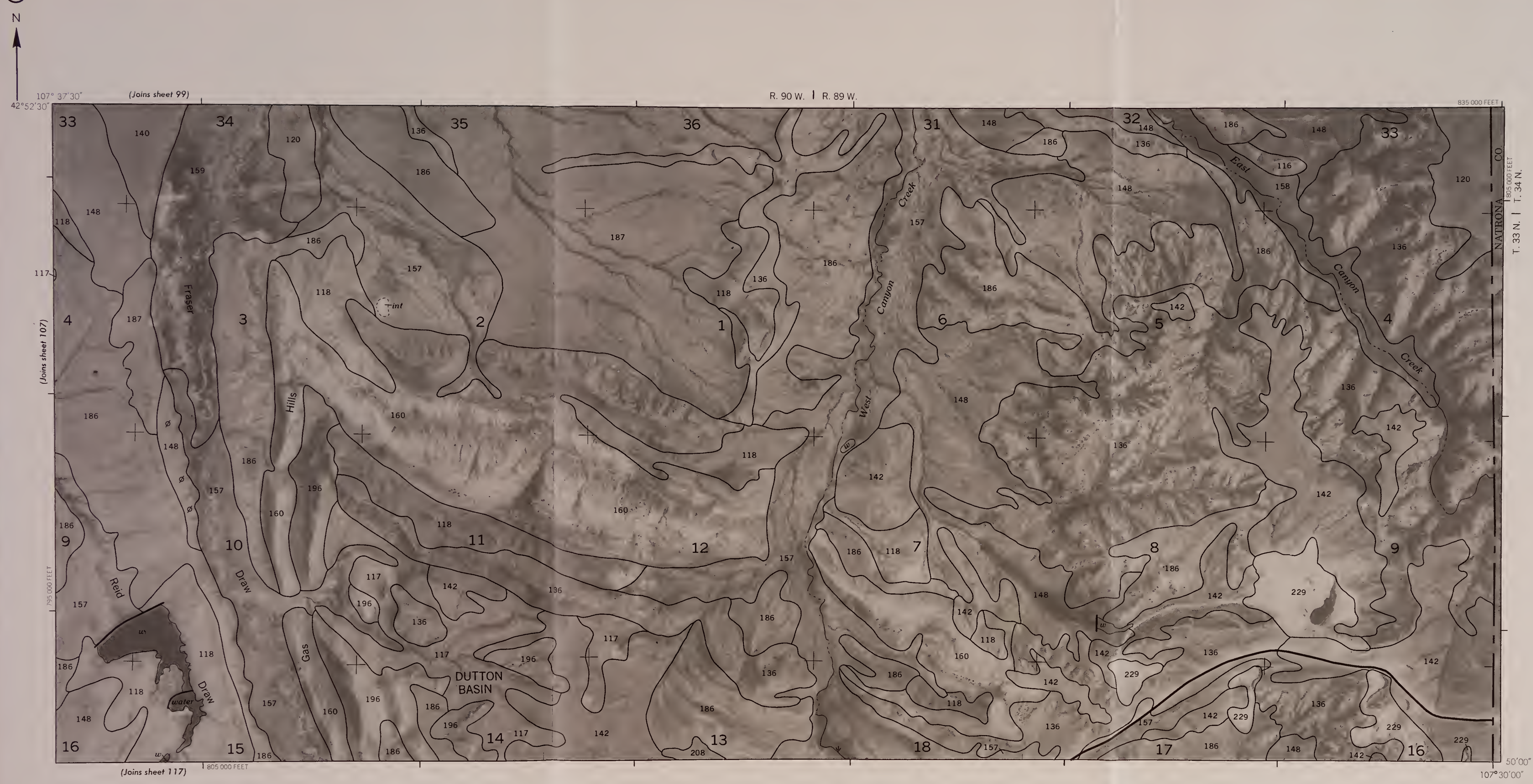
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 107

N



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 108



SCALE 1:24 000

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 108

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 109

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 110

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 110

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

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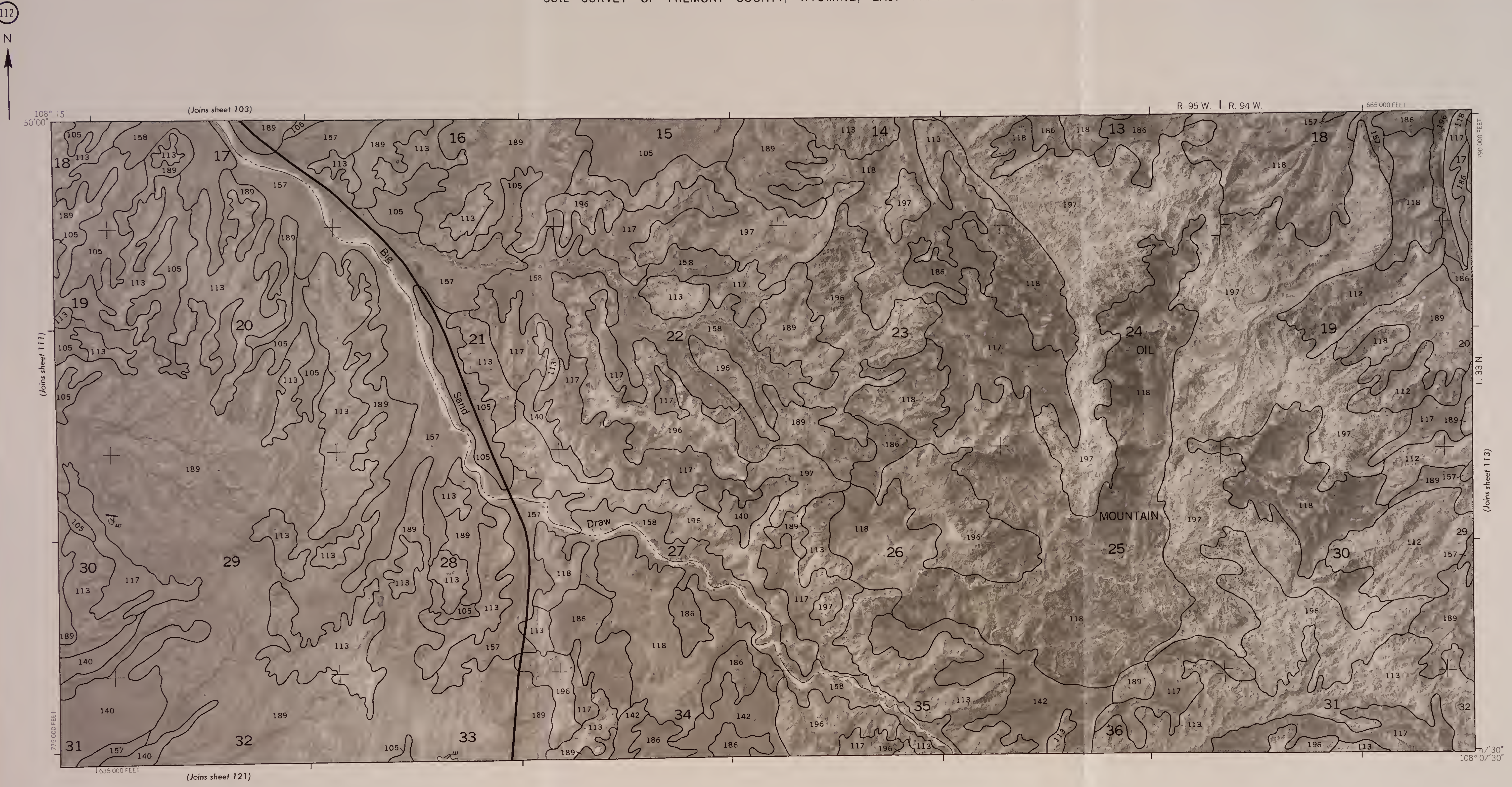
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 111

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 112



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 112

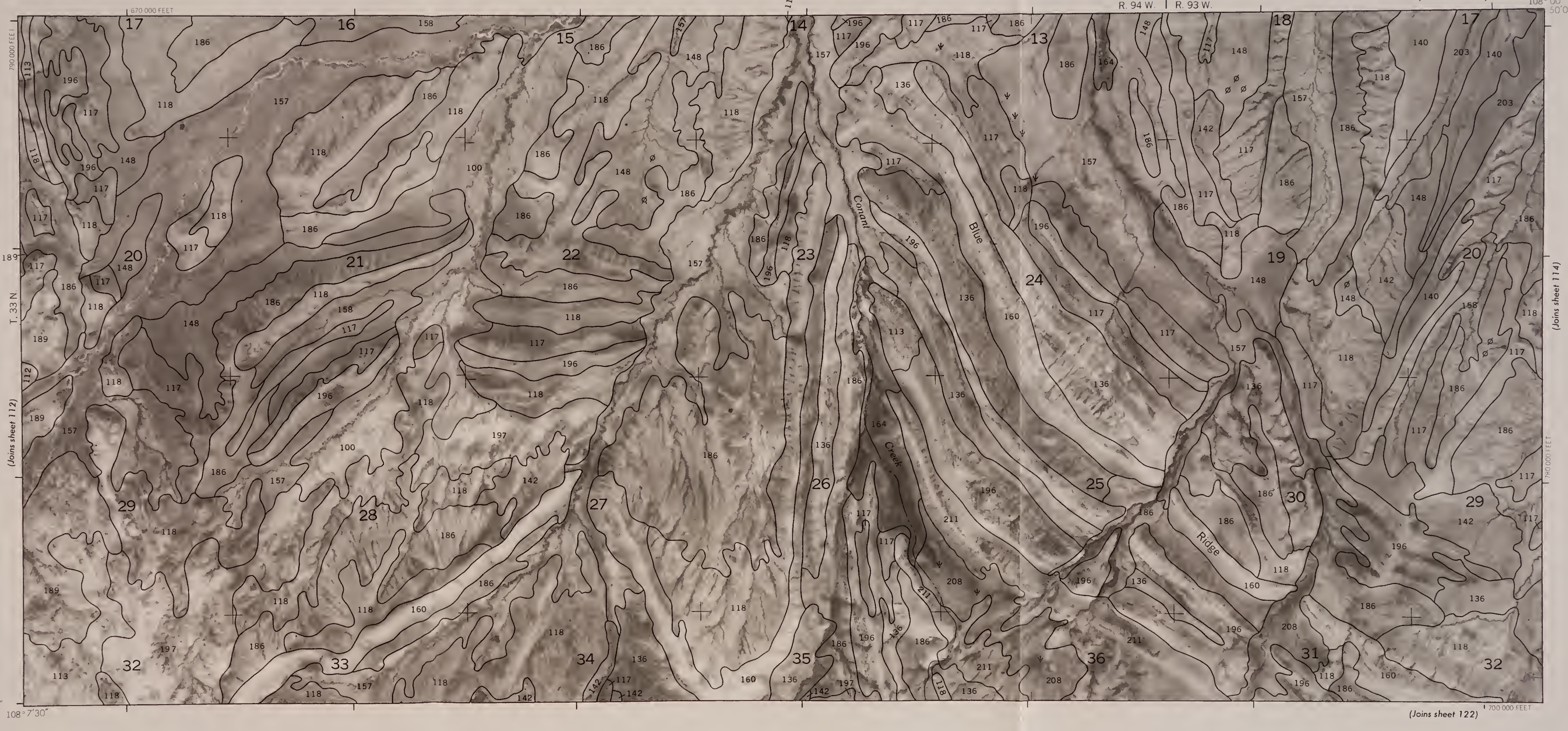
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 113

113

N



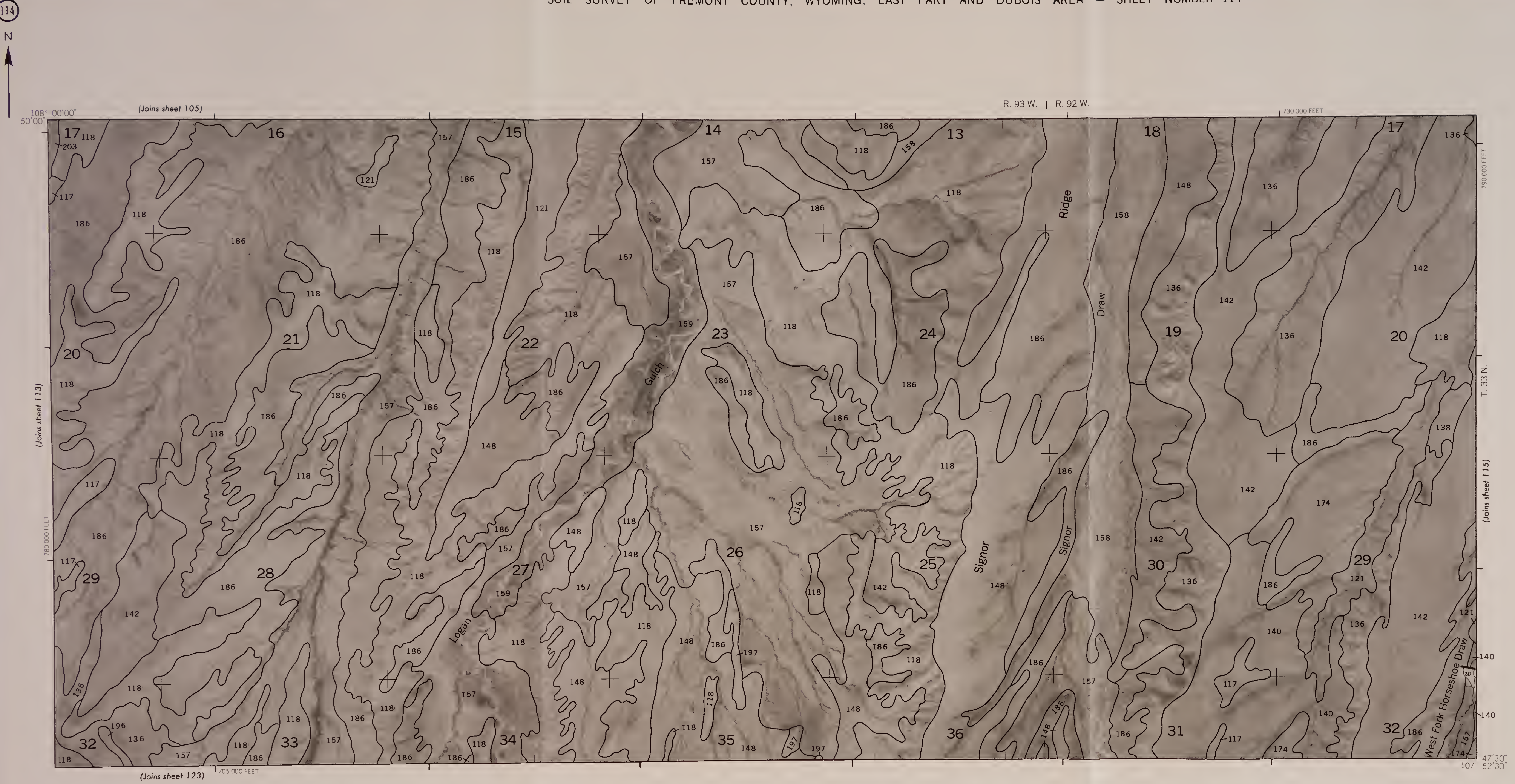
SCALE 1:24 000

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

114

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 114



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

PREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 114

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

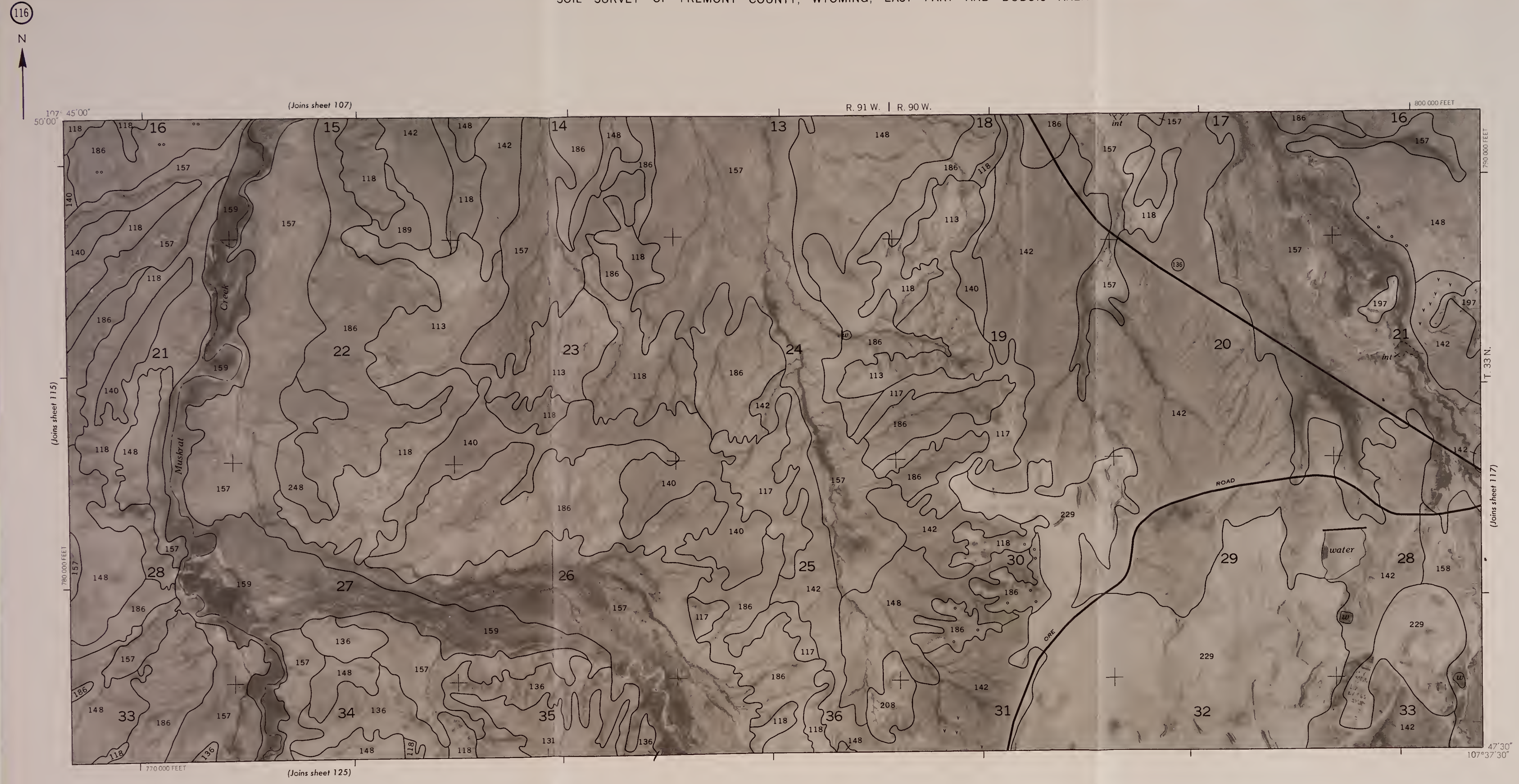
115

N

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 115



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 116

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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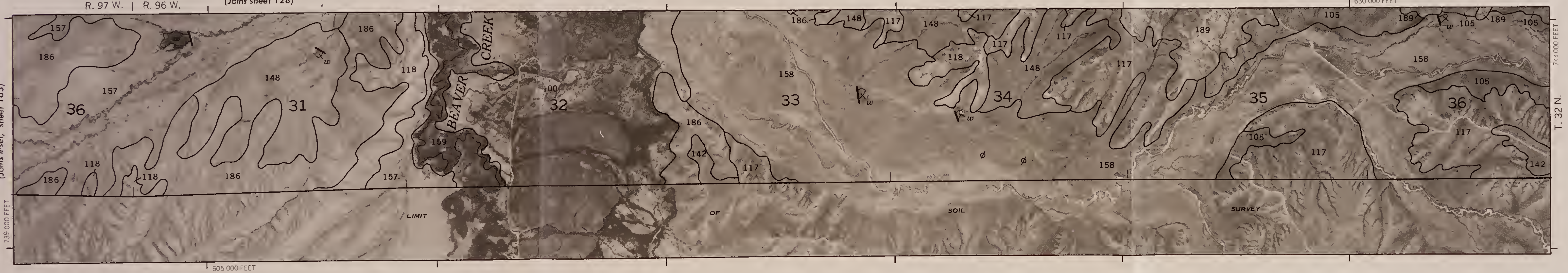
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 117

1 3/4 1/2 1/4 0 1 2 MILES
0.5 0 1 2 KILOMETERS
SCALE 1:24 000

118

N

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 118



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 118

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
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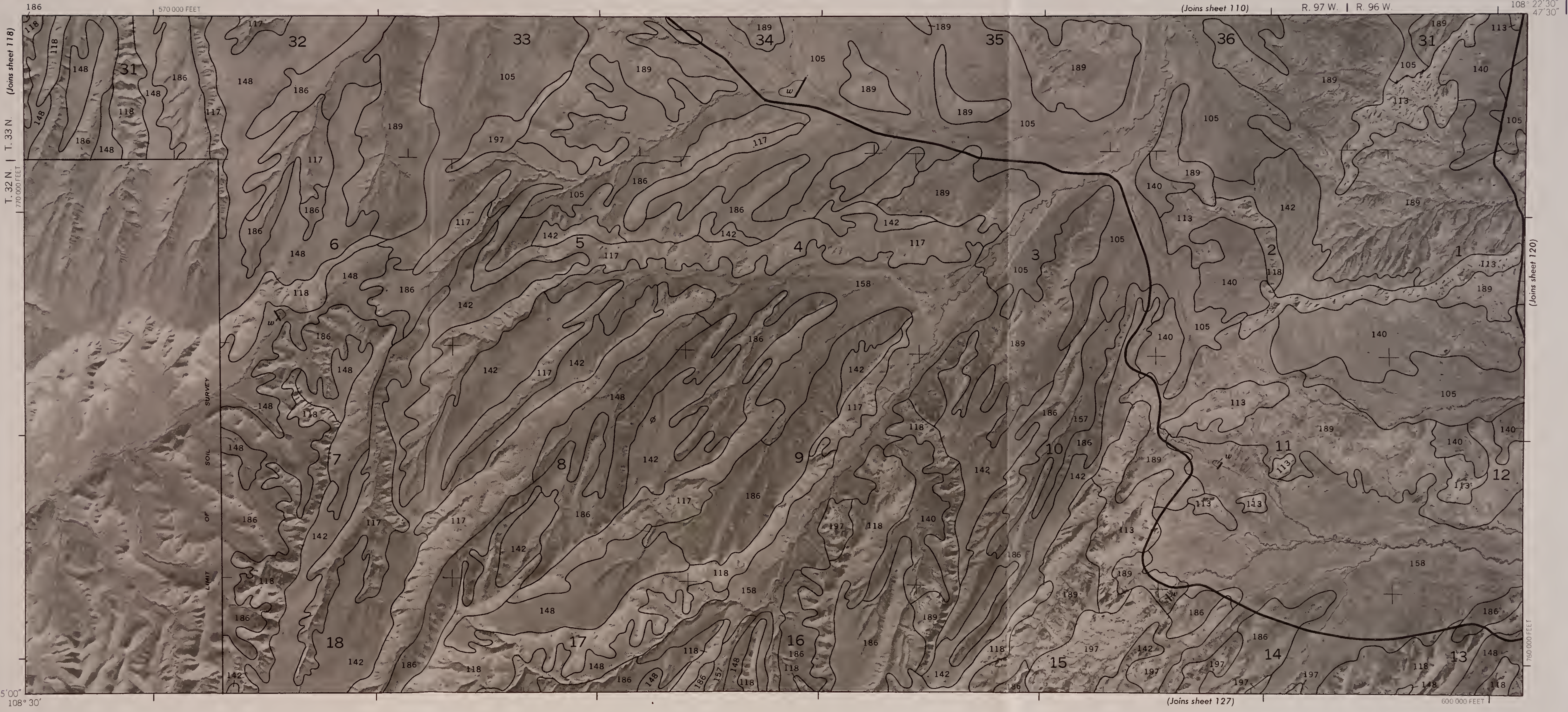
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 119

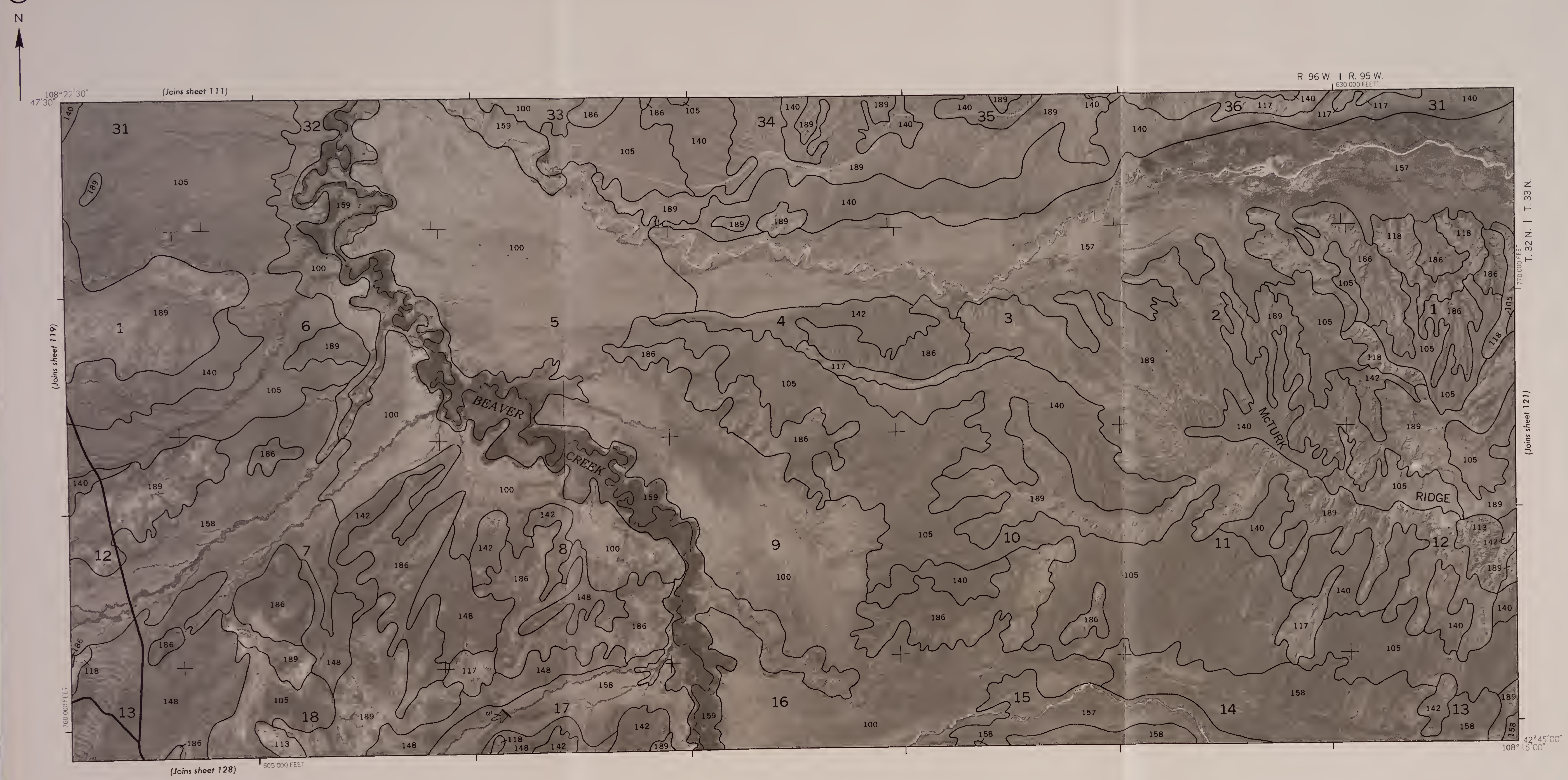
119

N



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 120



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 120

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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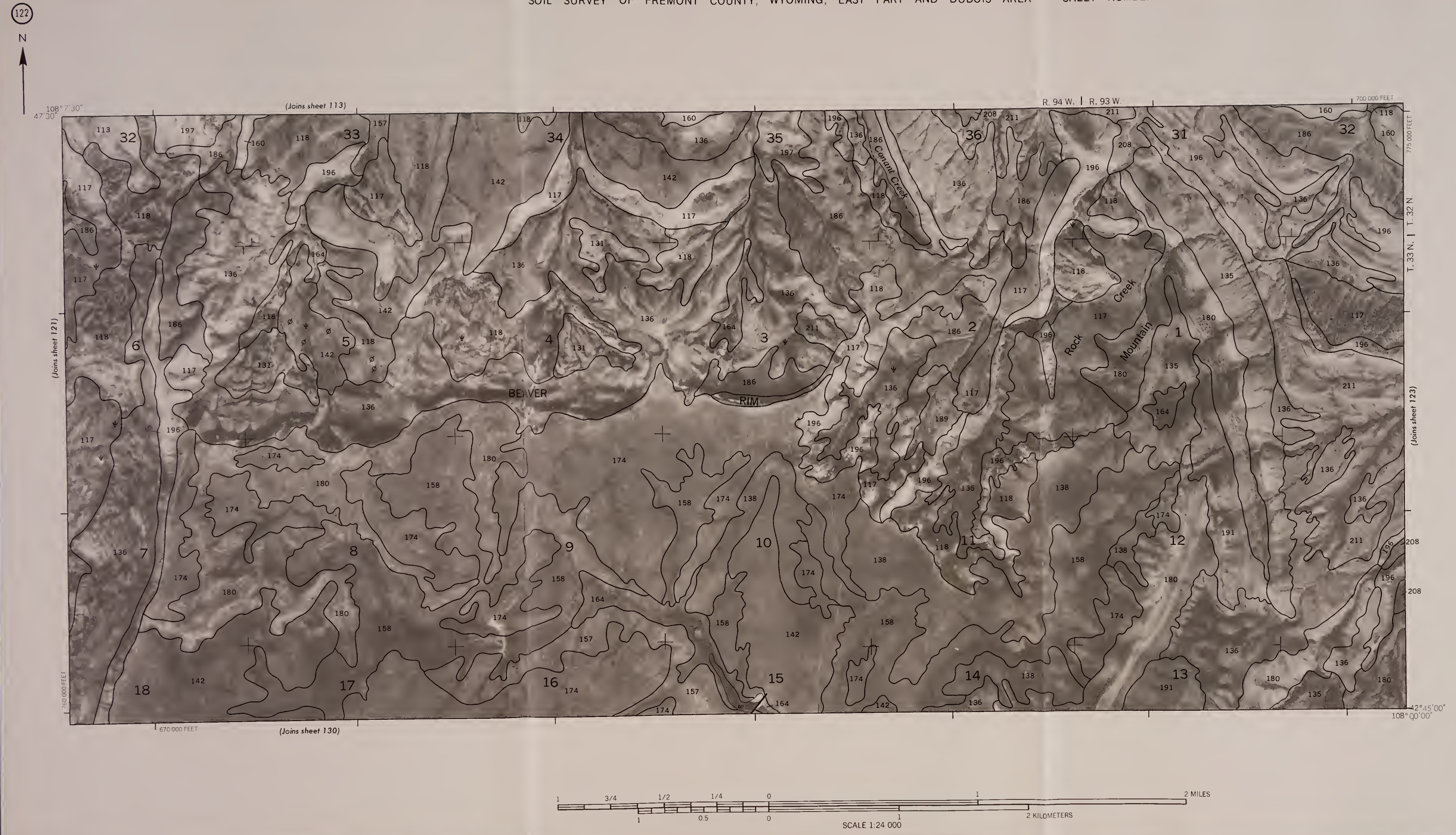
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 121

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000



FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 122

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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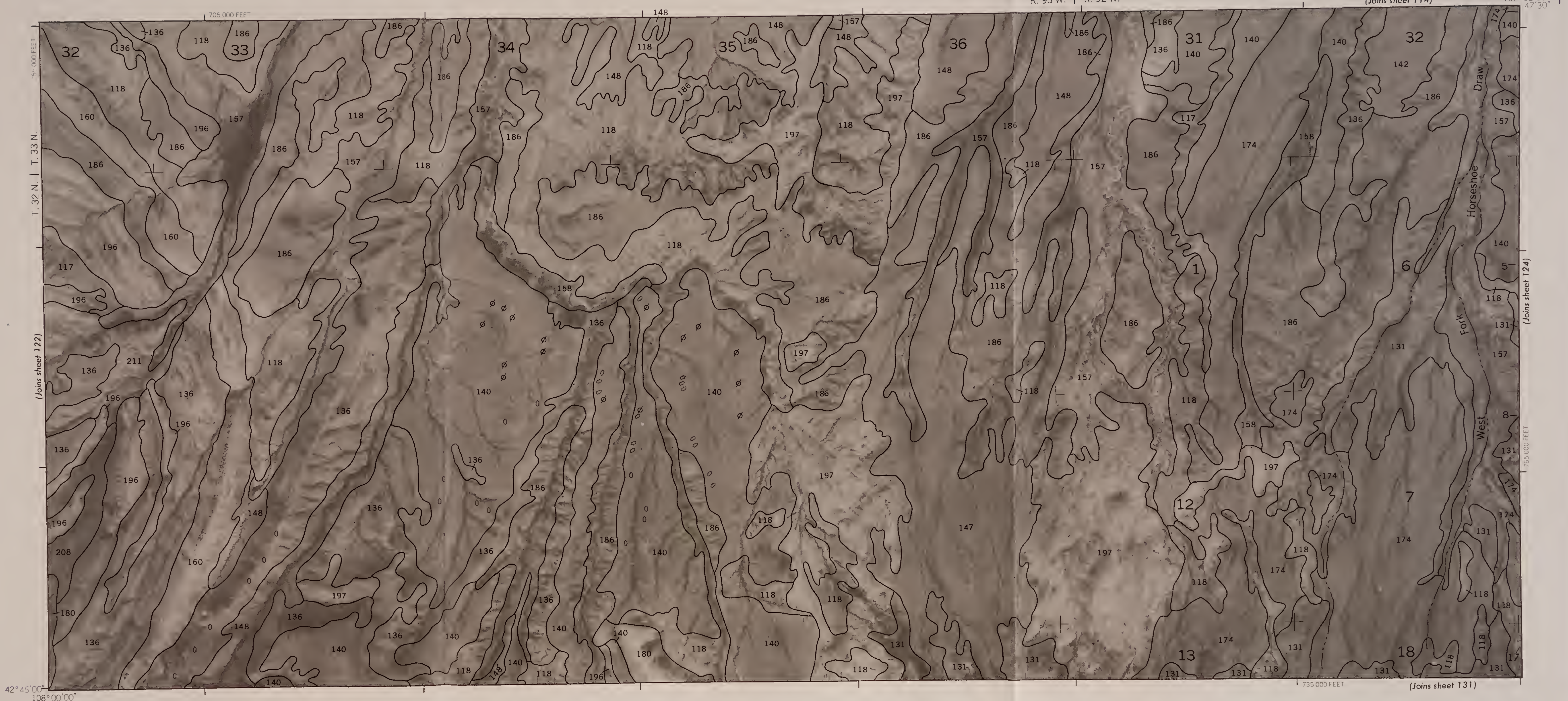
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 123

N



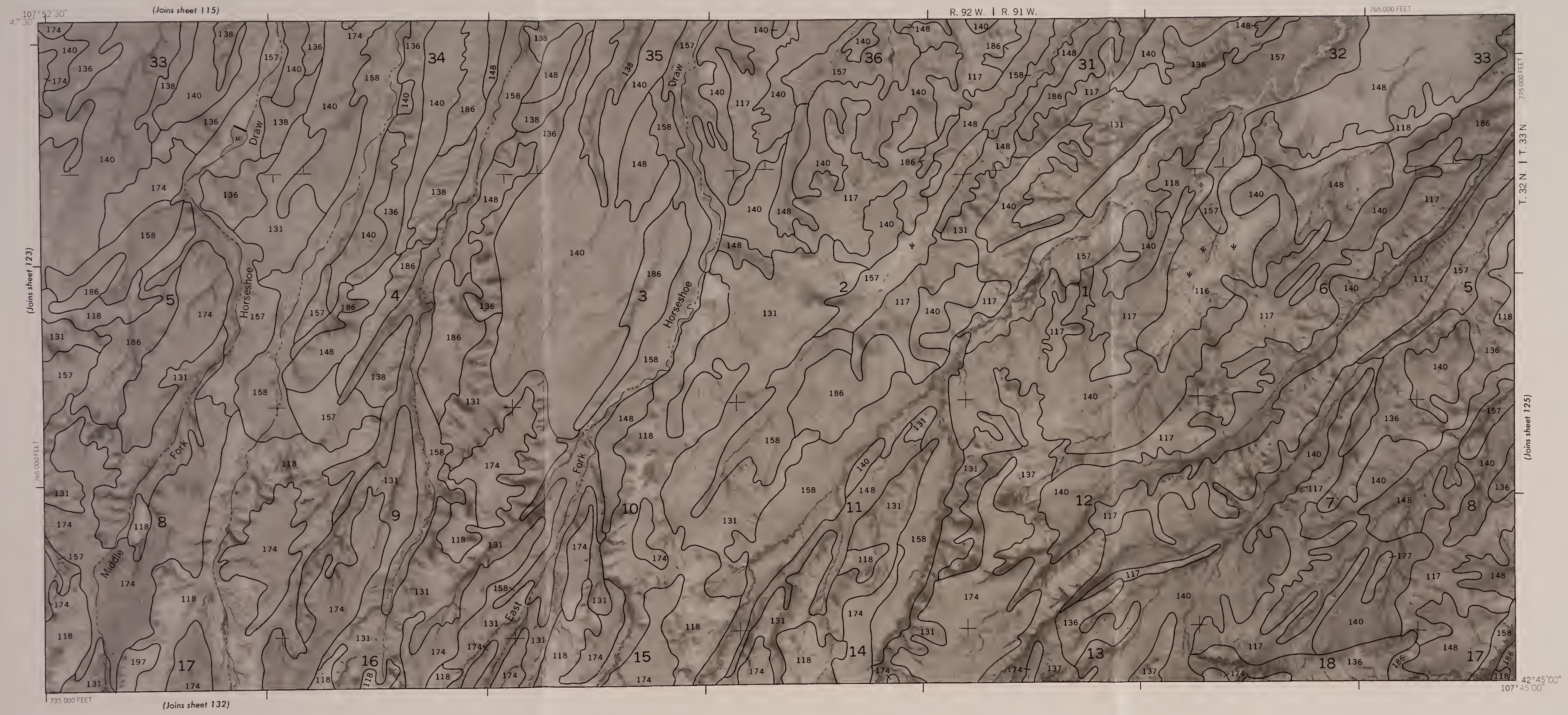
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

124

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 124

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 125

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 126

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 126

This soil survey map was compiled by the U S Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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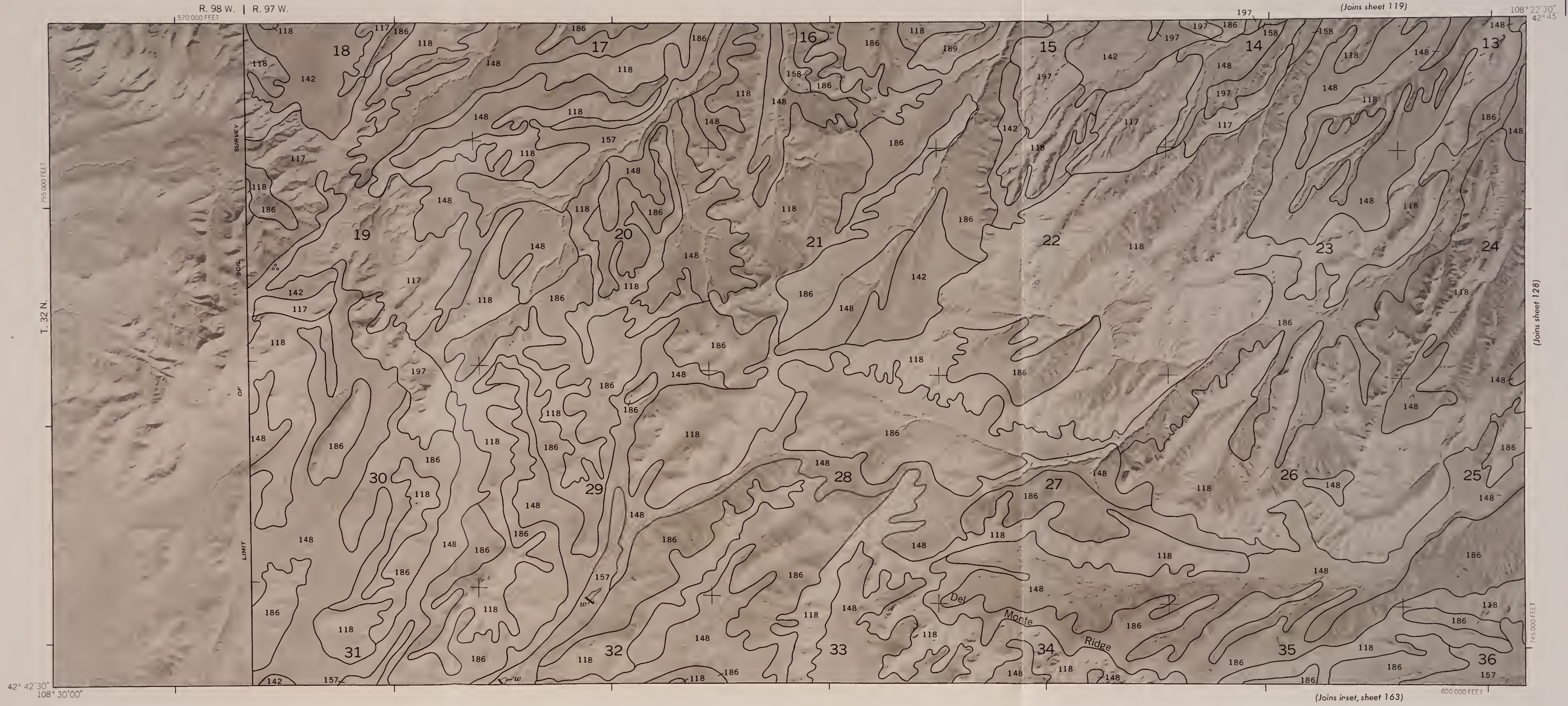
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 127

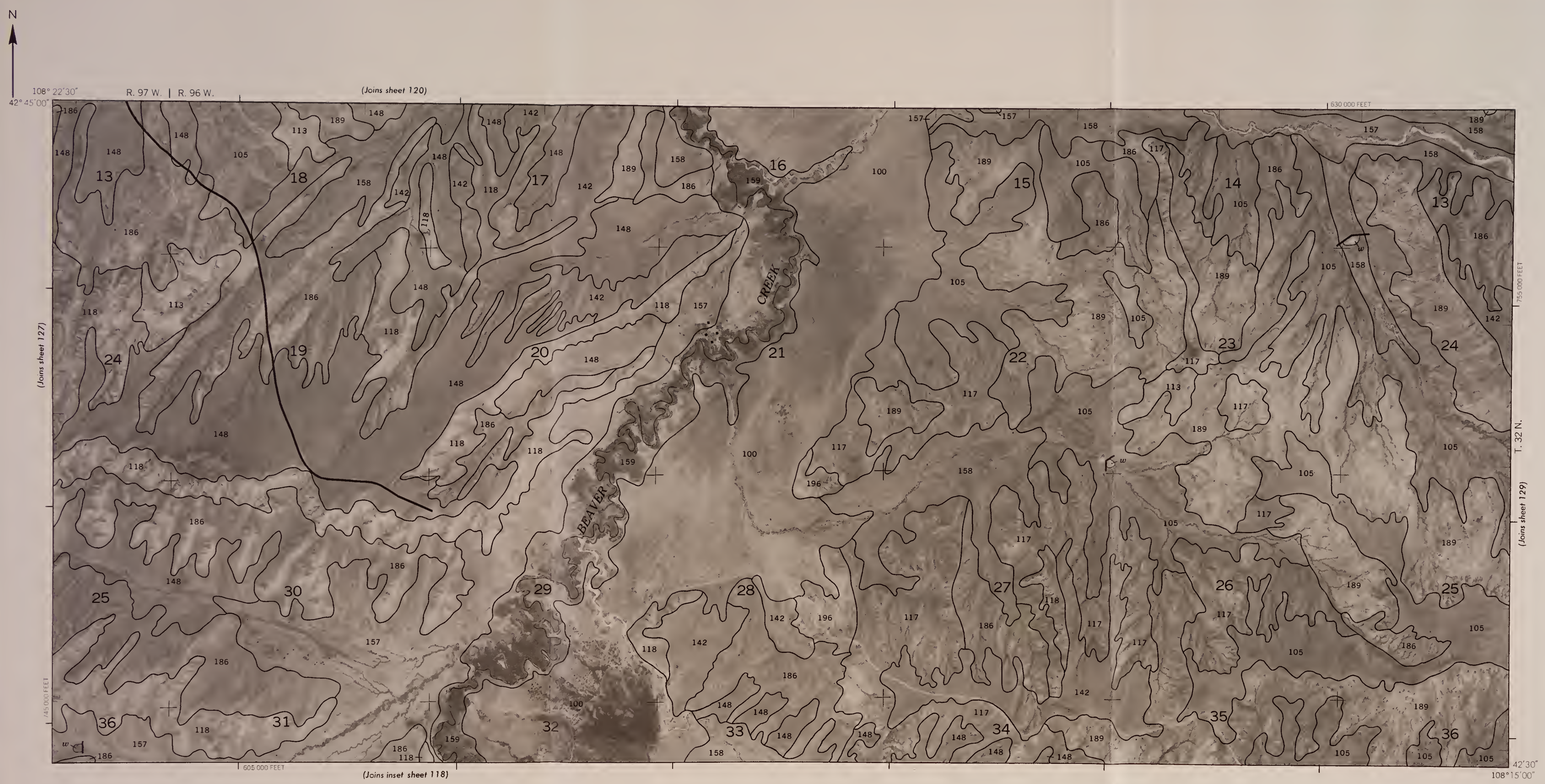


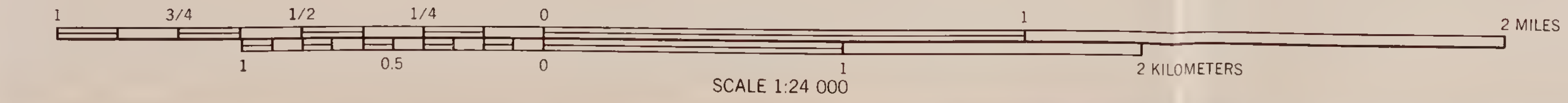
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 128





FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 128

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 129

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 130

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 130

This soil survey map was compiled by the U S Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

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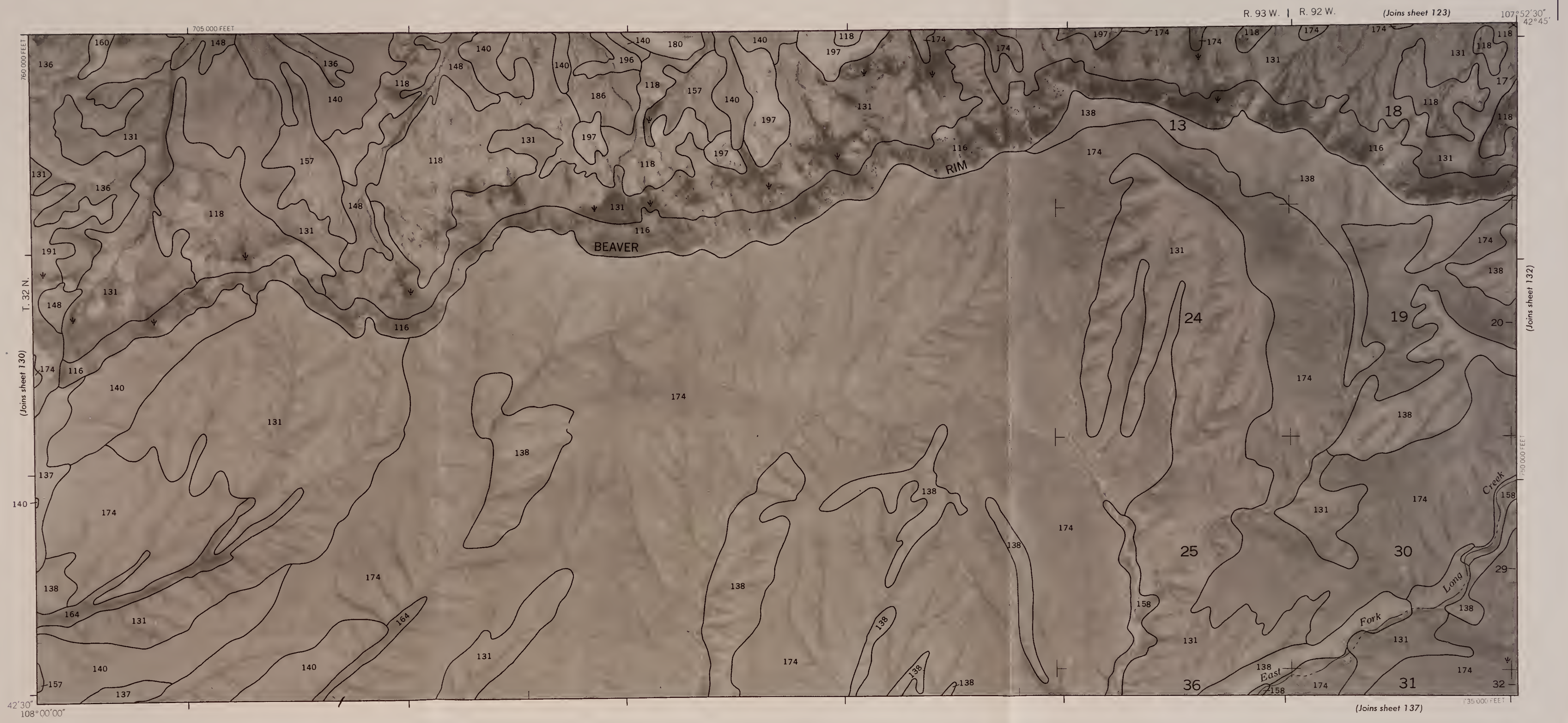
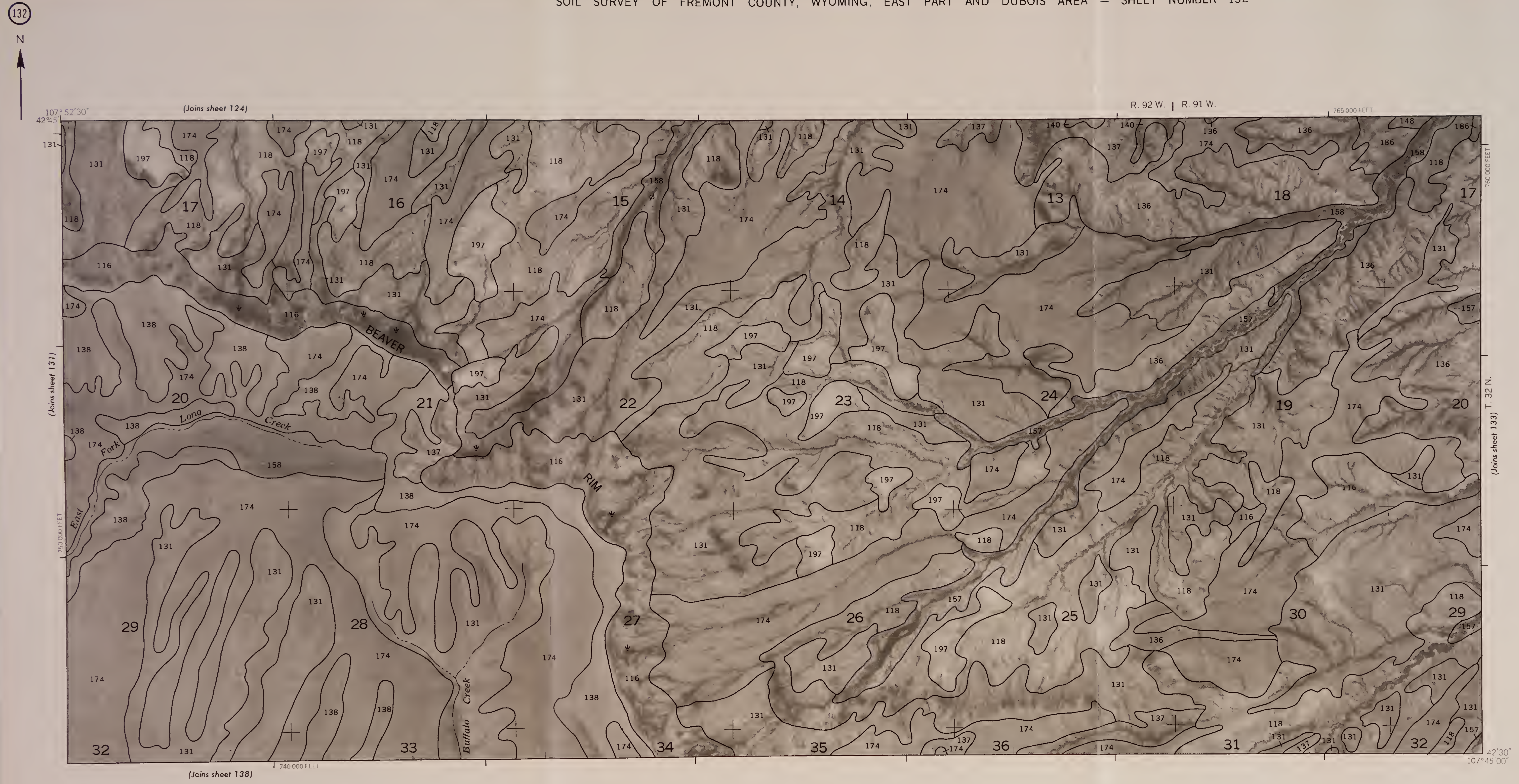
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 131



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 132

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

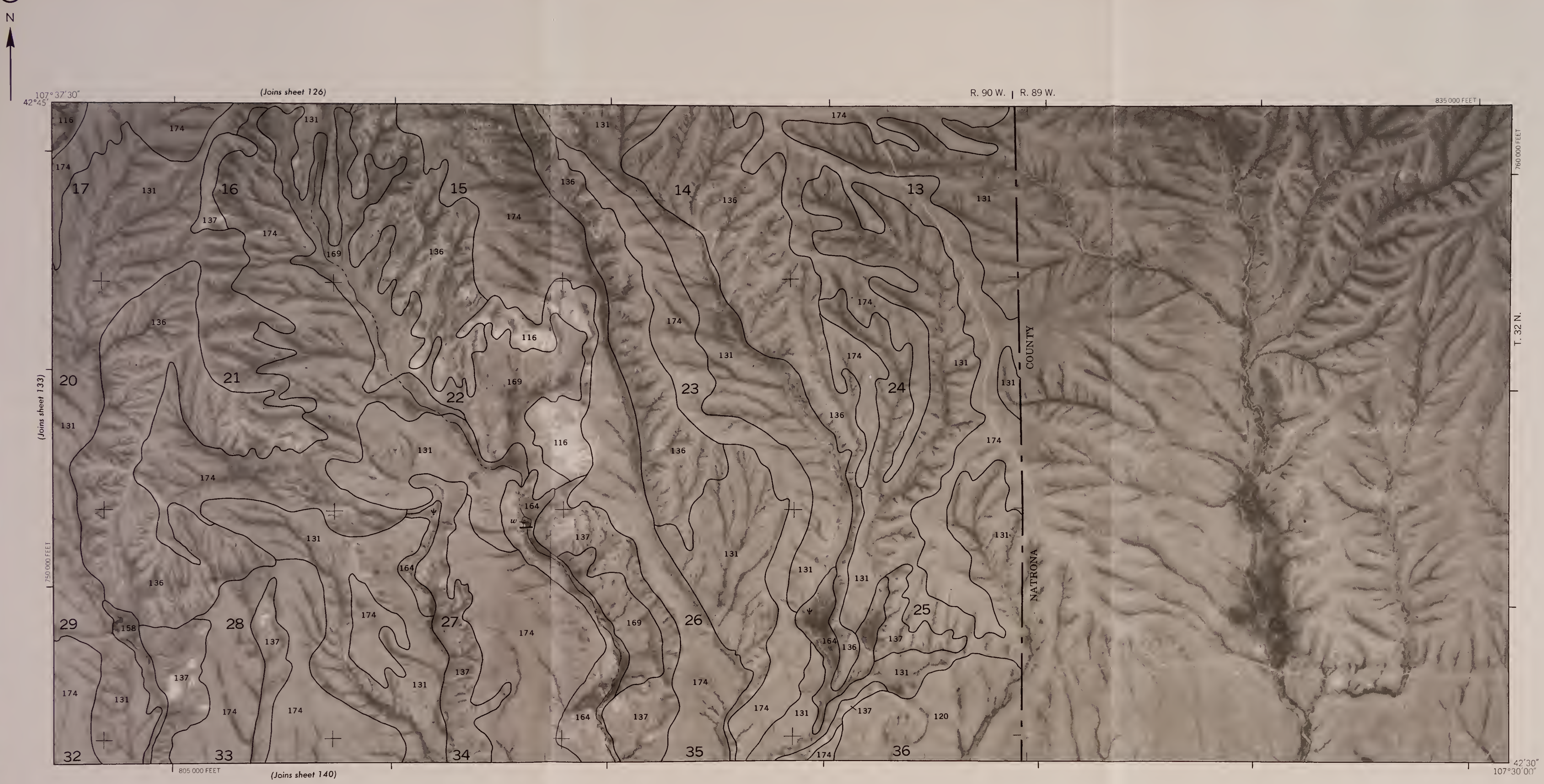
133

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 133

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 134



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 134

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 135

135

N

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

(136)

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 136

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

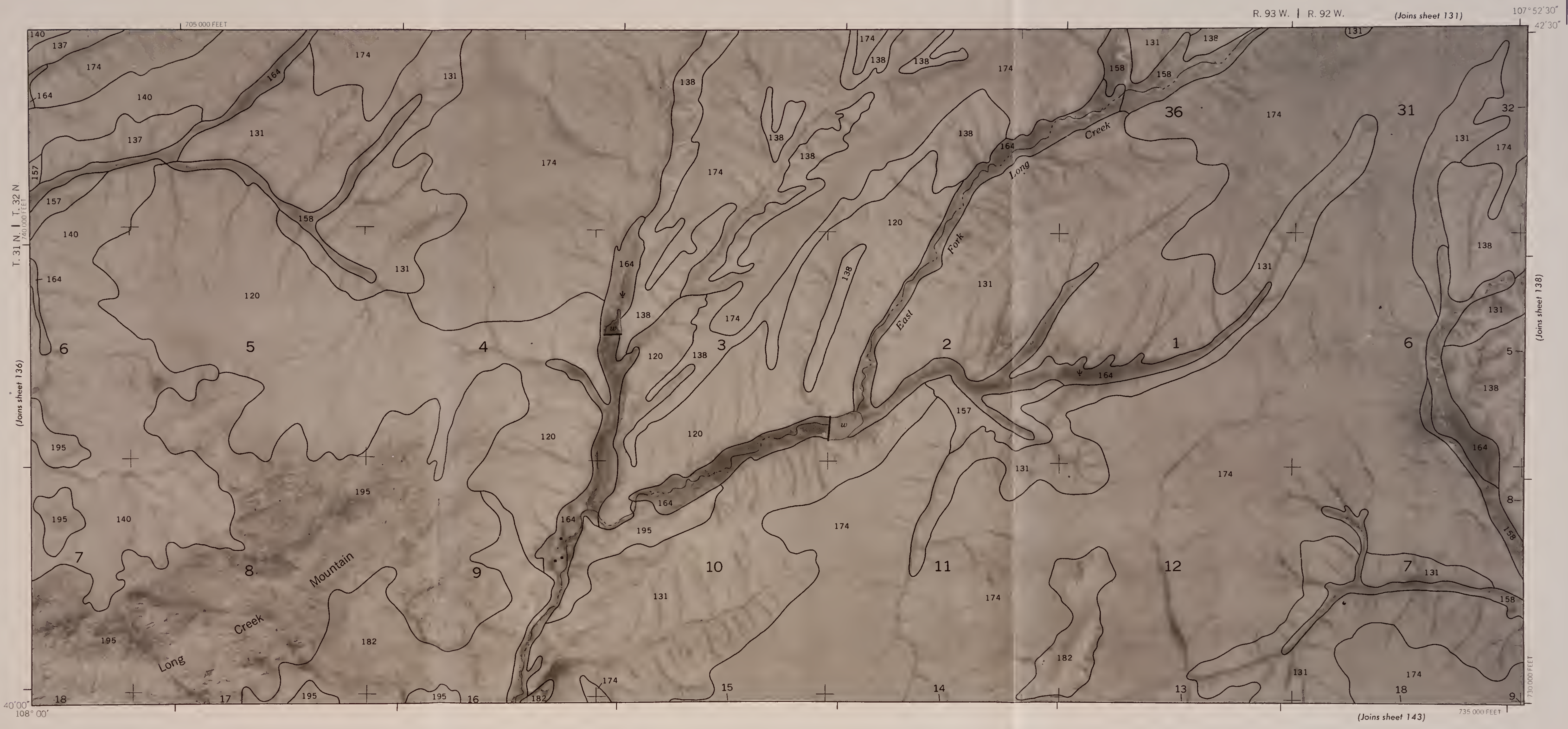
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 136

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

137

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 137

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 138

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 138

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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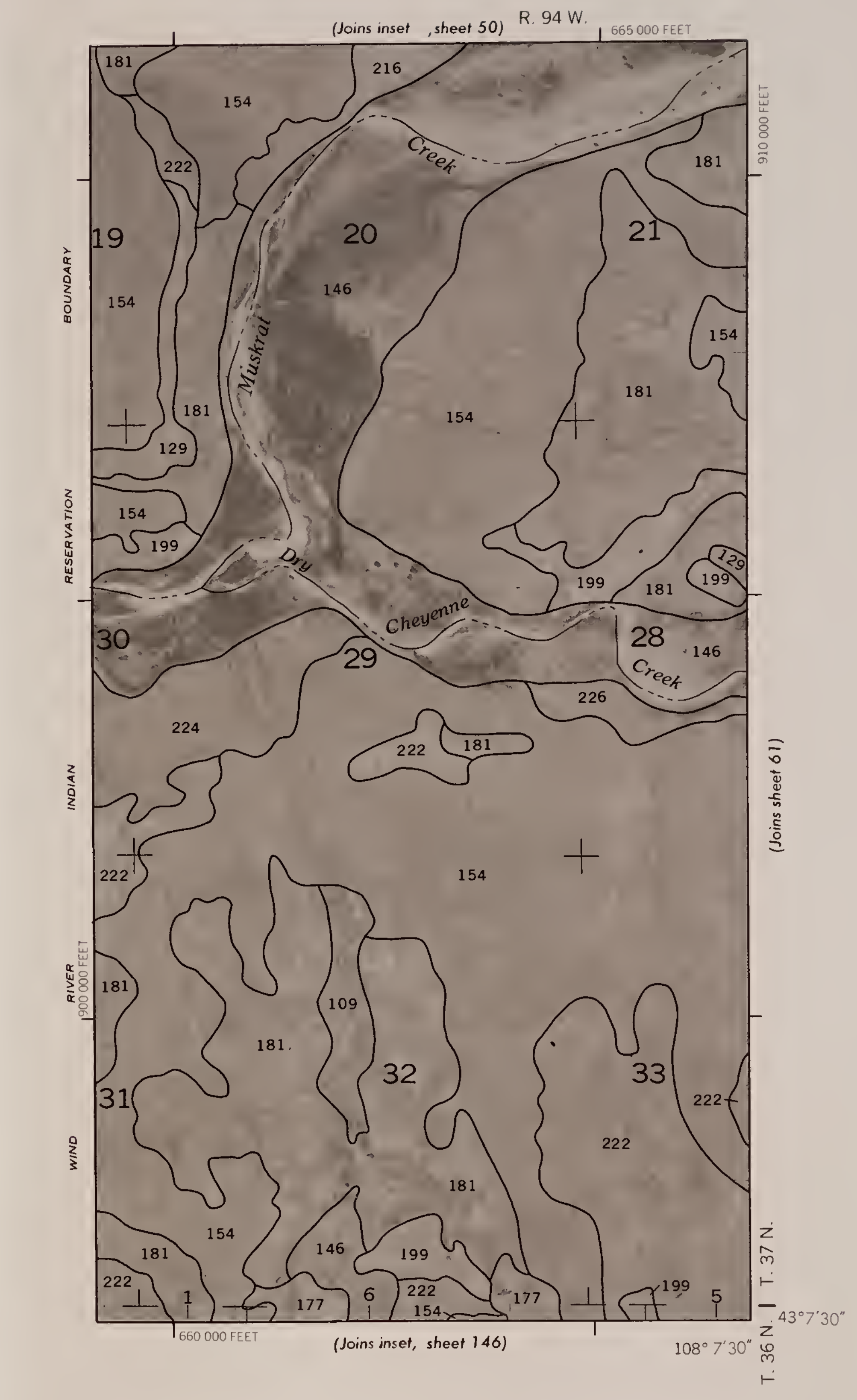
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 139

N

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 140

N



1 — 3/4 — 1/2 — 1/4 — 0 — 1 — 2 MILES

1 — 0.5 — 0 — 1 — 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 140

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
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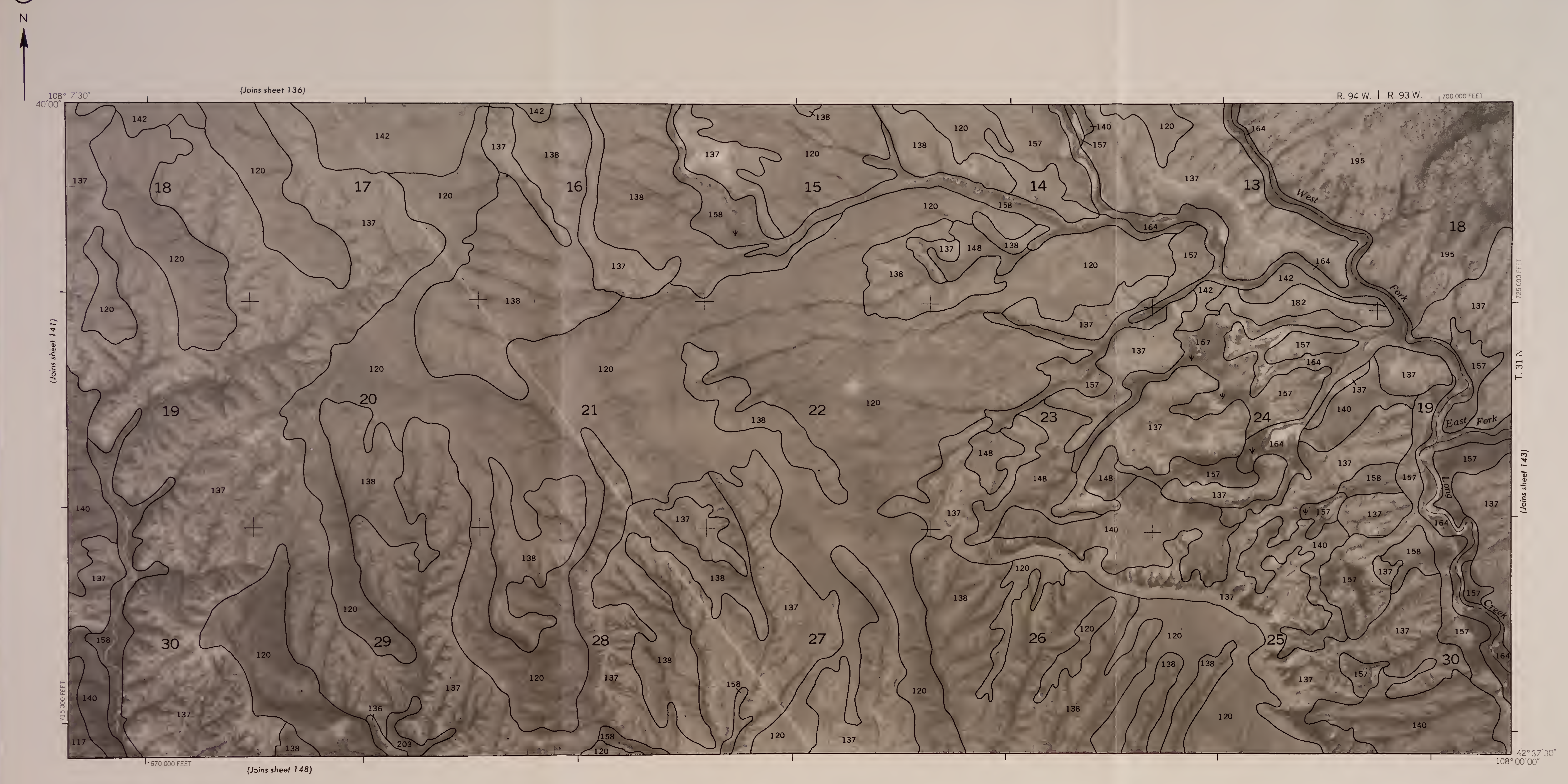
Coordinate grid ticks and land division corners, if shown, are approximately positioned

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 141

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 142



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 142

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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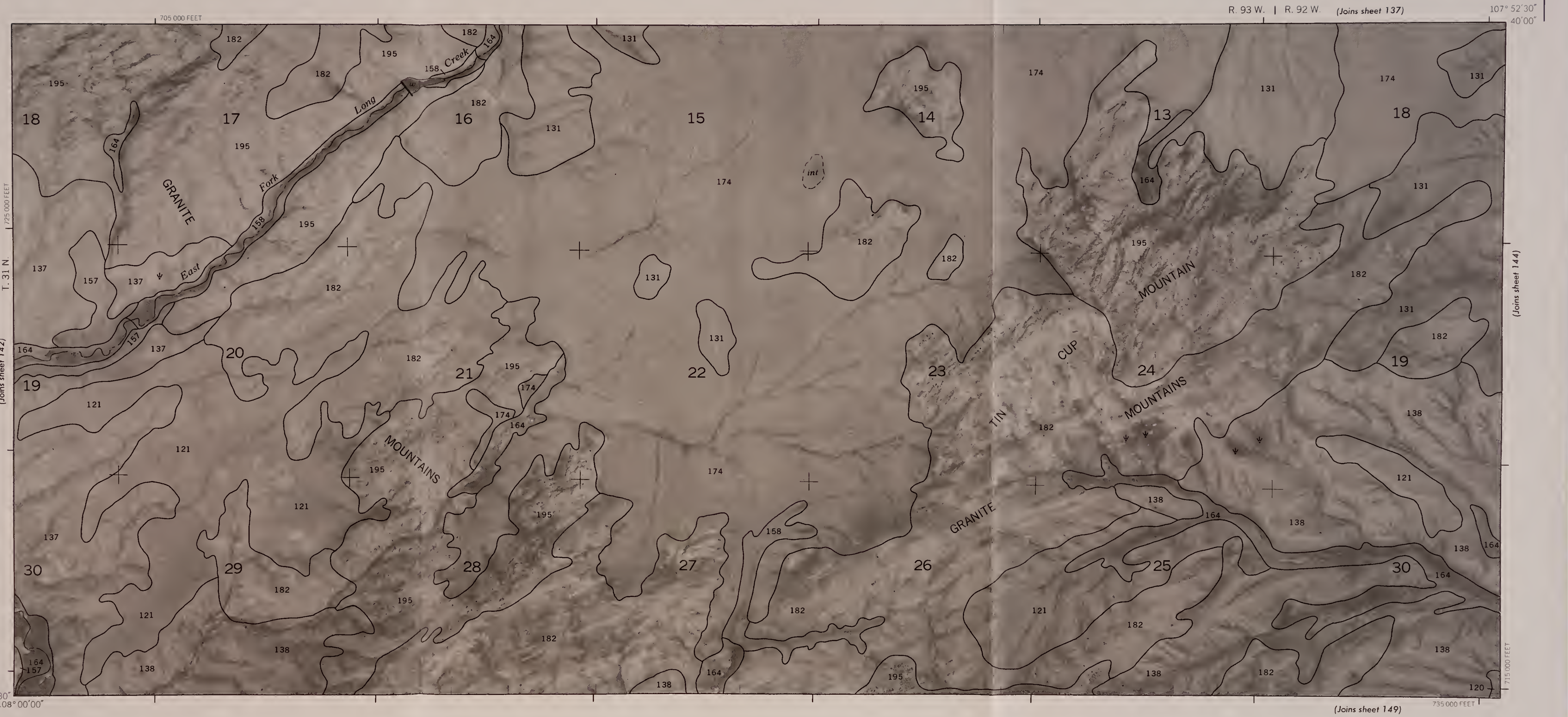
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 143

143



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 144

144

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 144

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

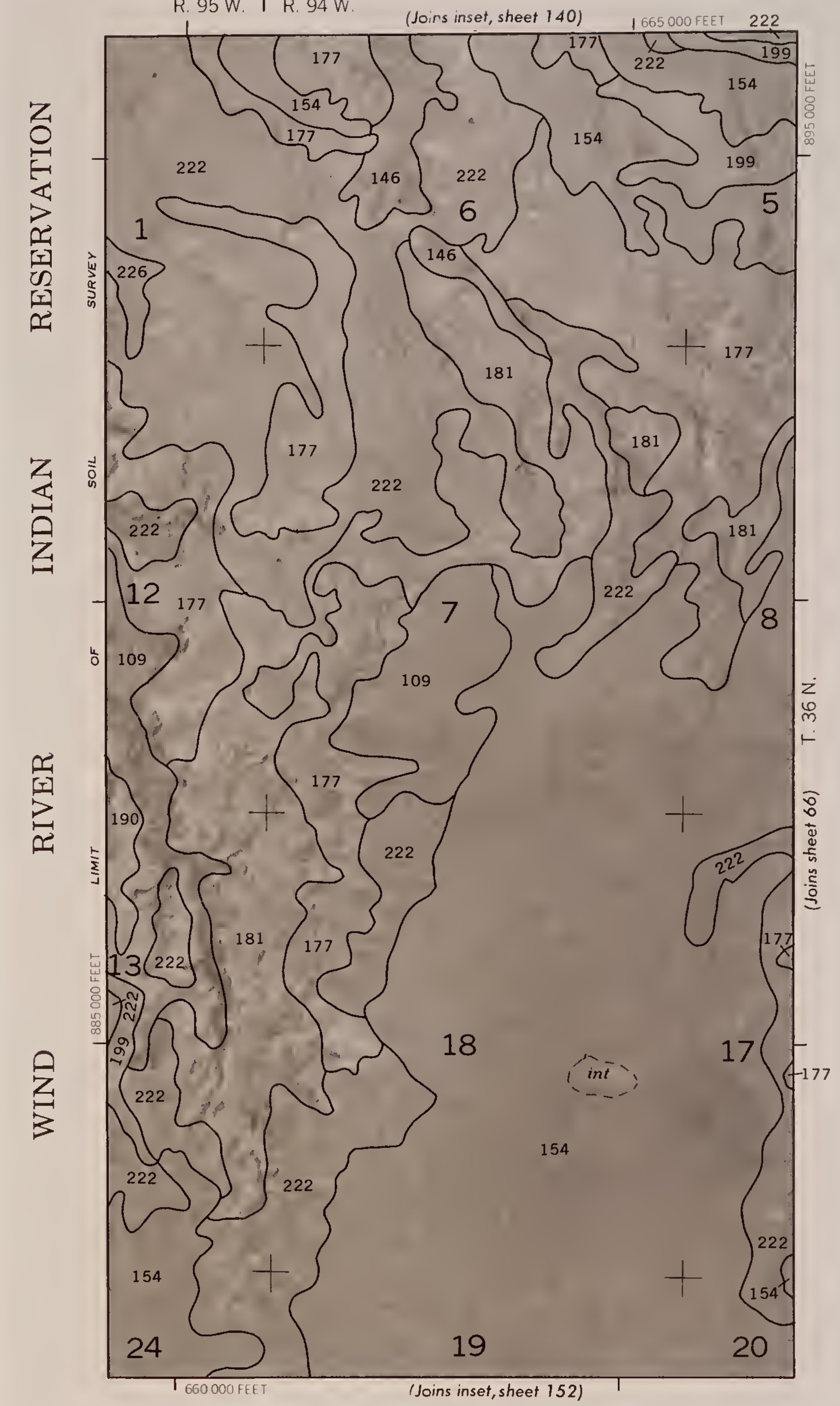
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 145

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 146

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 146

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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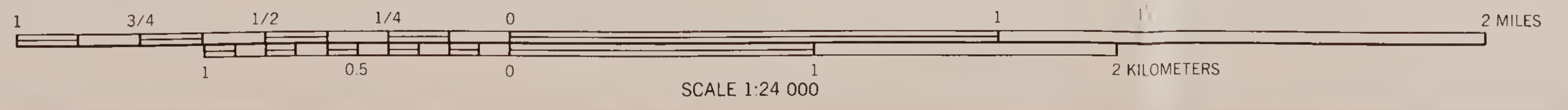
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 147

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 148



PREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 148

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 149

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 150

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 150

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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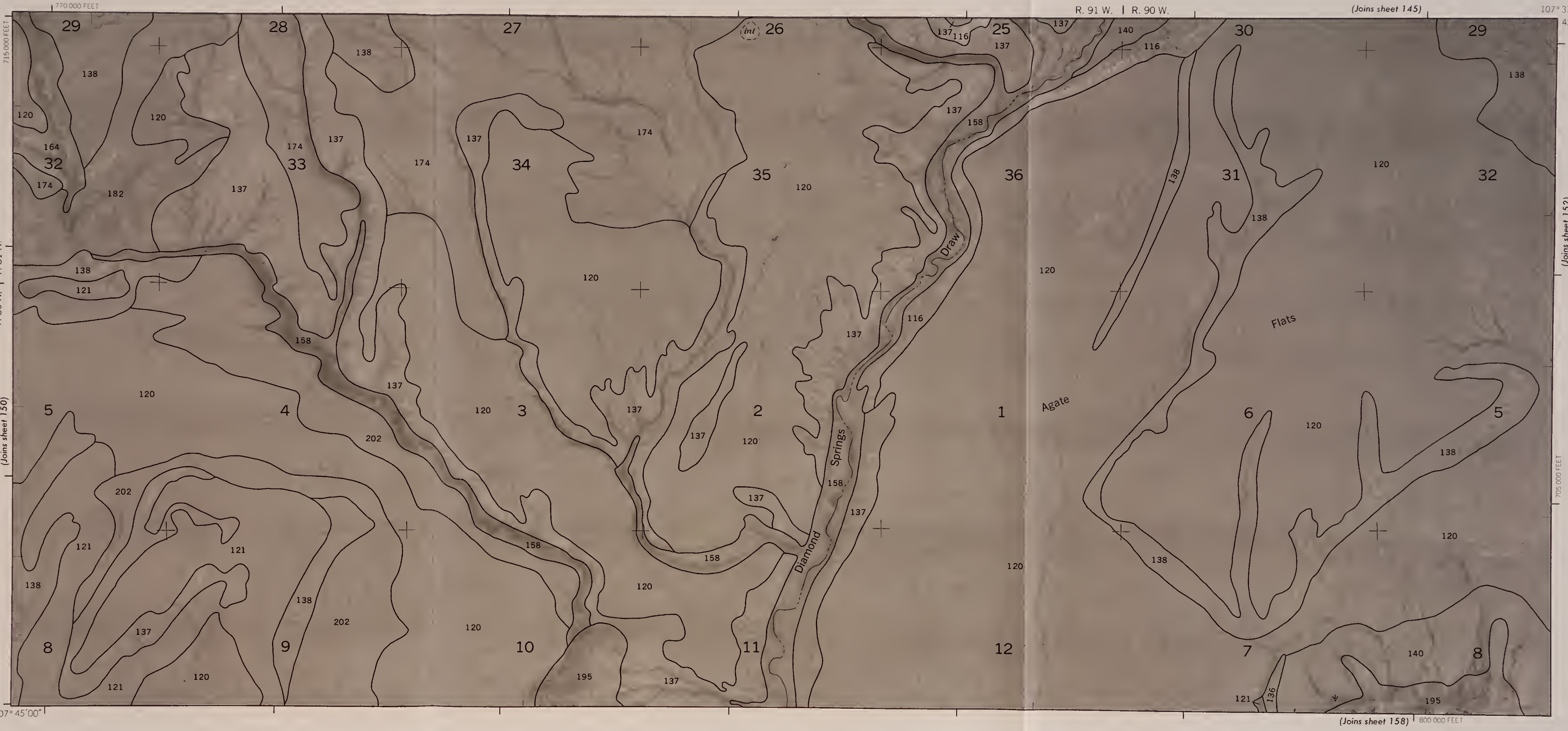
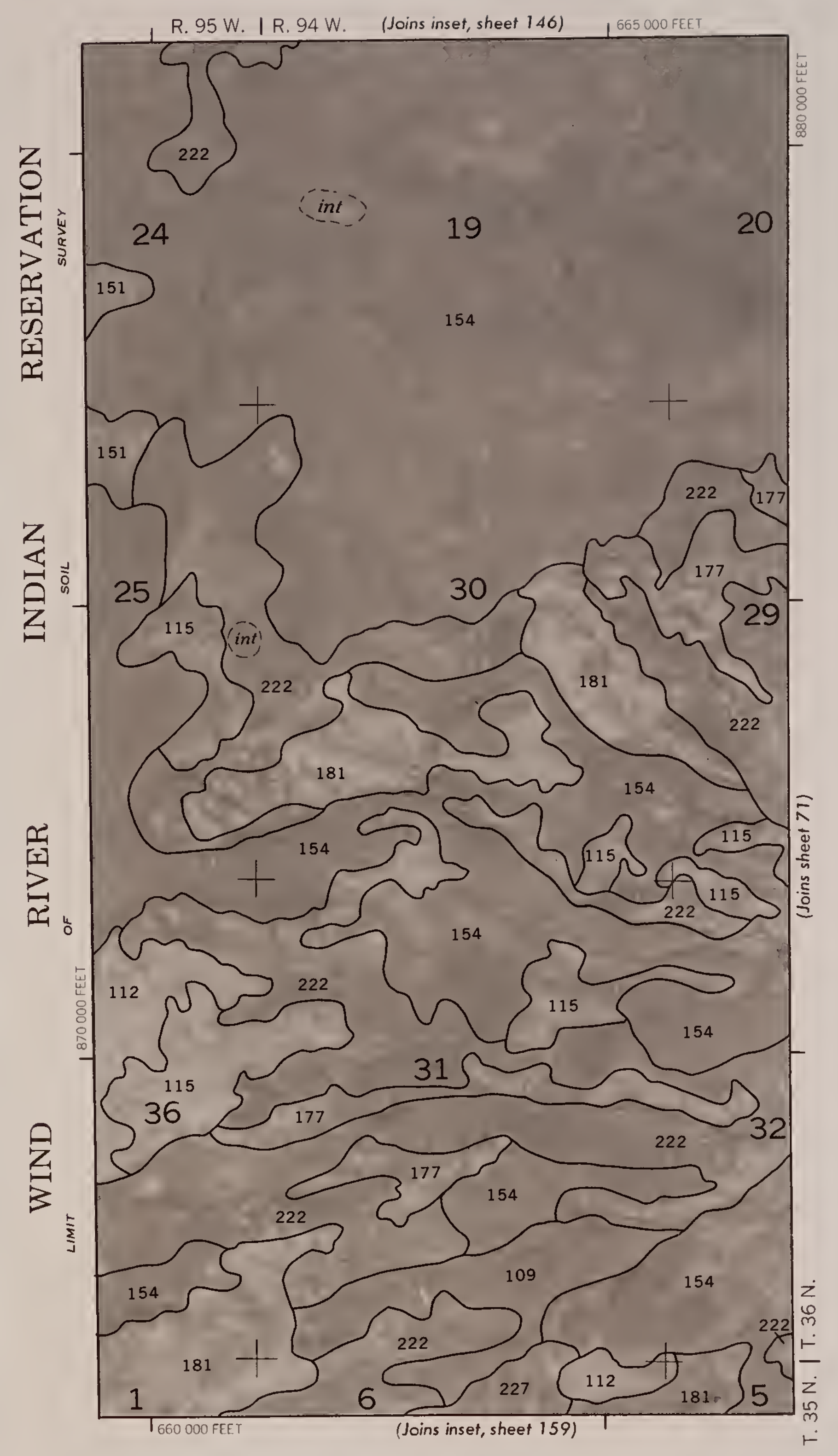
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 151



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

152

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 152

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

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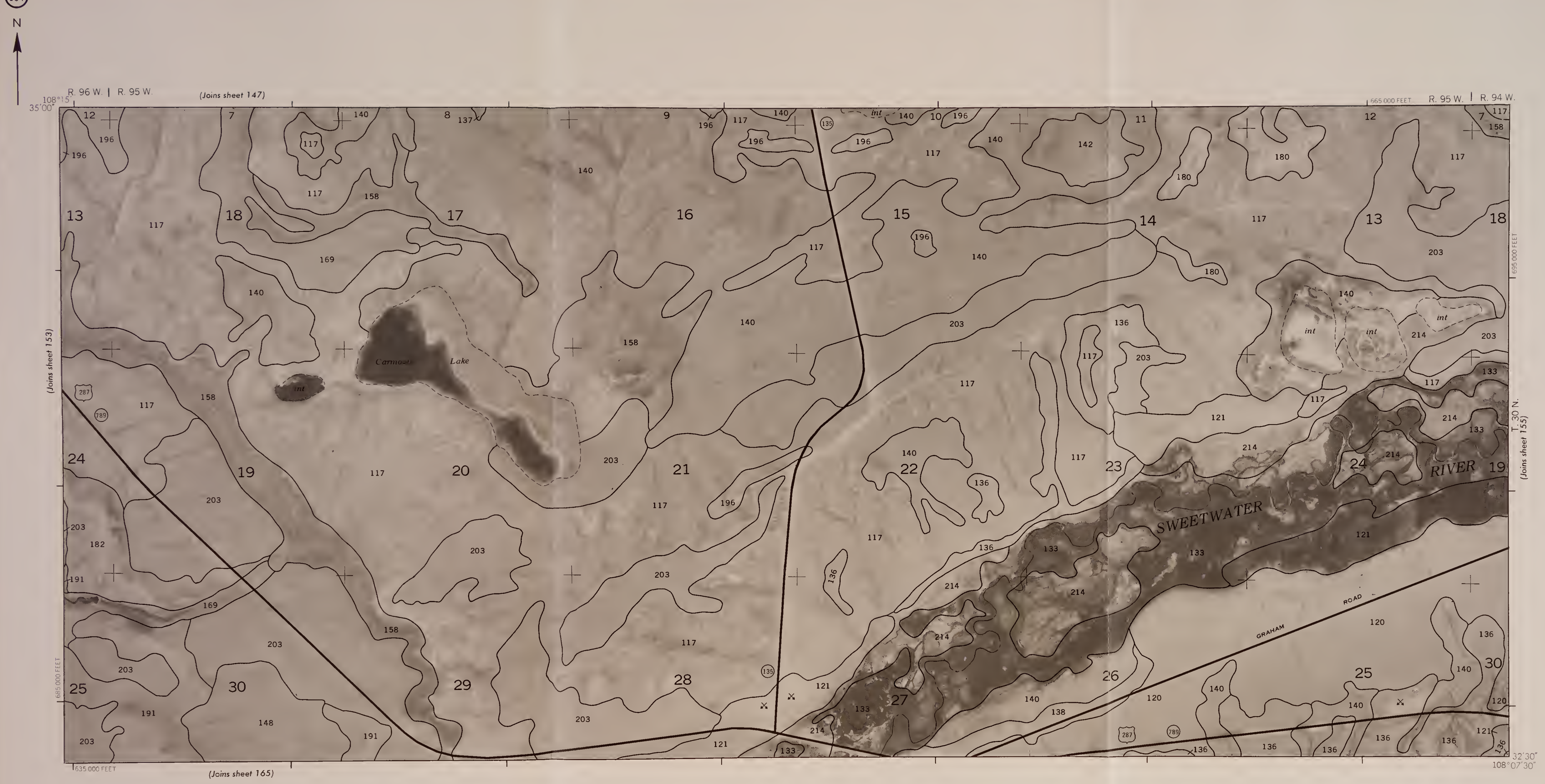
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 153

153

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 154

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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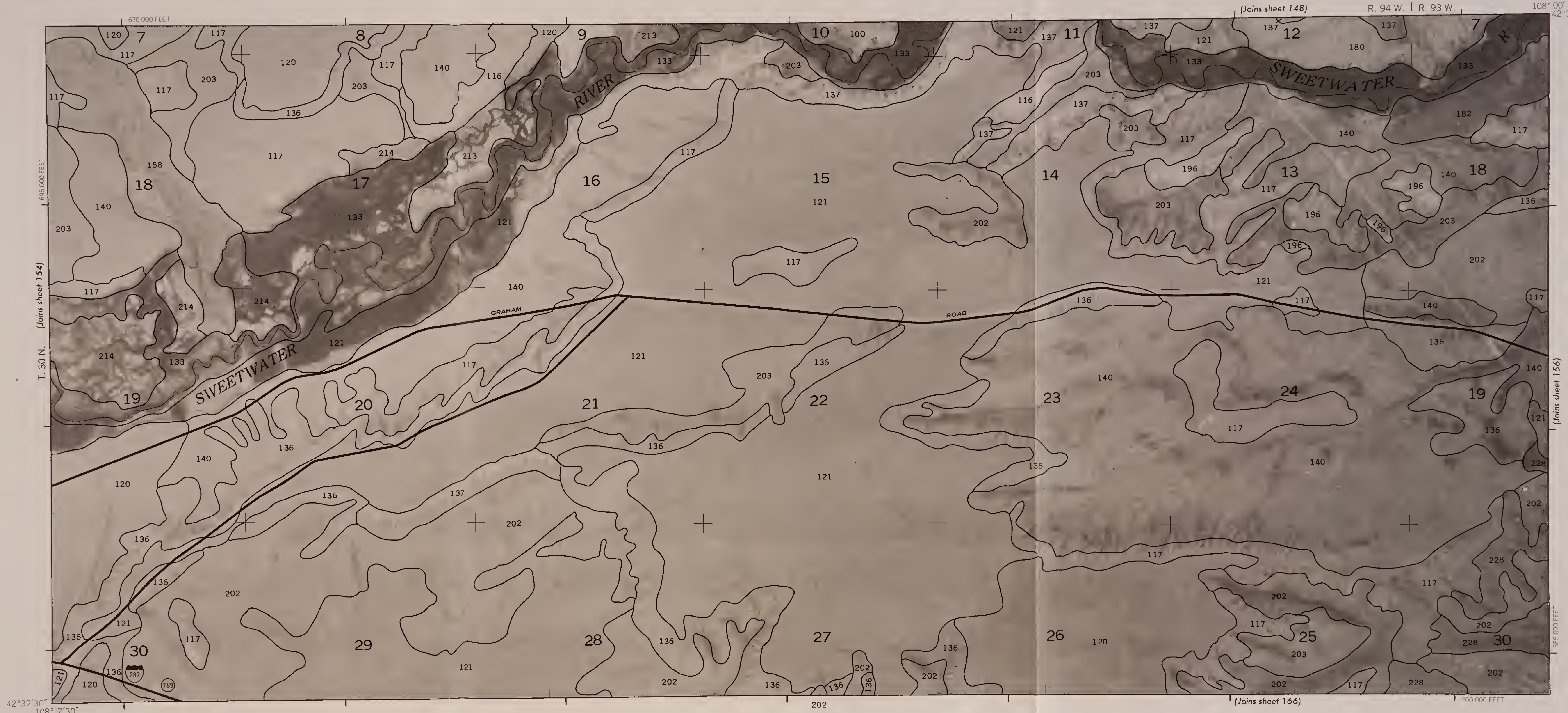
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 155



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 156

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 156

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SCALE 1:24 000

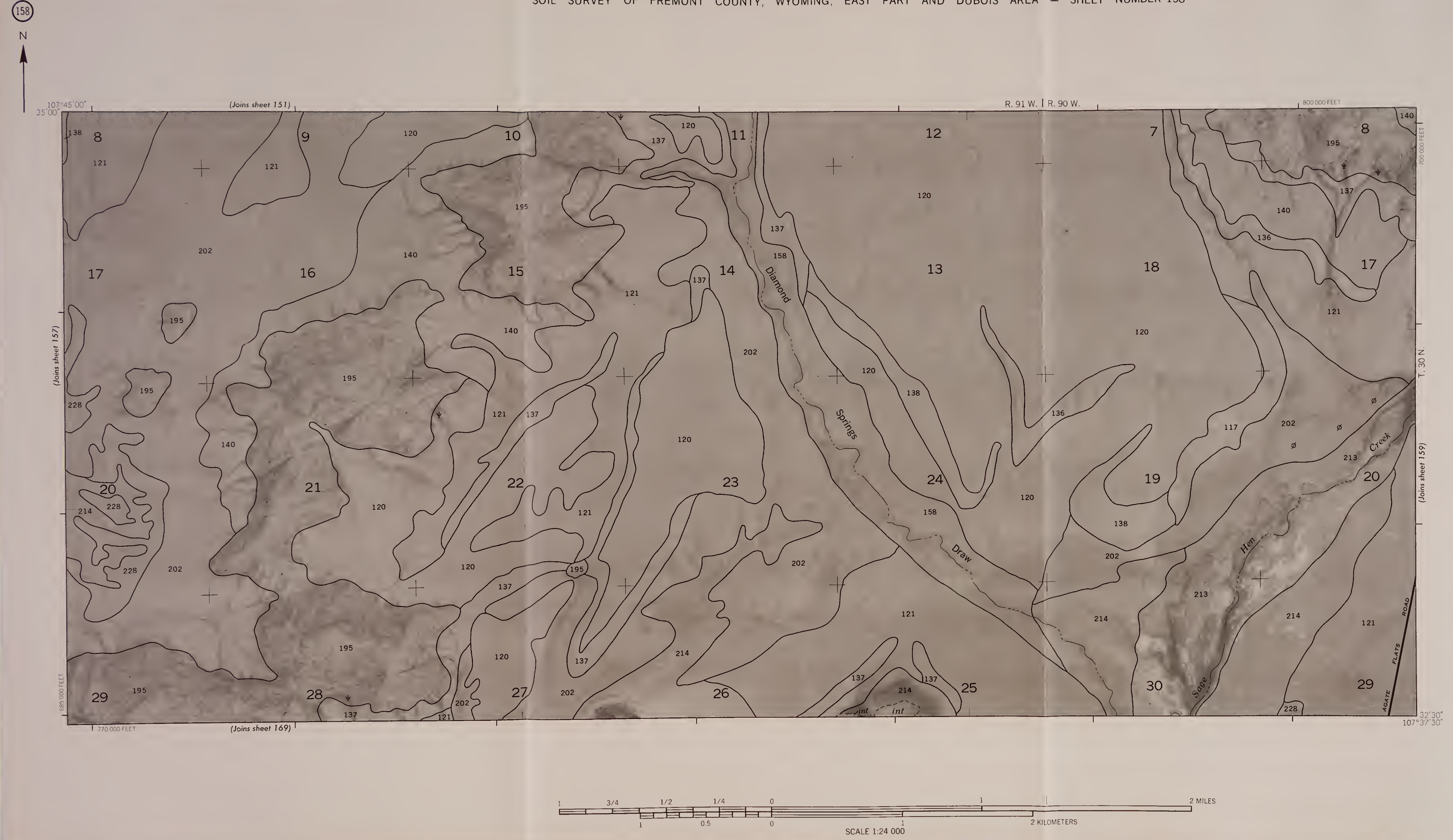
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 157

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 158



FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 158

This soil survey map was compiled by the U S Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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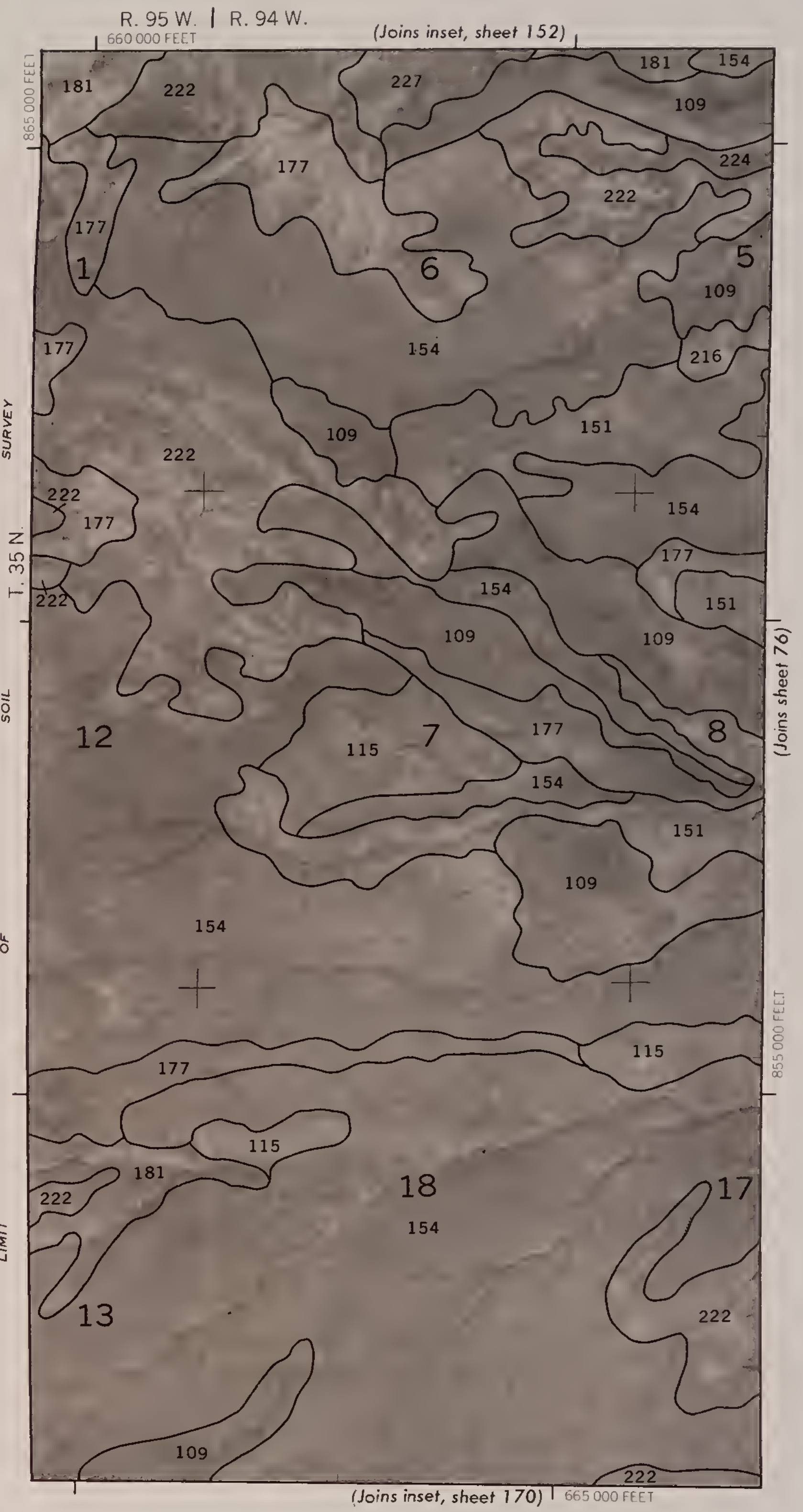
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 159



SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 160

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 160

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

161

N

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

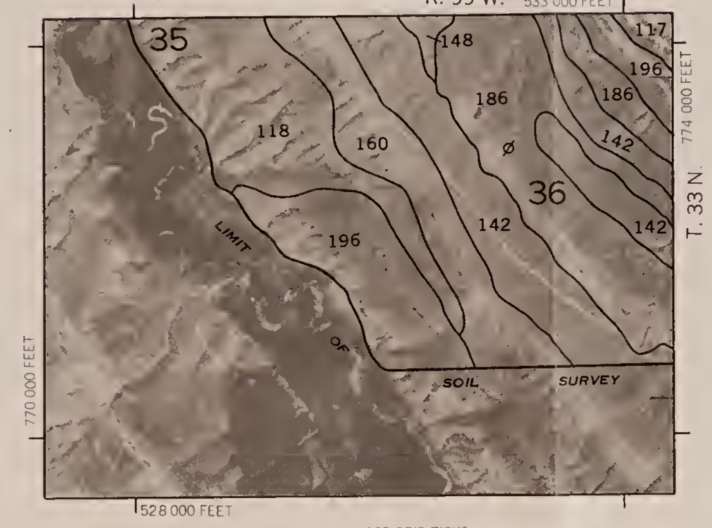
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 161

N

INSET A

INSET B



4000 AND 5000-FOOT GRID TICKS

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 162

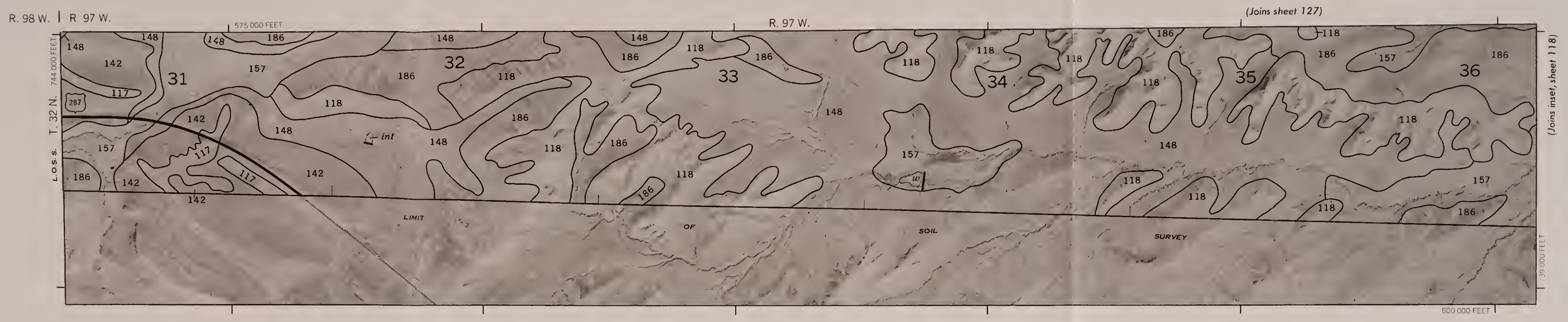
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

(163)

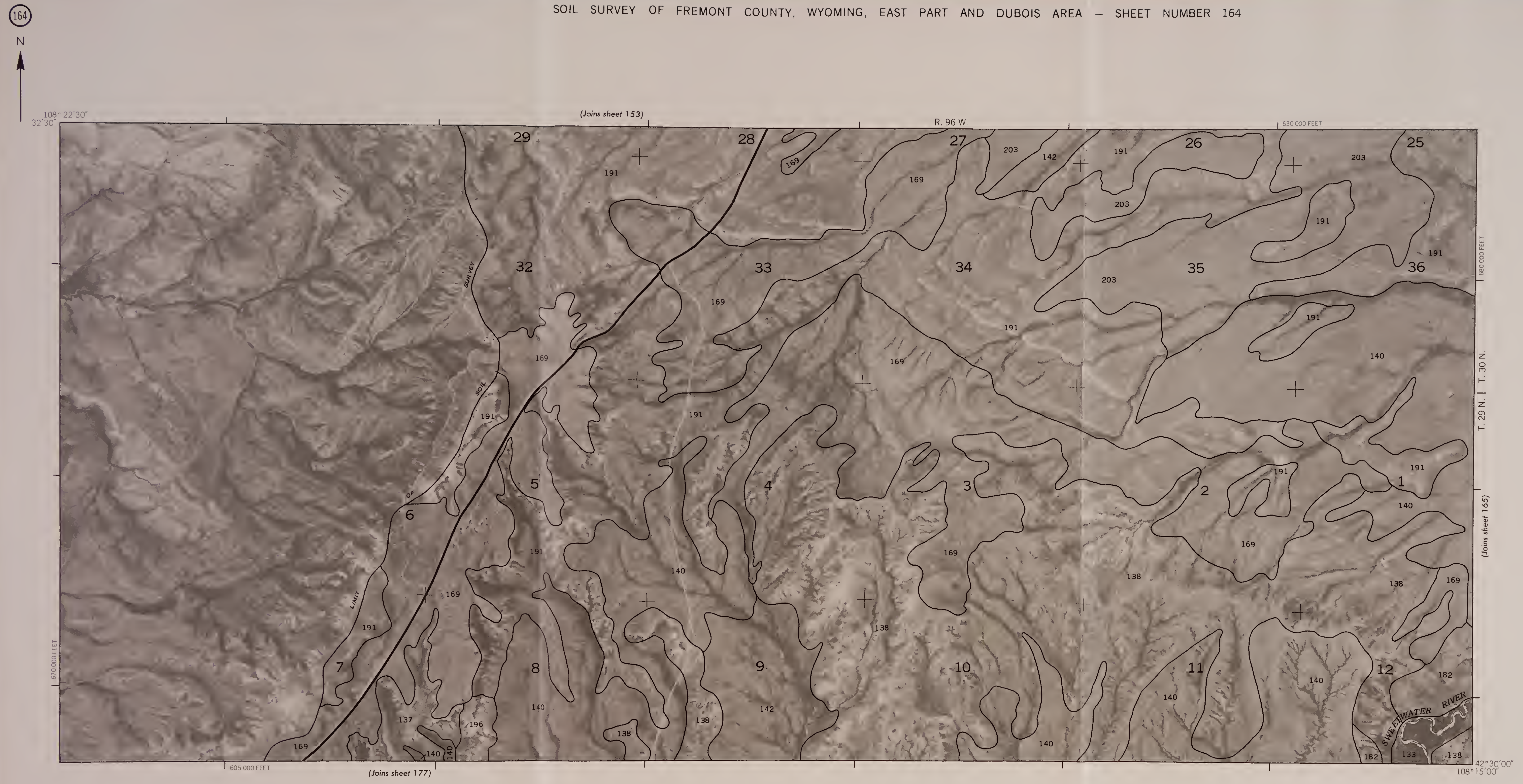
N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 163



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 164

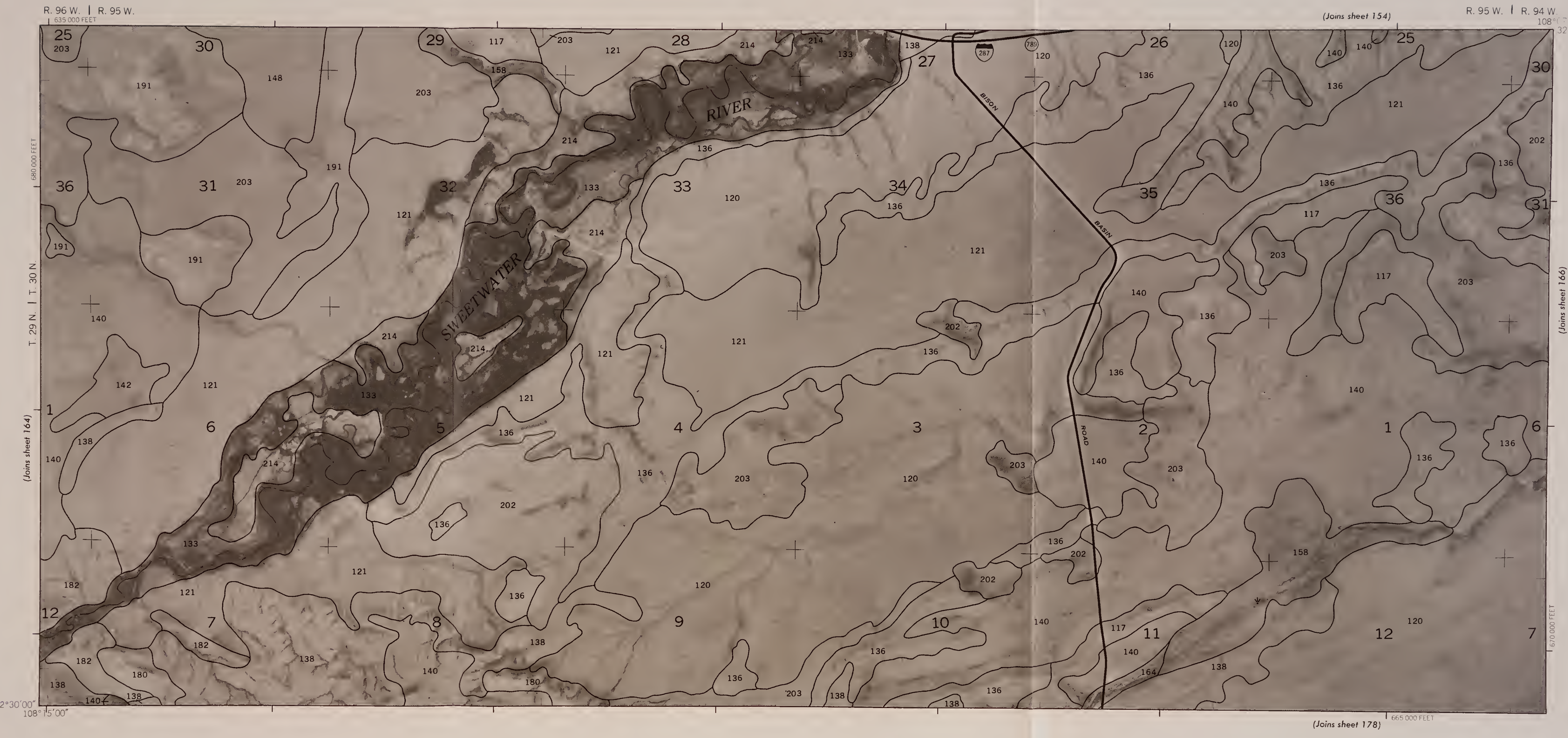
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 165

165

N



1 3/4 1/2 1/4 0 1 2 MILES

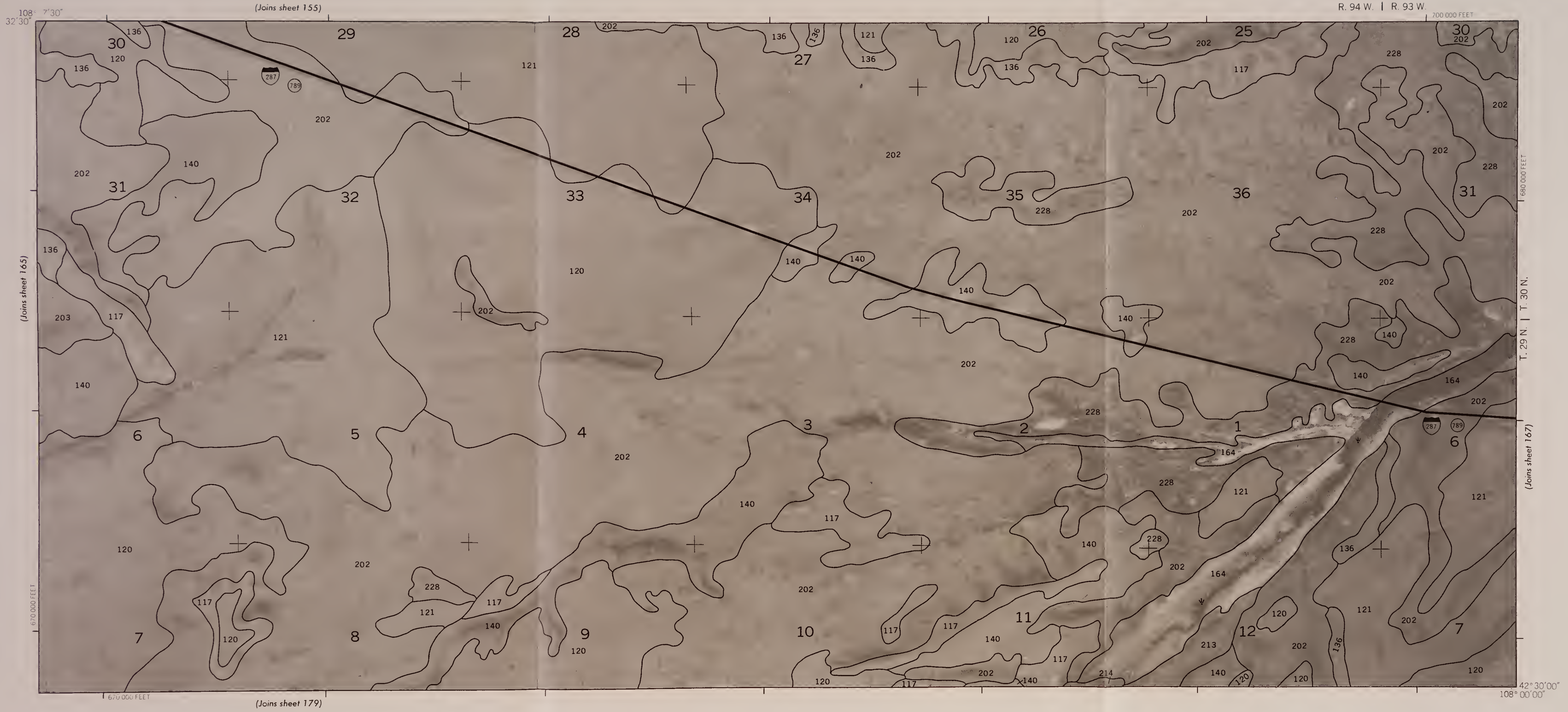
1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

166

N

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 166



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 166

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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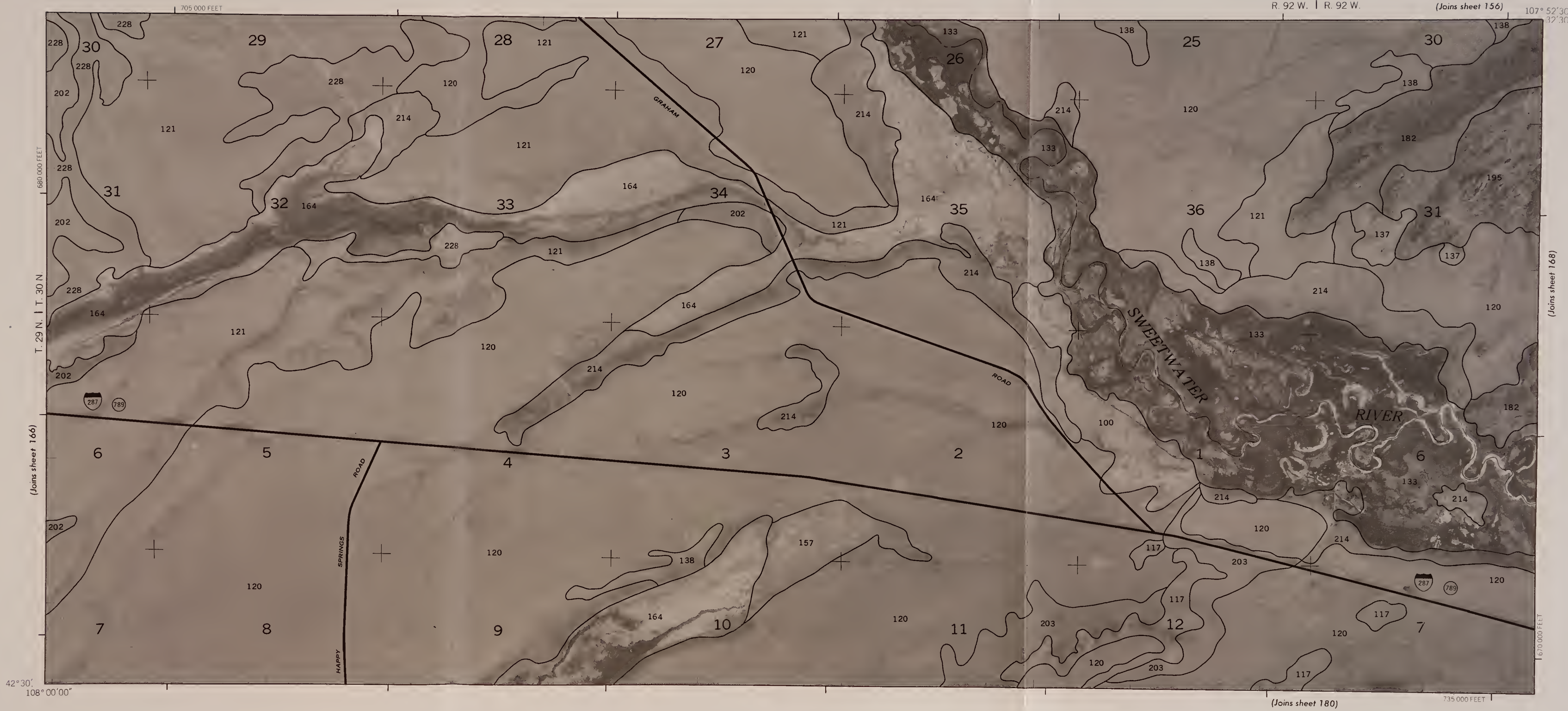
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 167

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 168

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 168

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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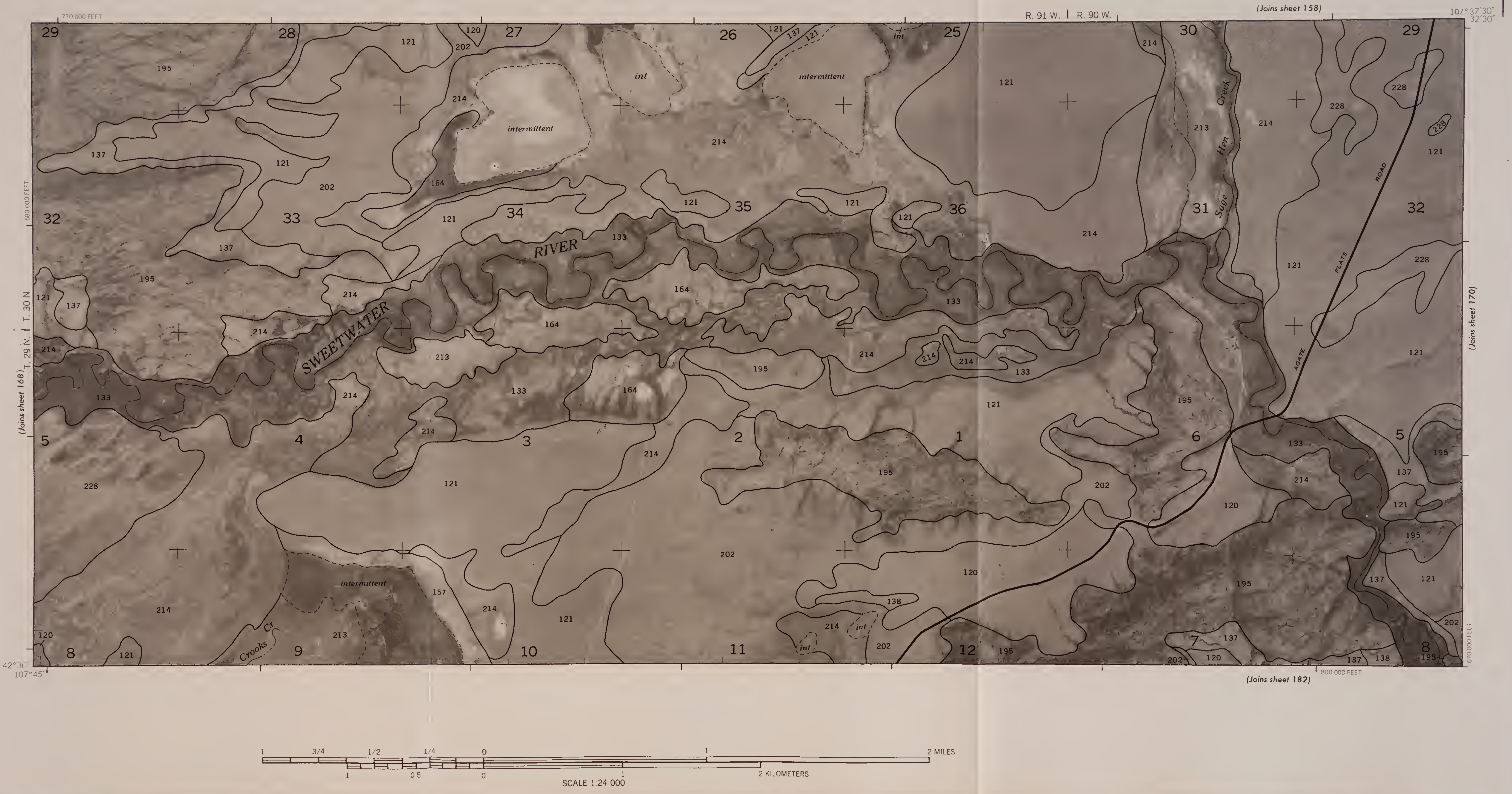
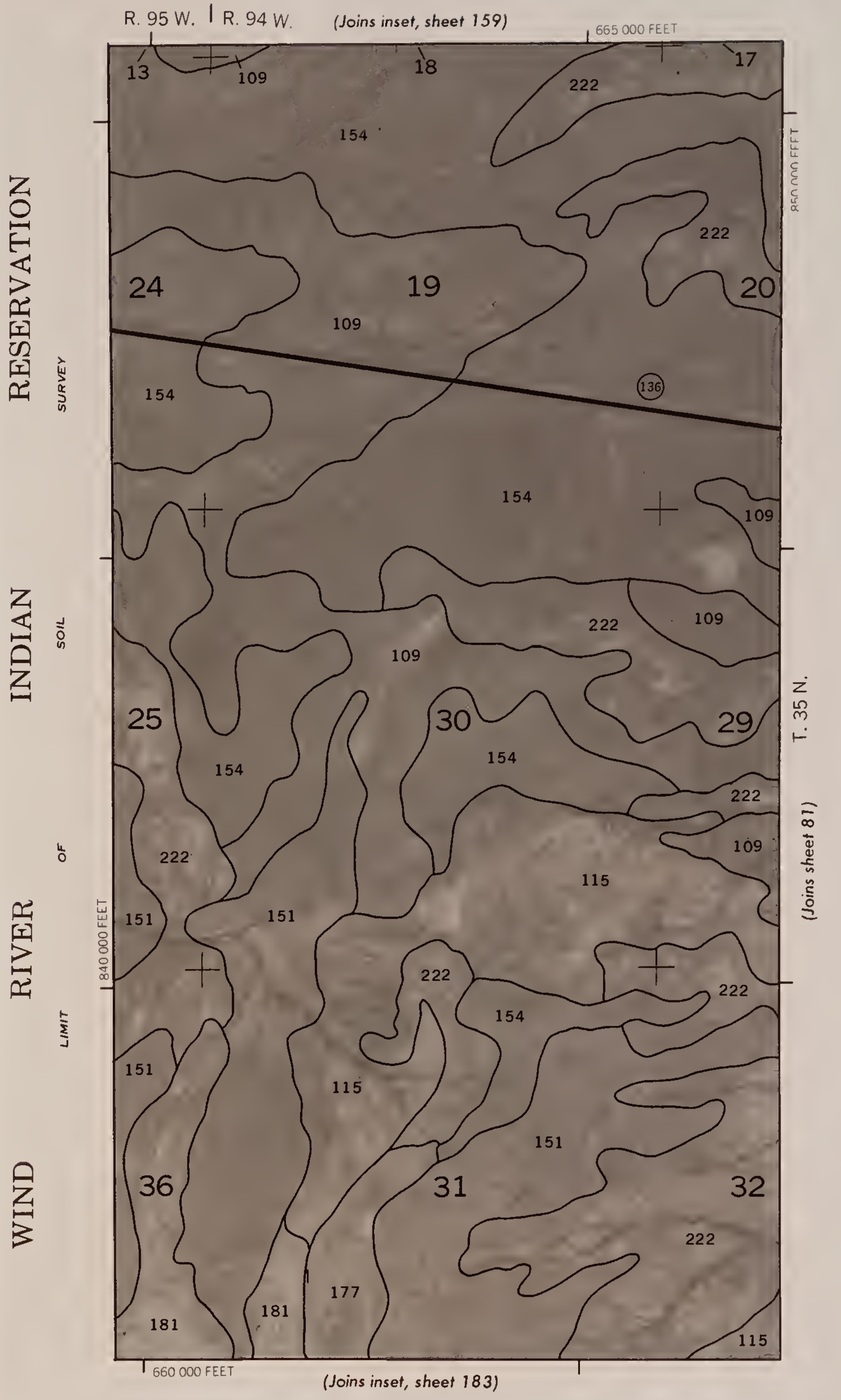
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 169



SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 170



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 170

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 171

171

N

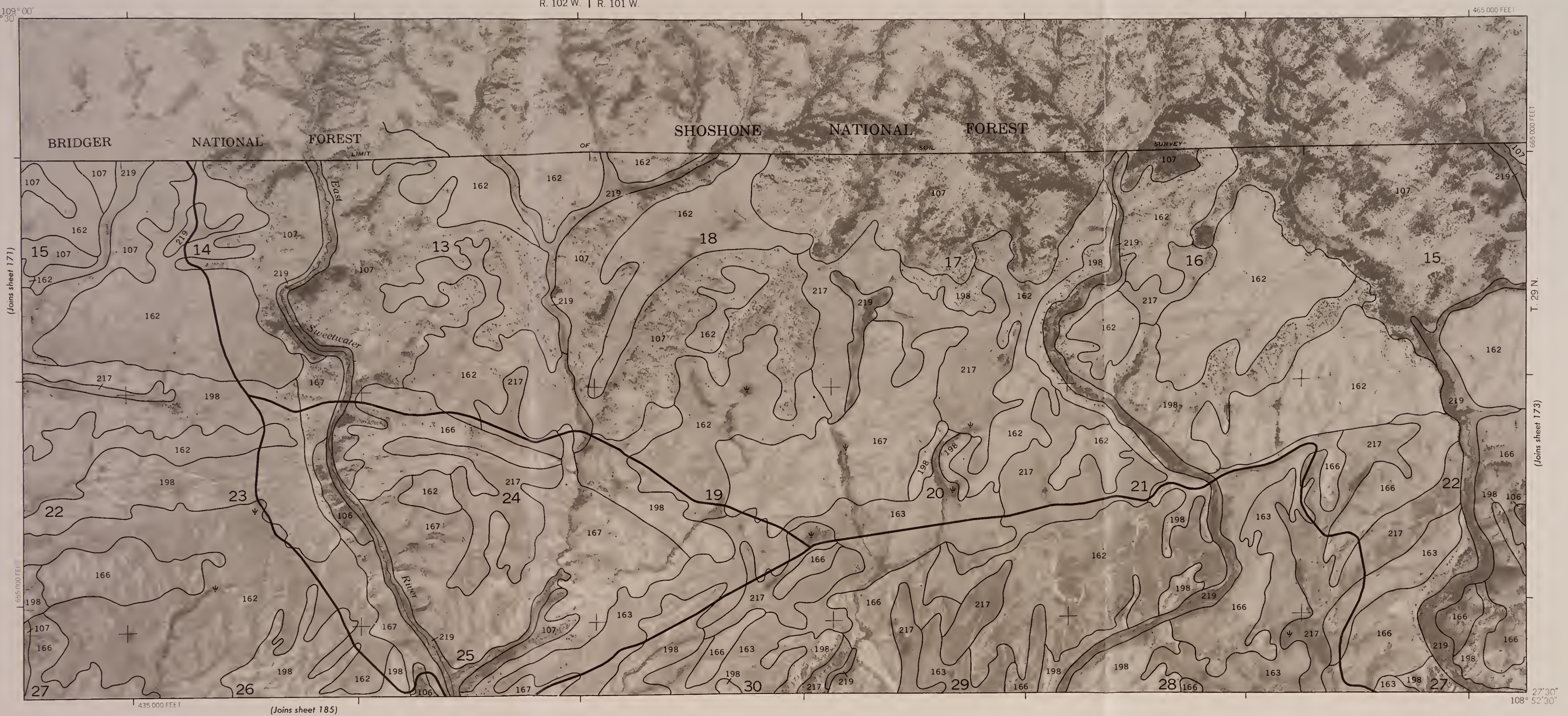
1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 171

172

N



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 172

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 173

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

174

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 174

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 174

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 175

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

176

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 176

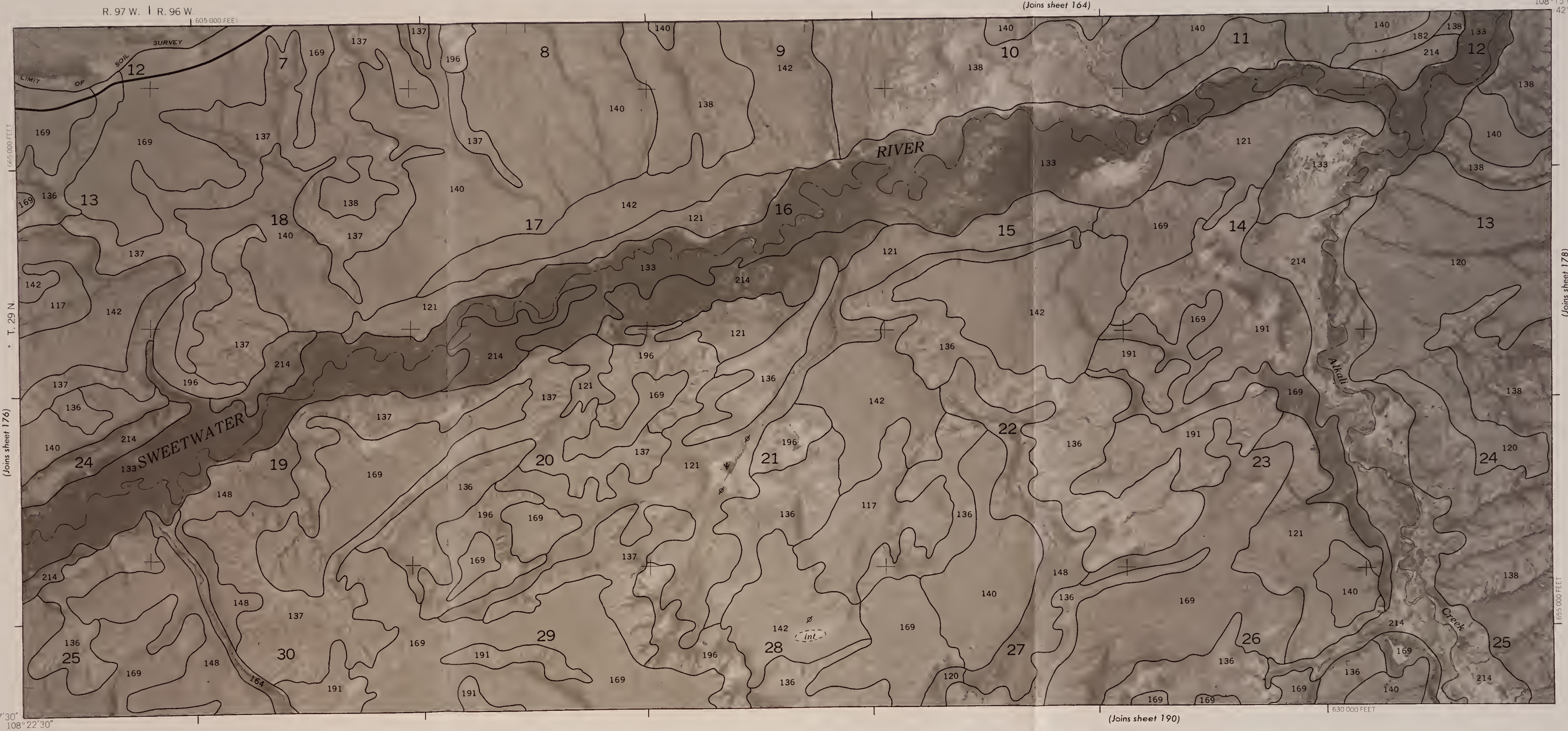
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 176

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 177

177

N



1 3/4 1/2 1/4 0 1 2 MILES

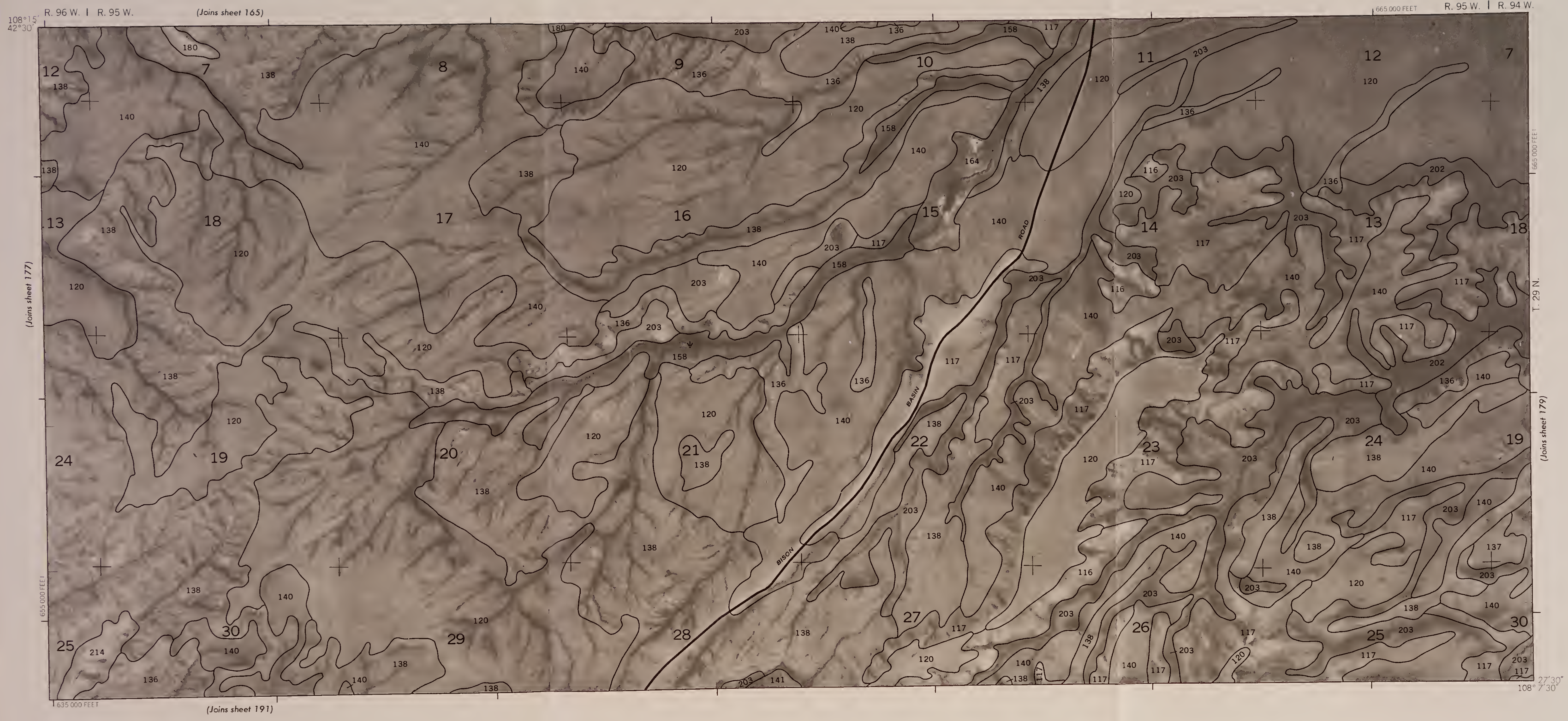
1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 177

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 178



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 178

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 179

179

N

SCALE 1:24 000

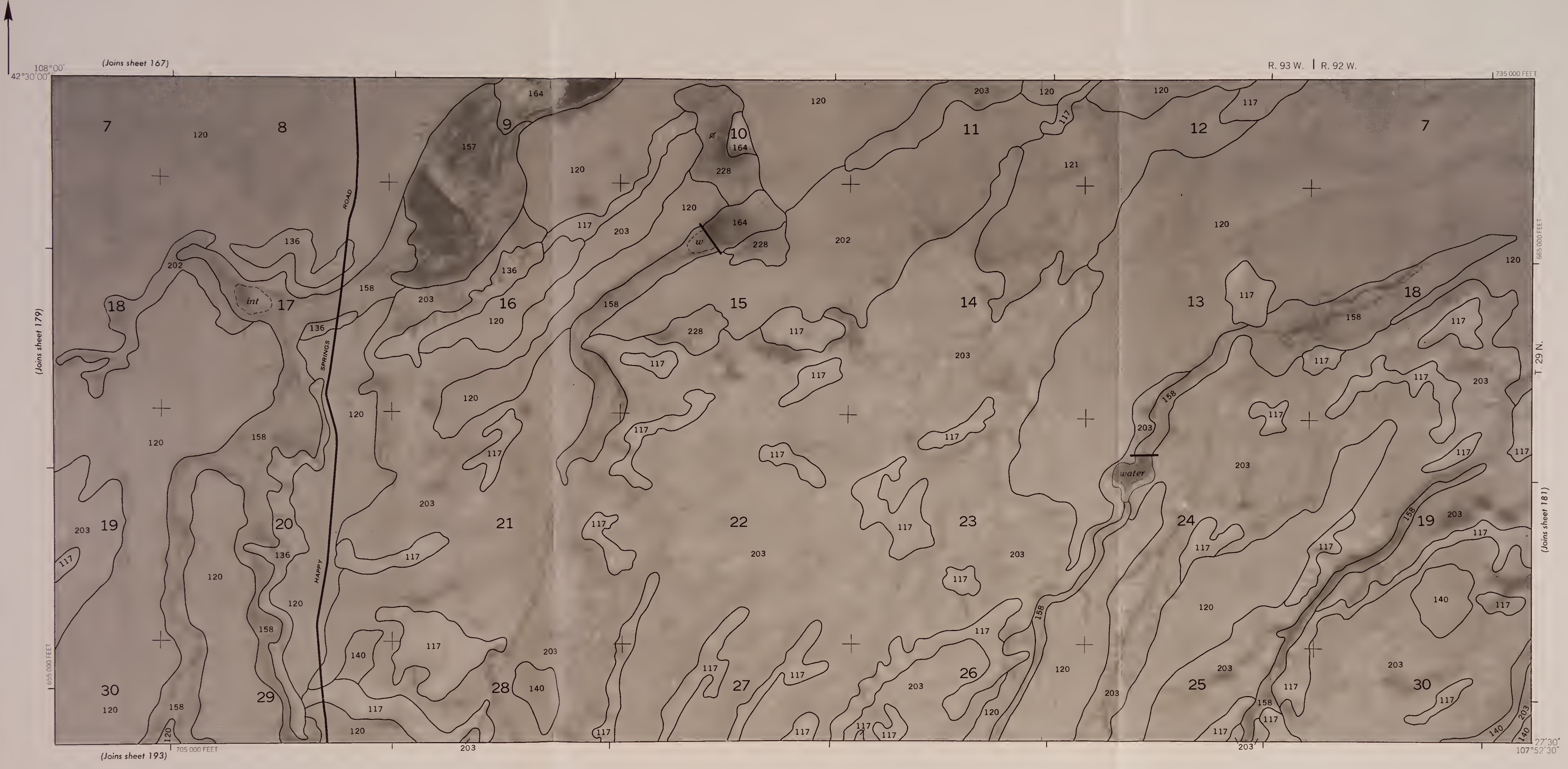
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 179

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 180



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 180

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING, NO. 181

181

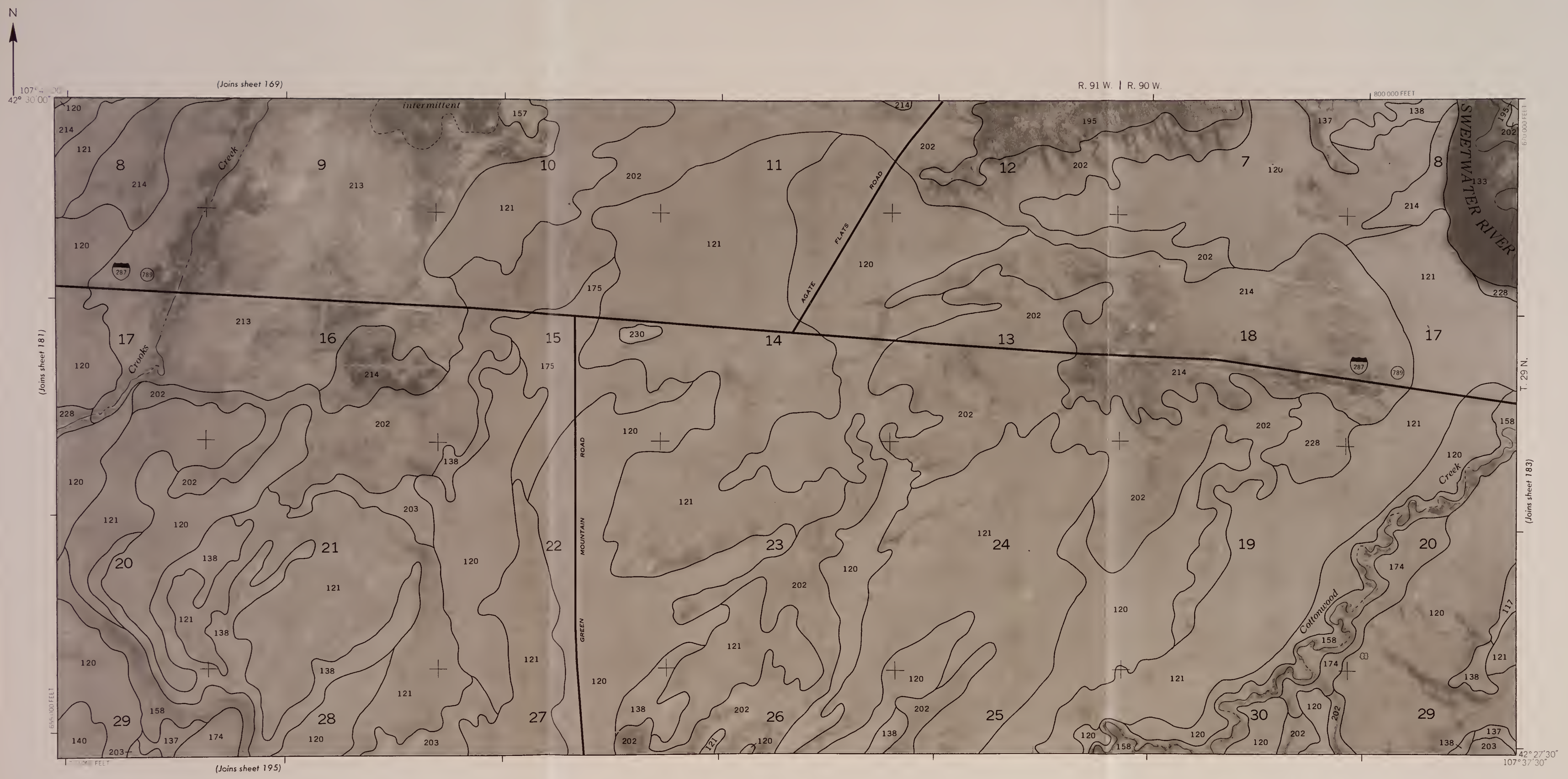
N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 182



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

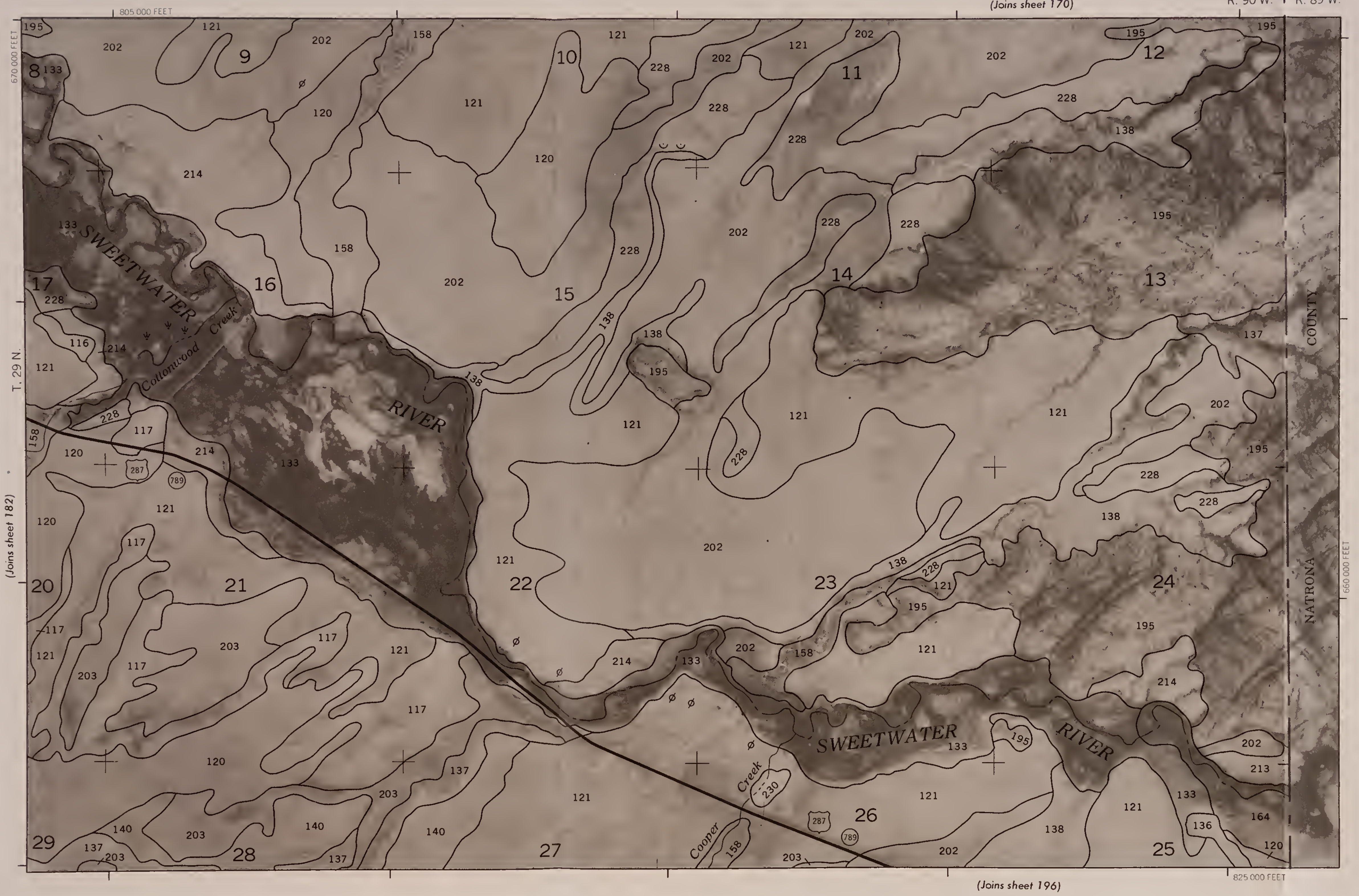
SCALE 1:24 000

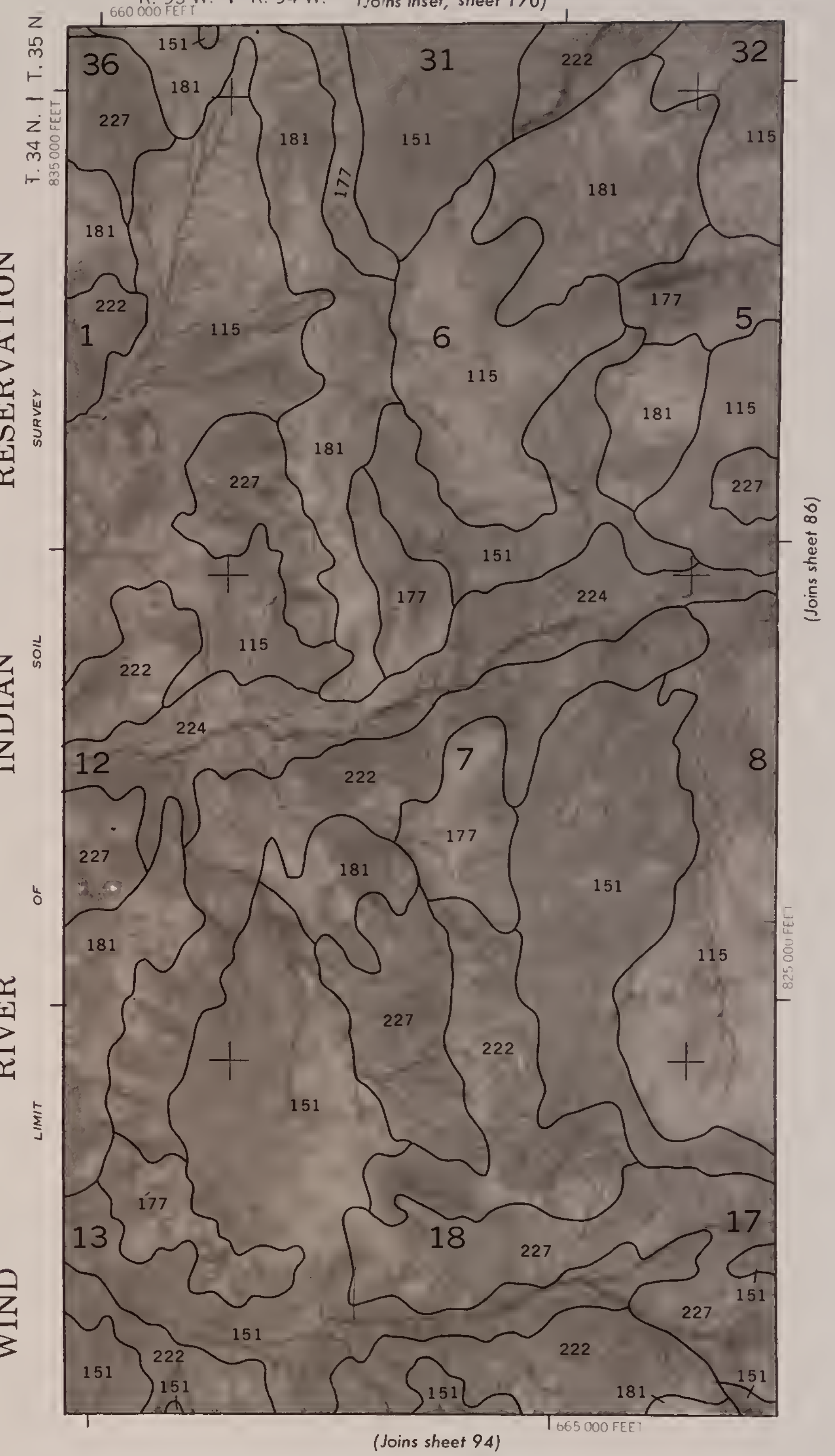
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 182

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 183



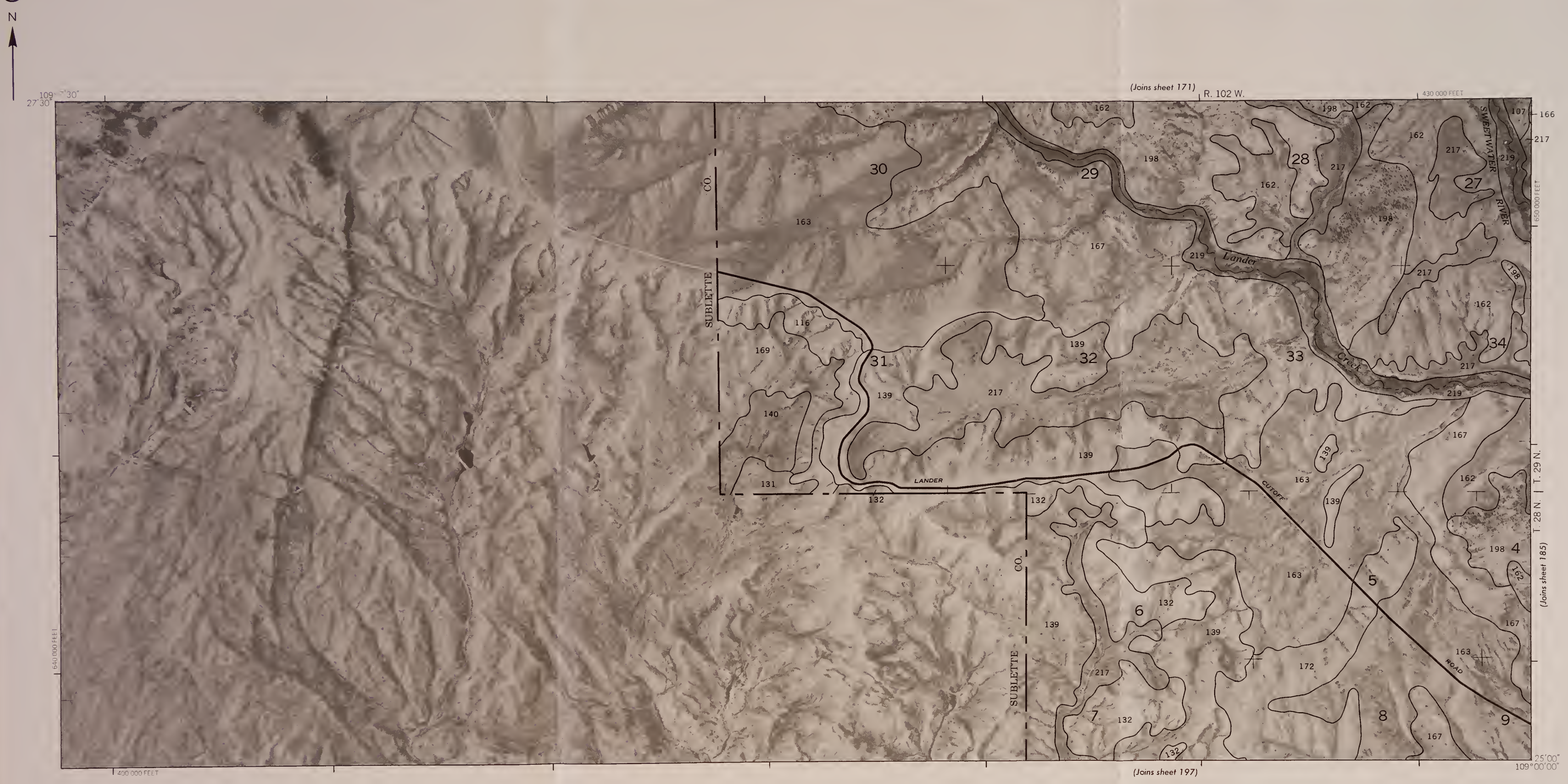


SCALE 1:24 000

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 184



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

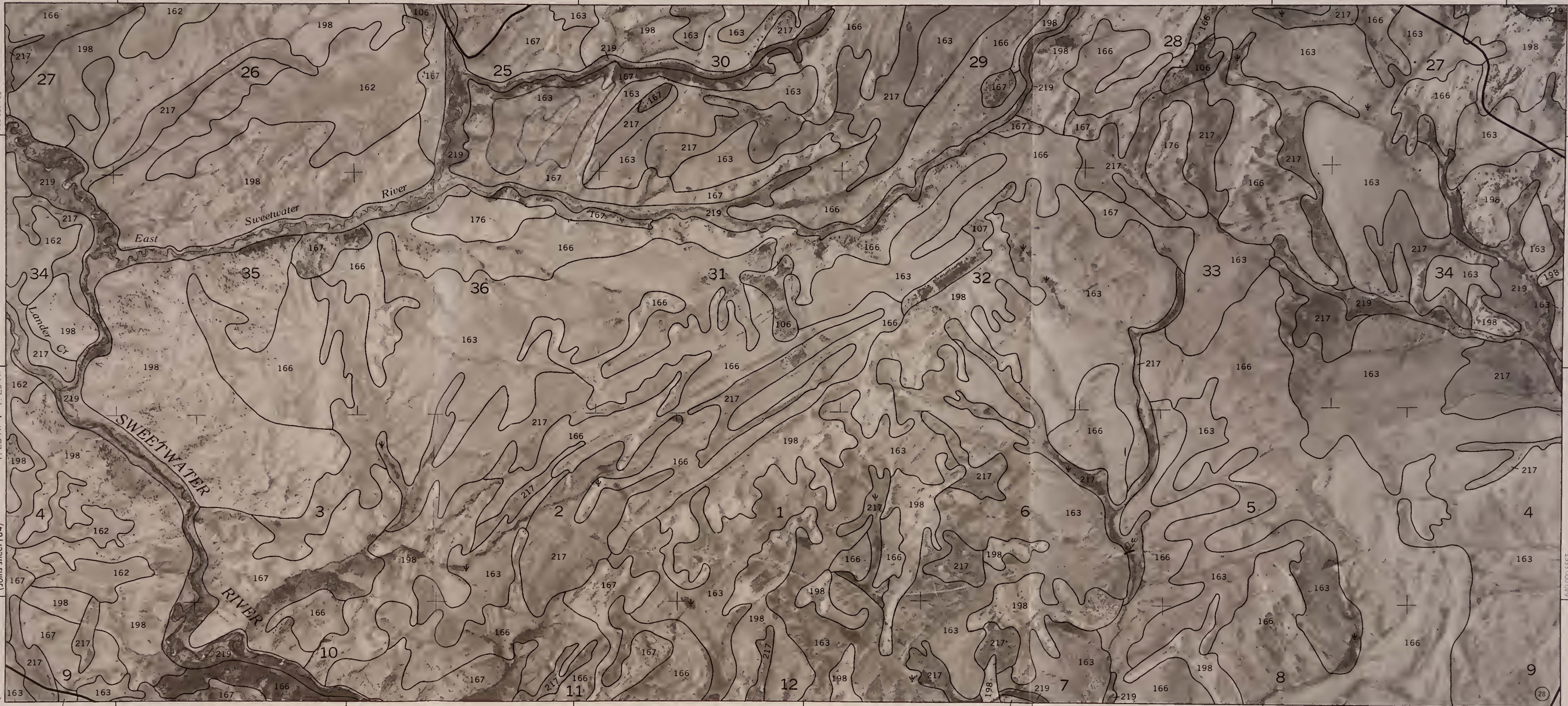
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 184

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

185

N

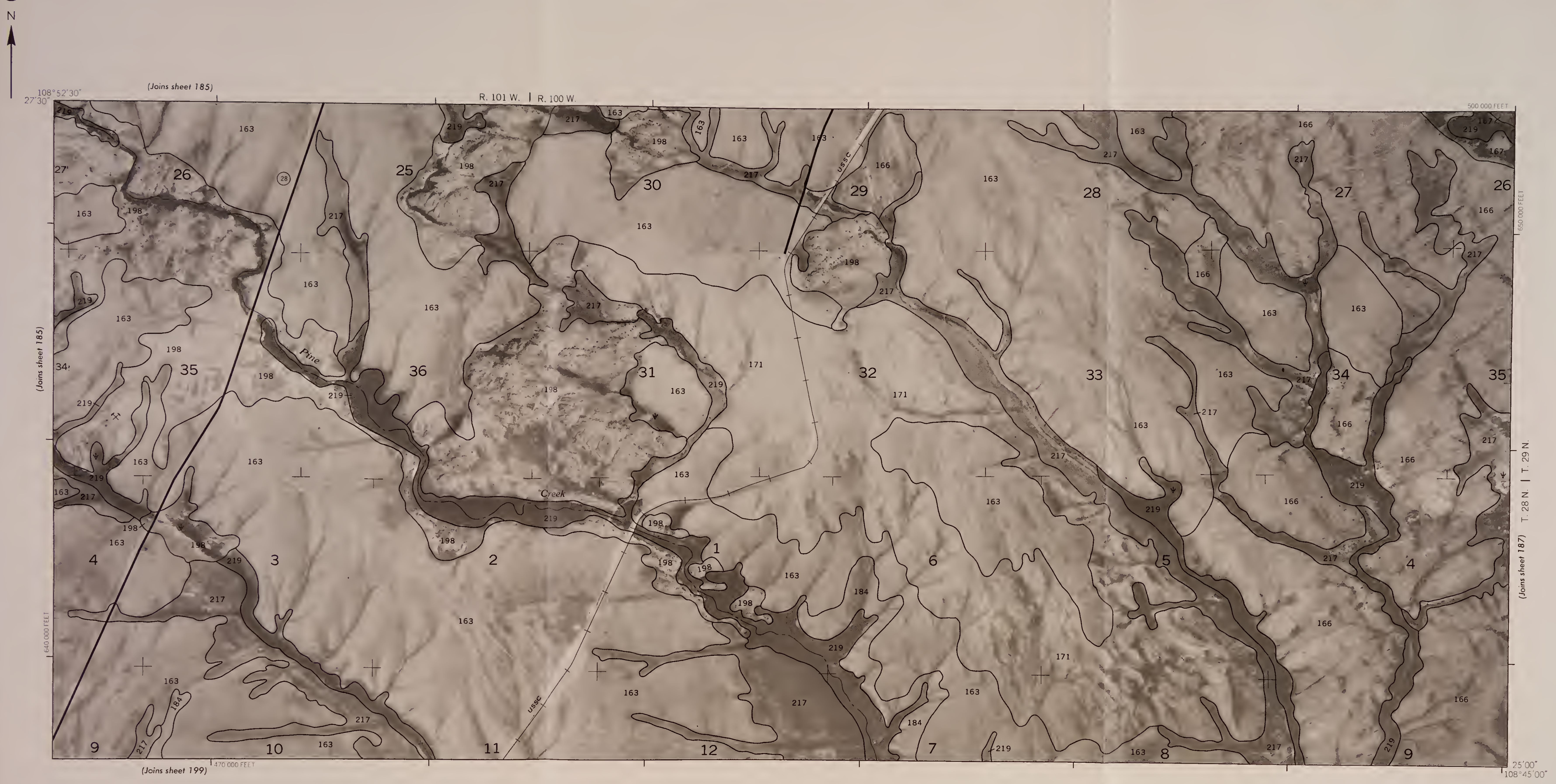


1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 185

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 186



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 186

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

(187)

N

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 187

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 188

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 188

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

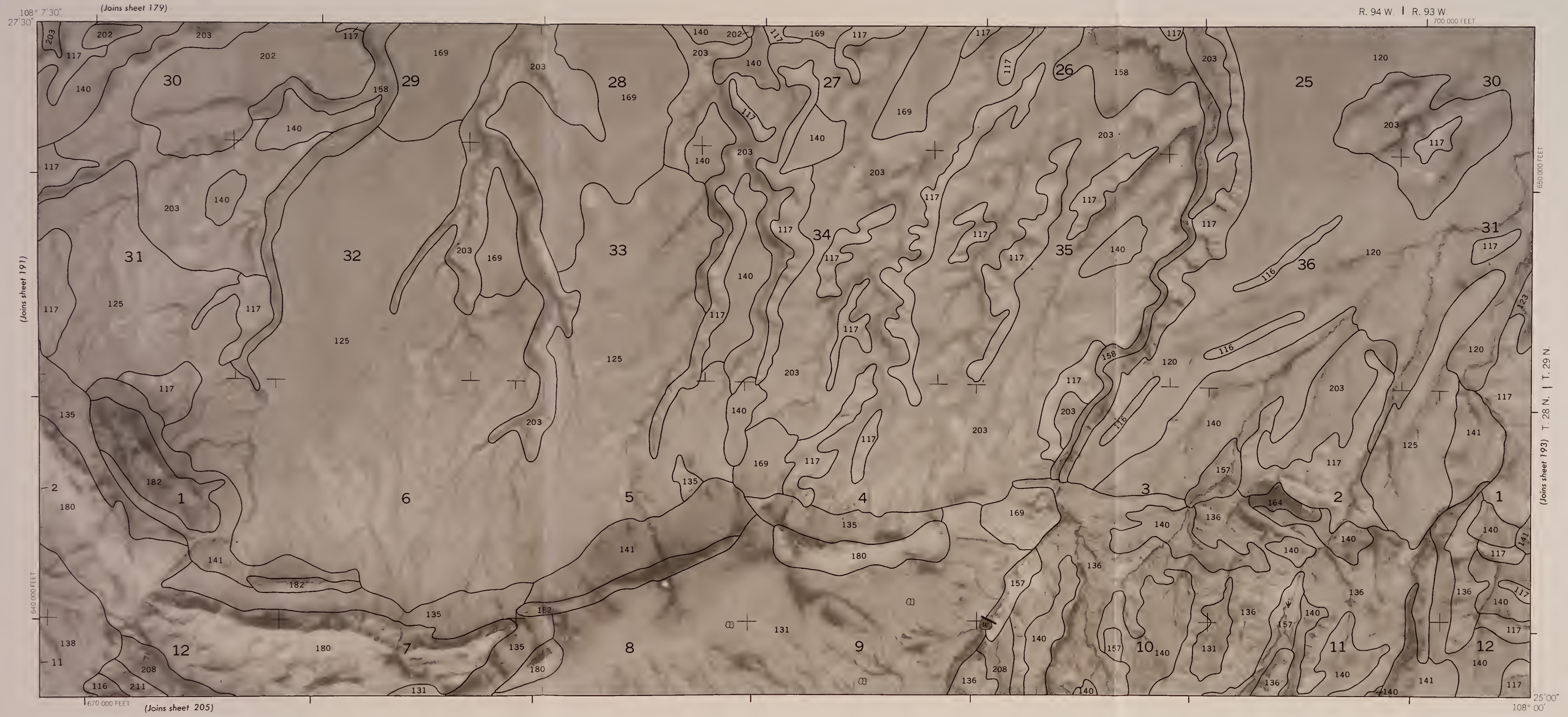
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 191

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 192

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

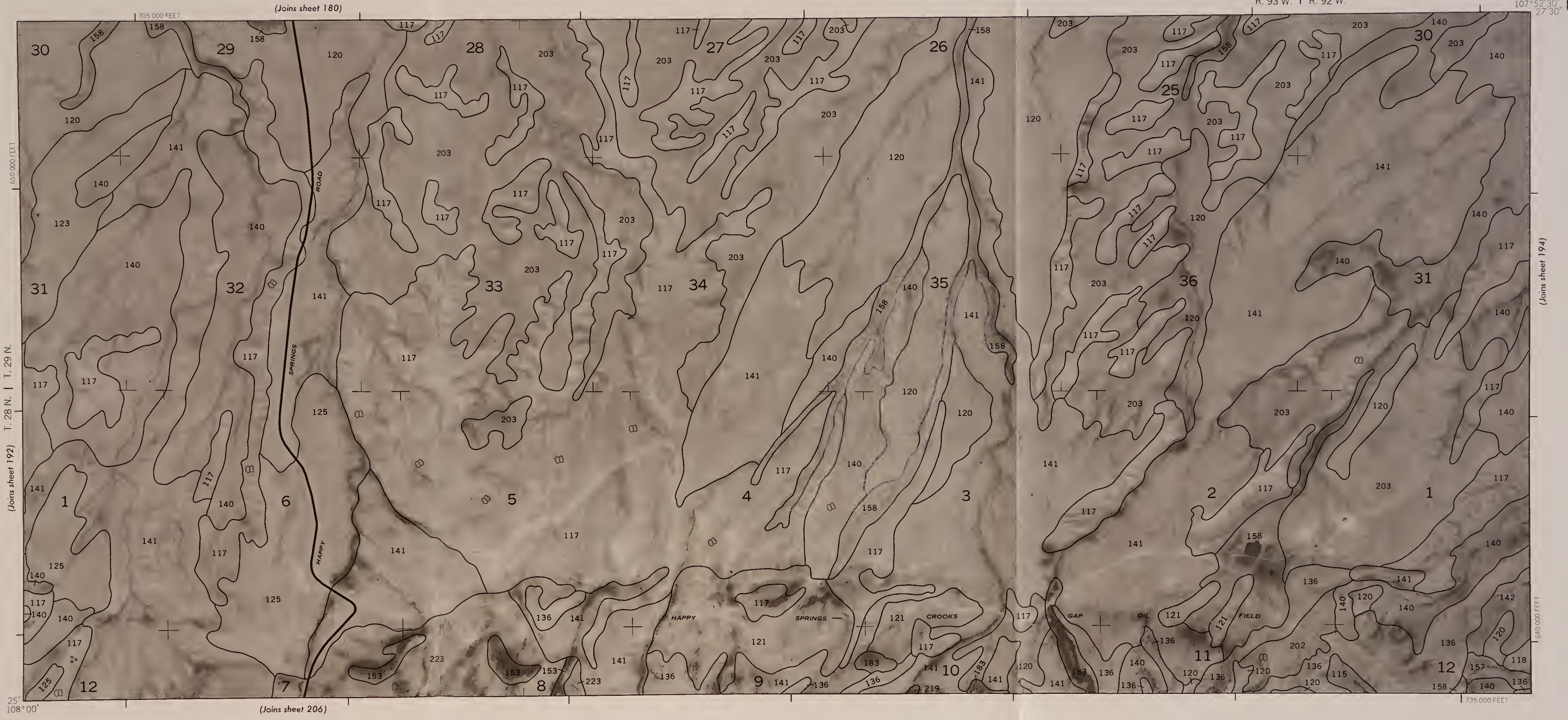
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 192

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 193



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

194

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

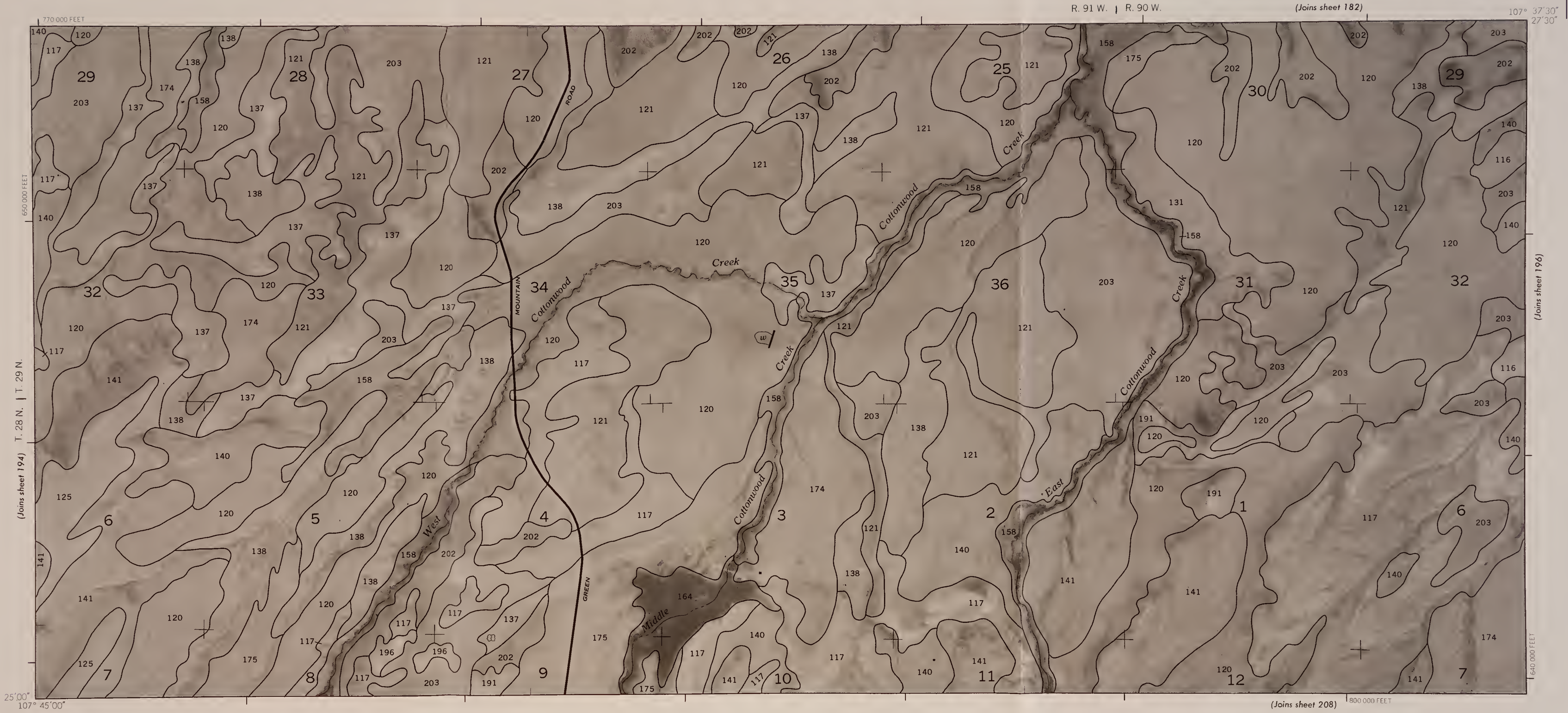
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 194

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 195

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

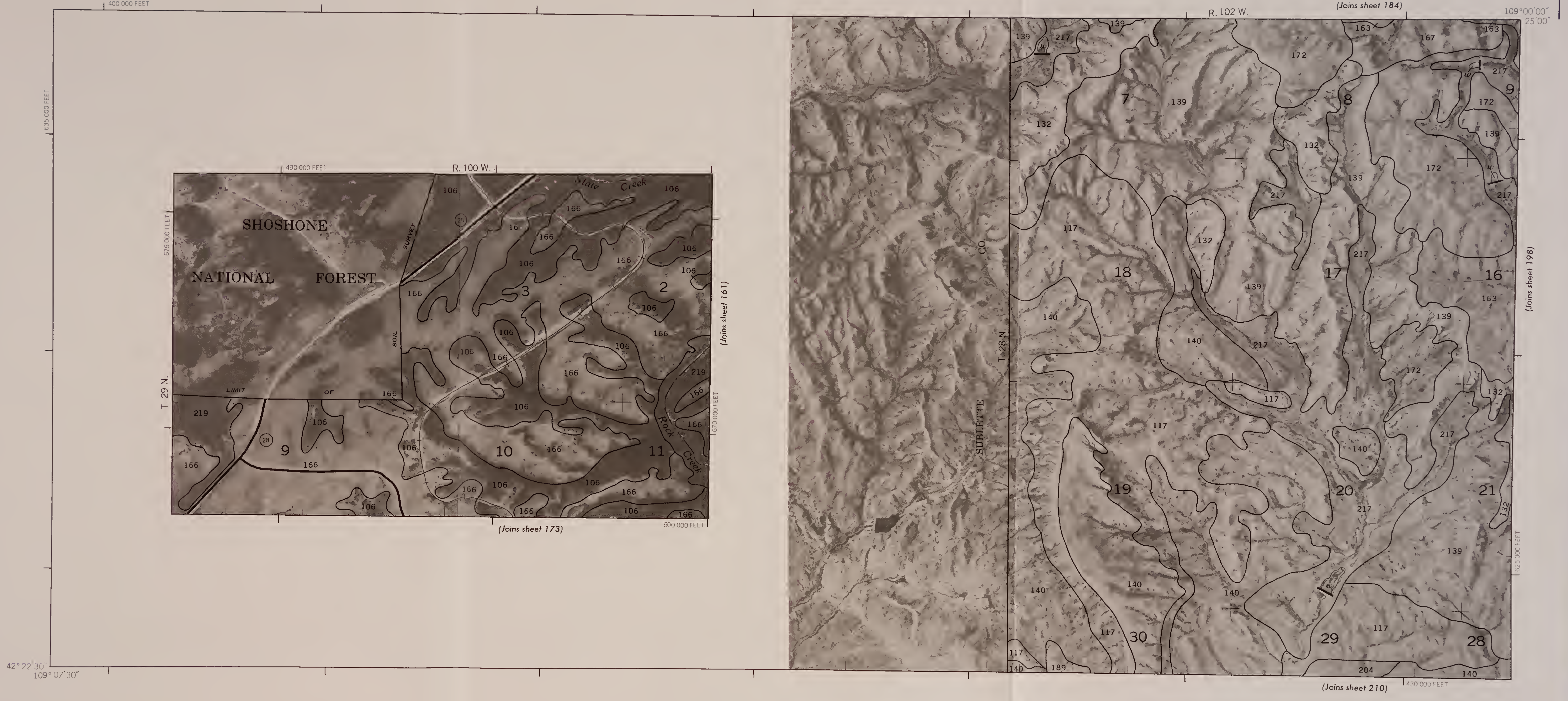
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 196

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 197



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

(198)

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 198

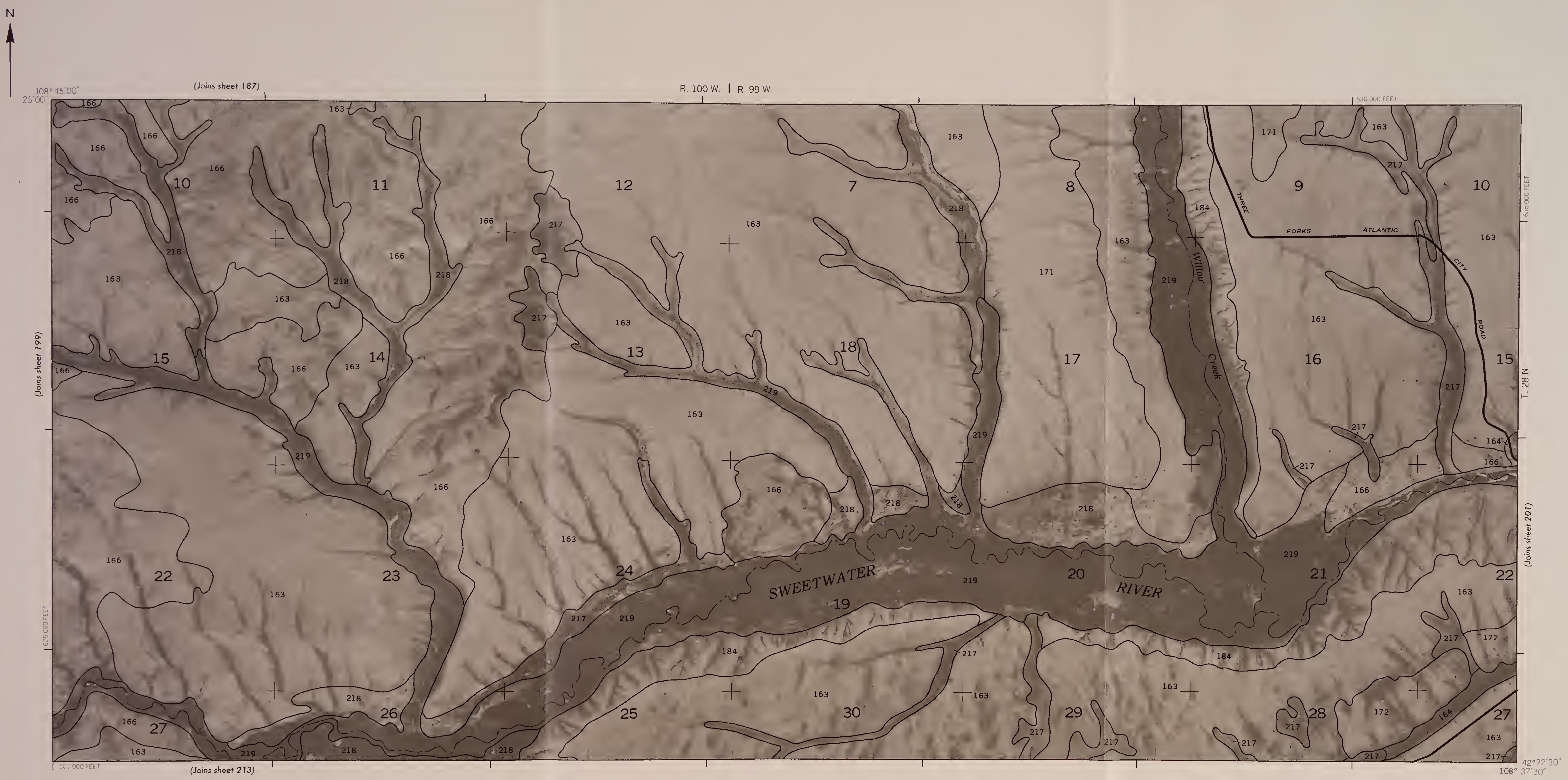
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 199

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 200



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 200

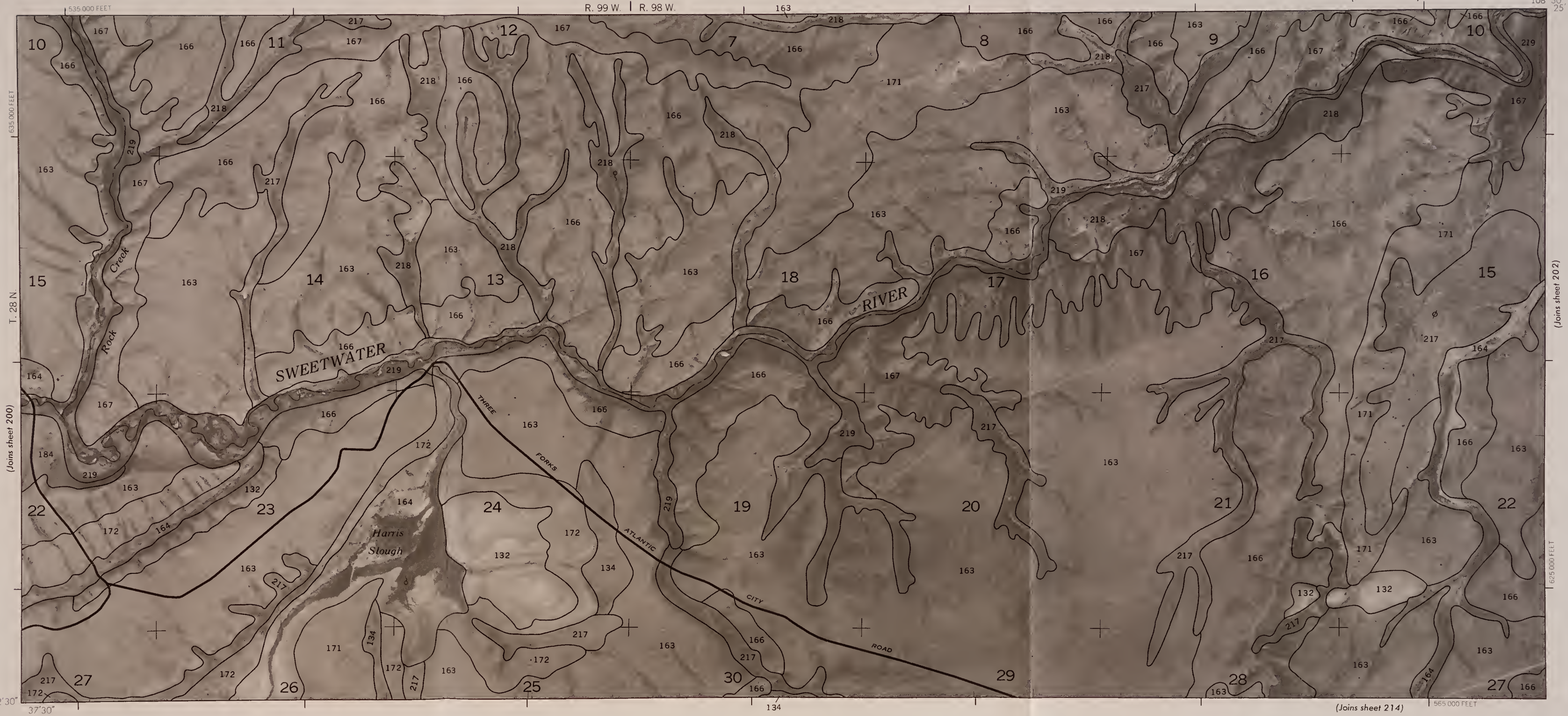
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 201

201

N



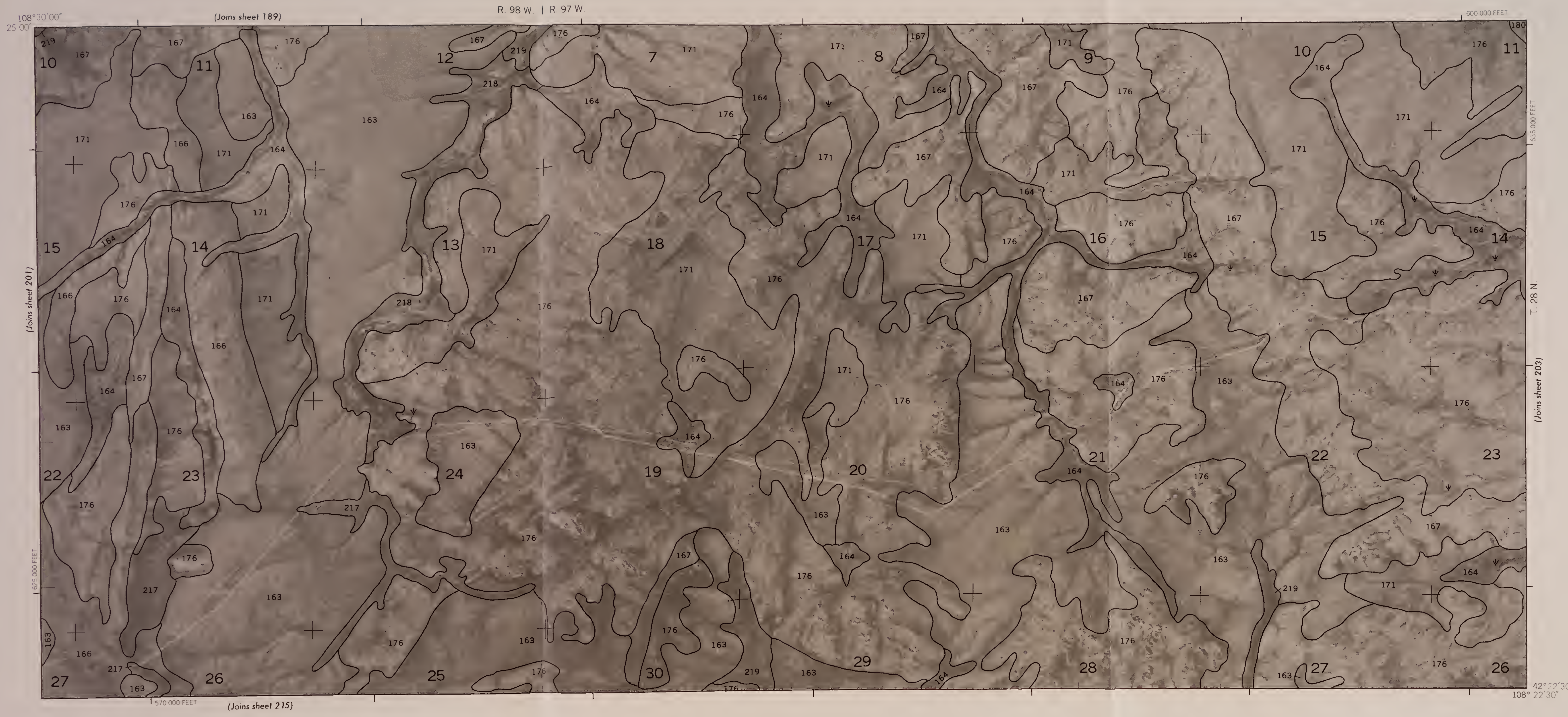
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

(202)

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

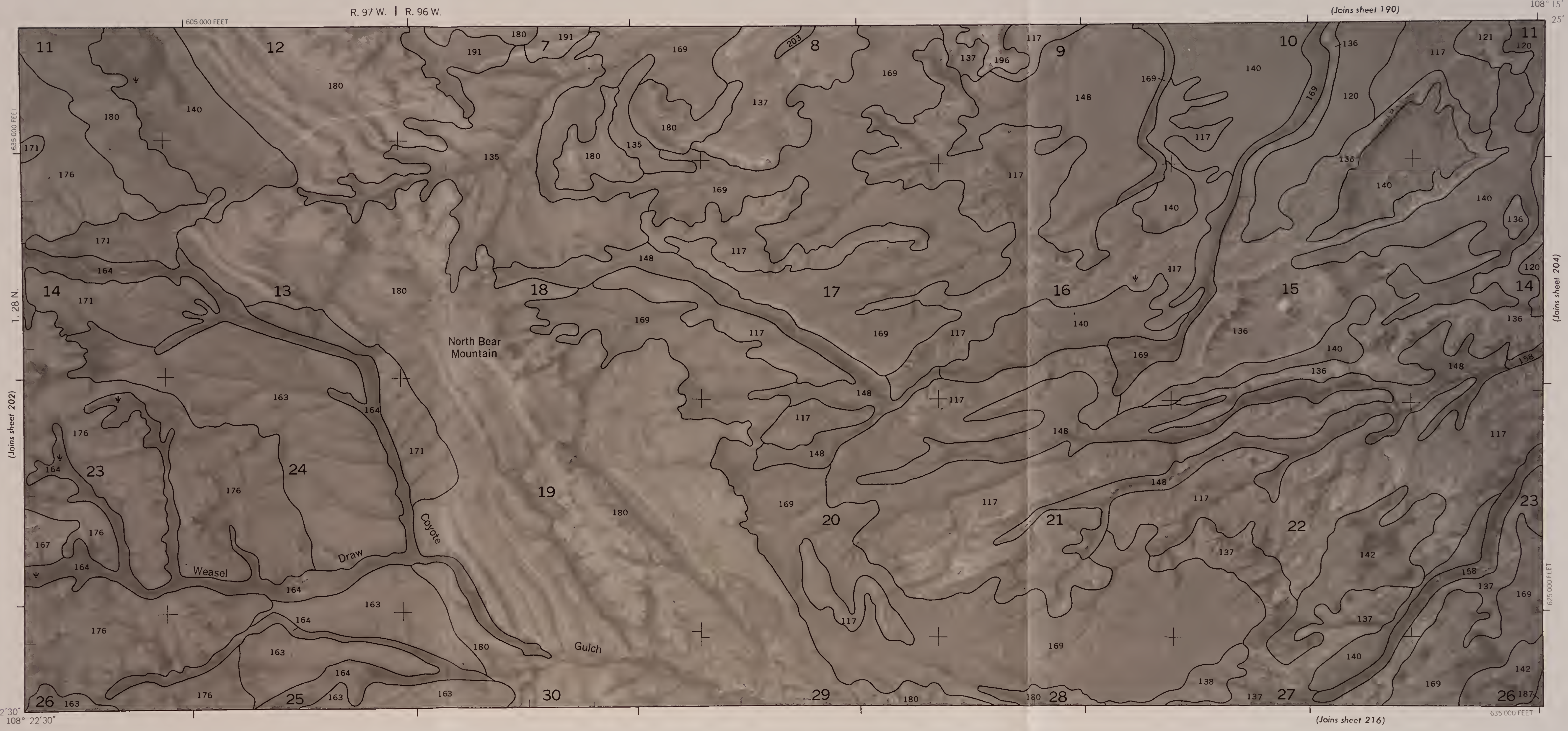
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 202

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 203



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

204

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 204

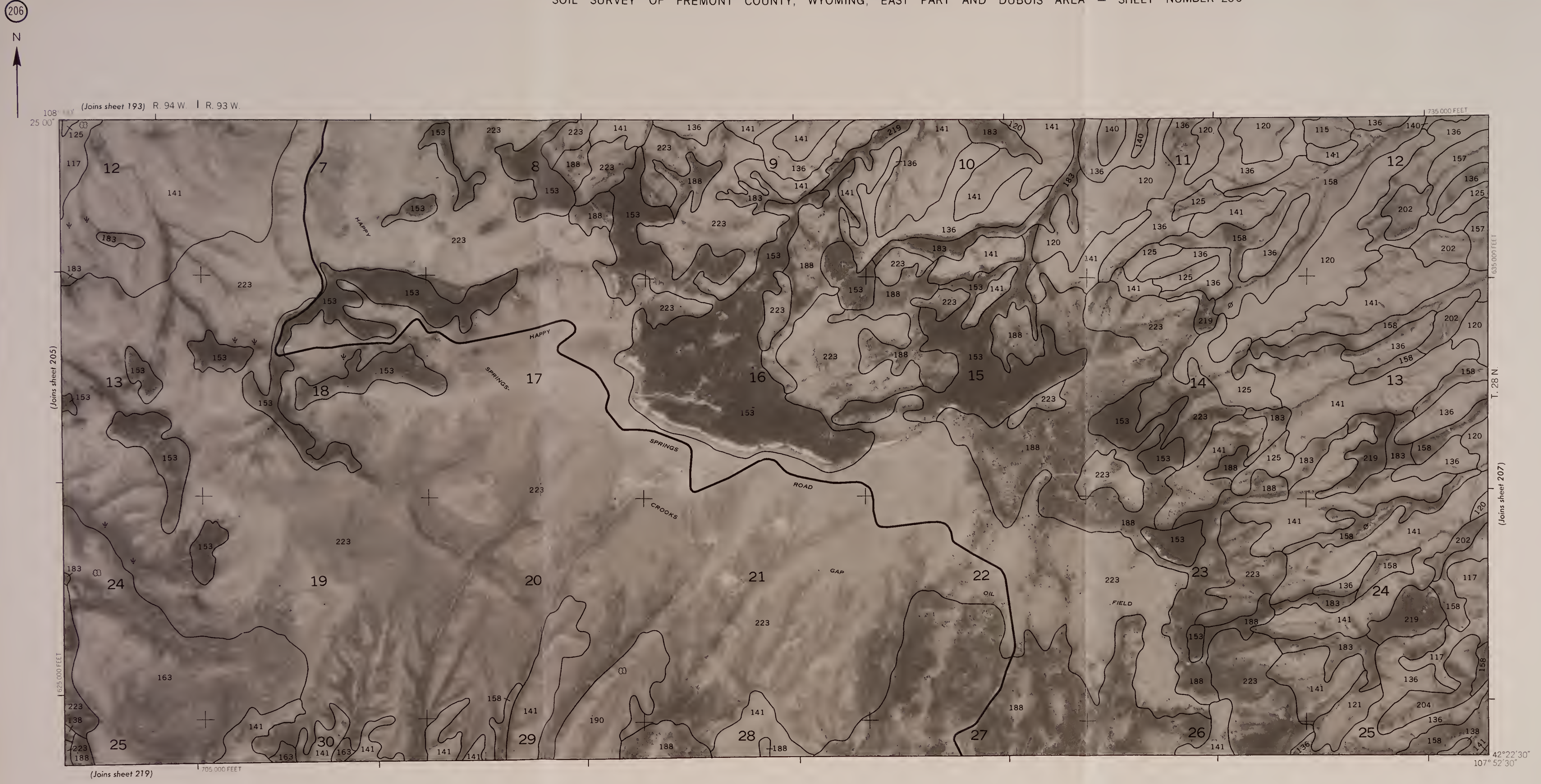
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

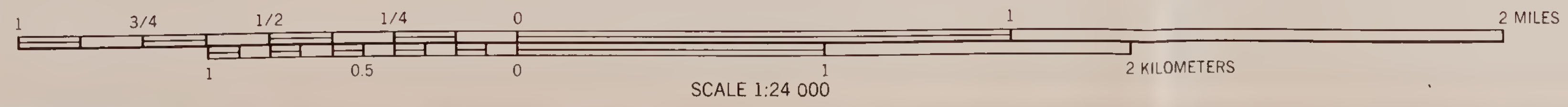
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 205

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 206





FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 206

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

207

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING, NO. 207

208

N

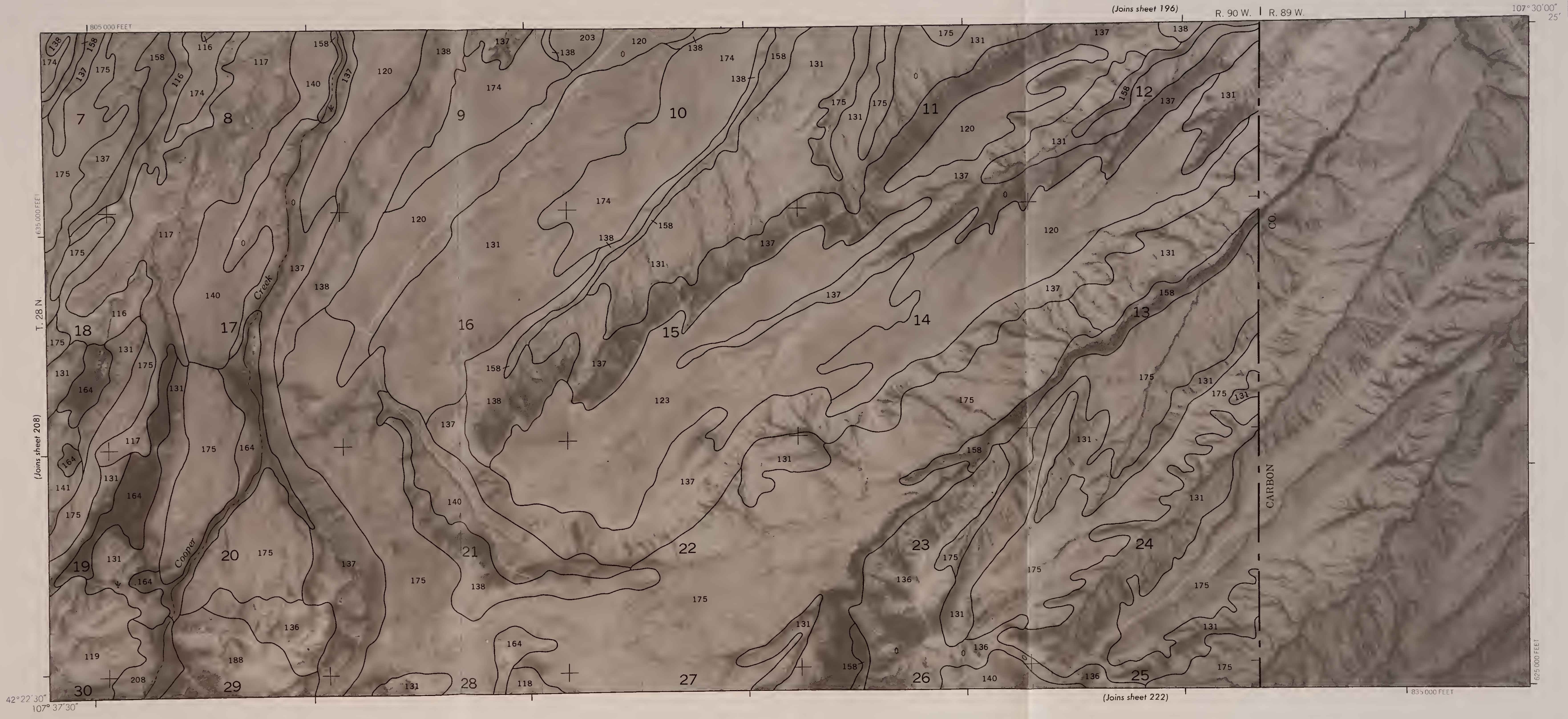
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 208

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

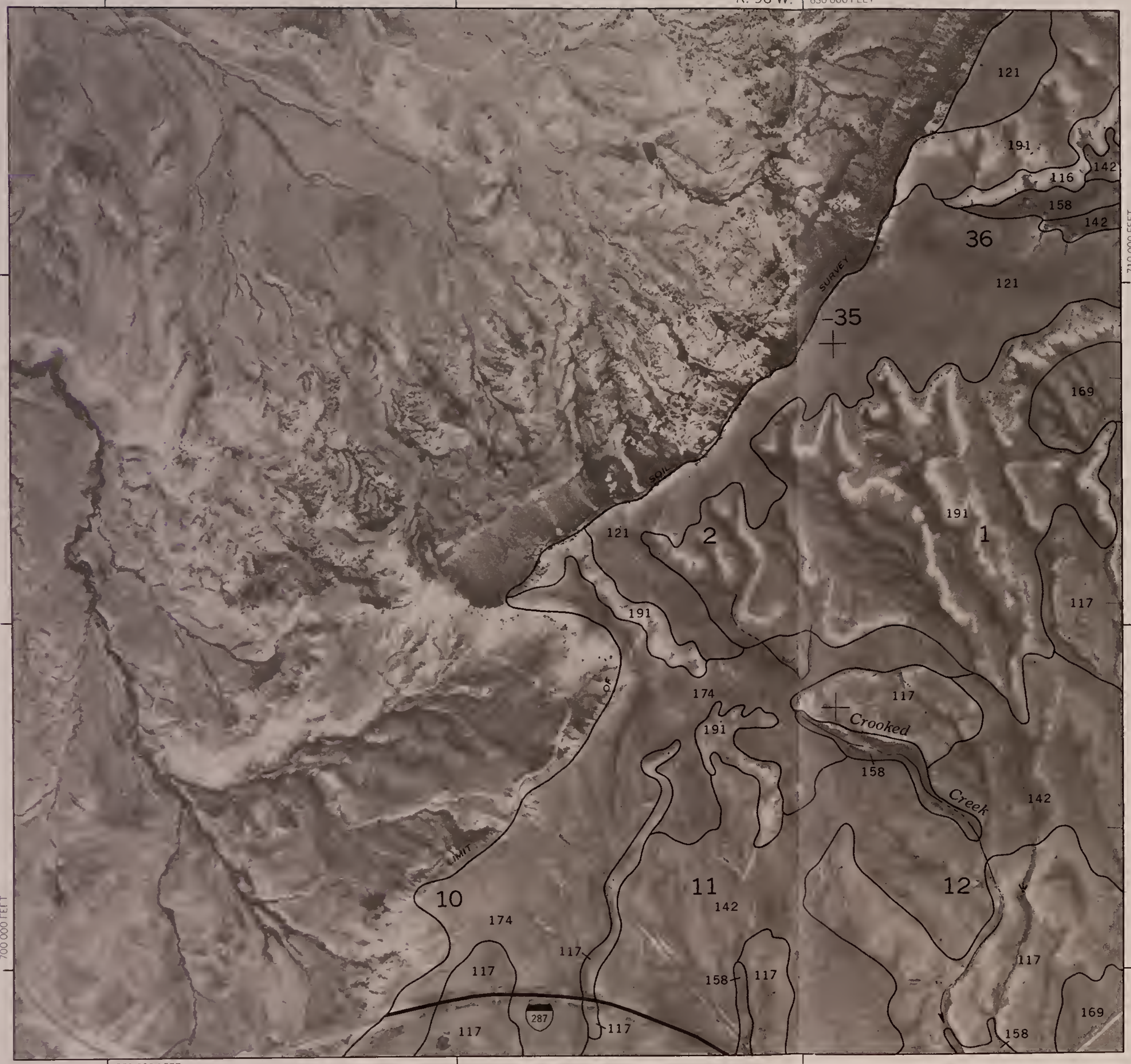
SCALE 1:24 000

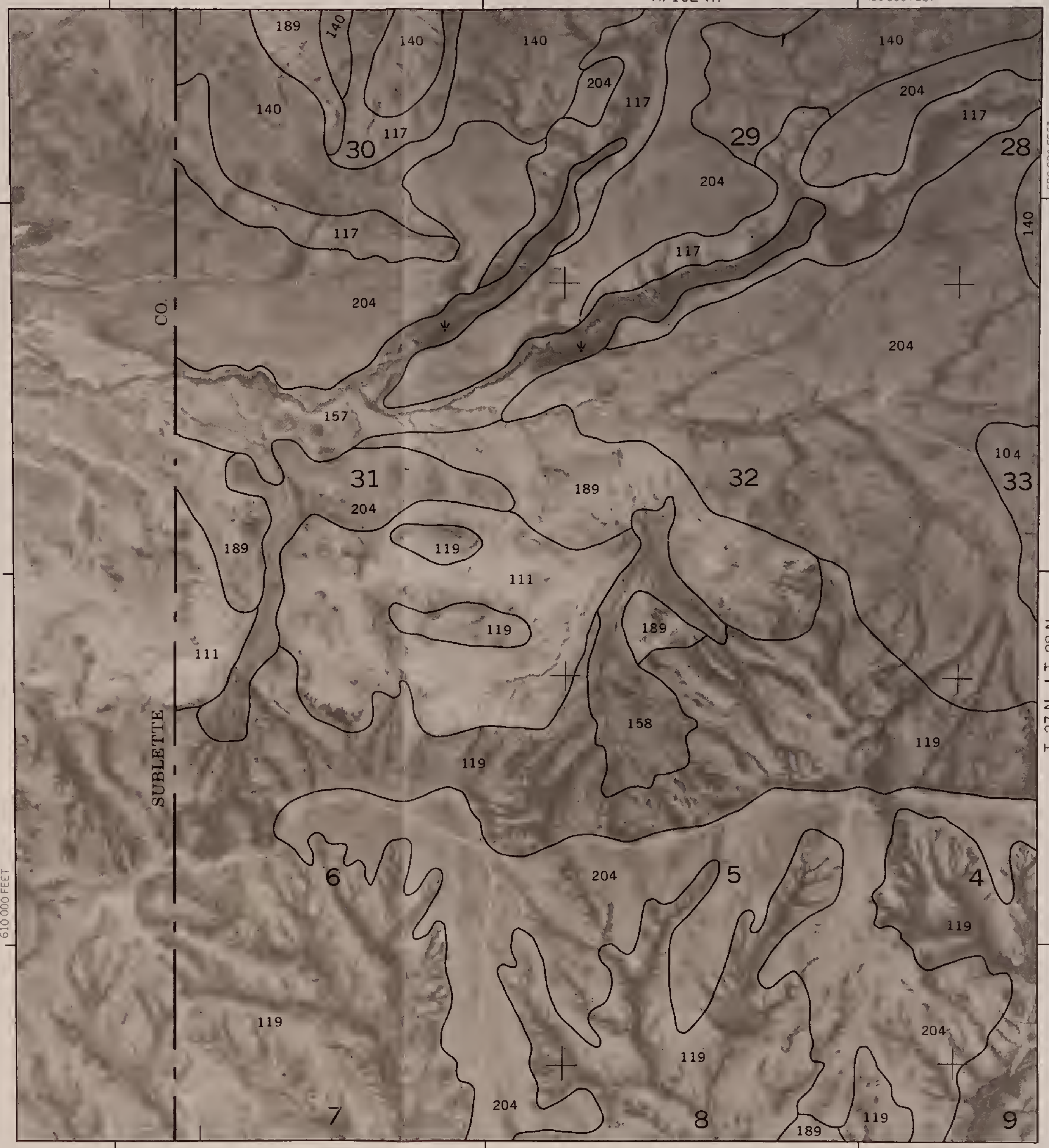
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 209

N

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 210





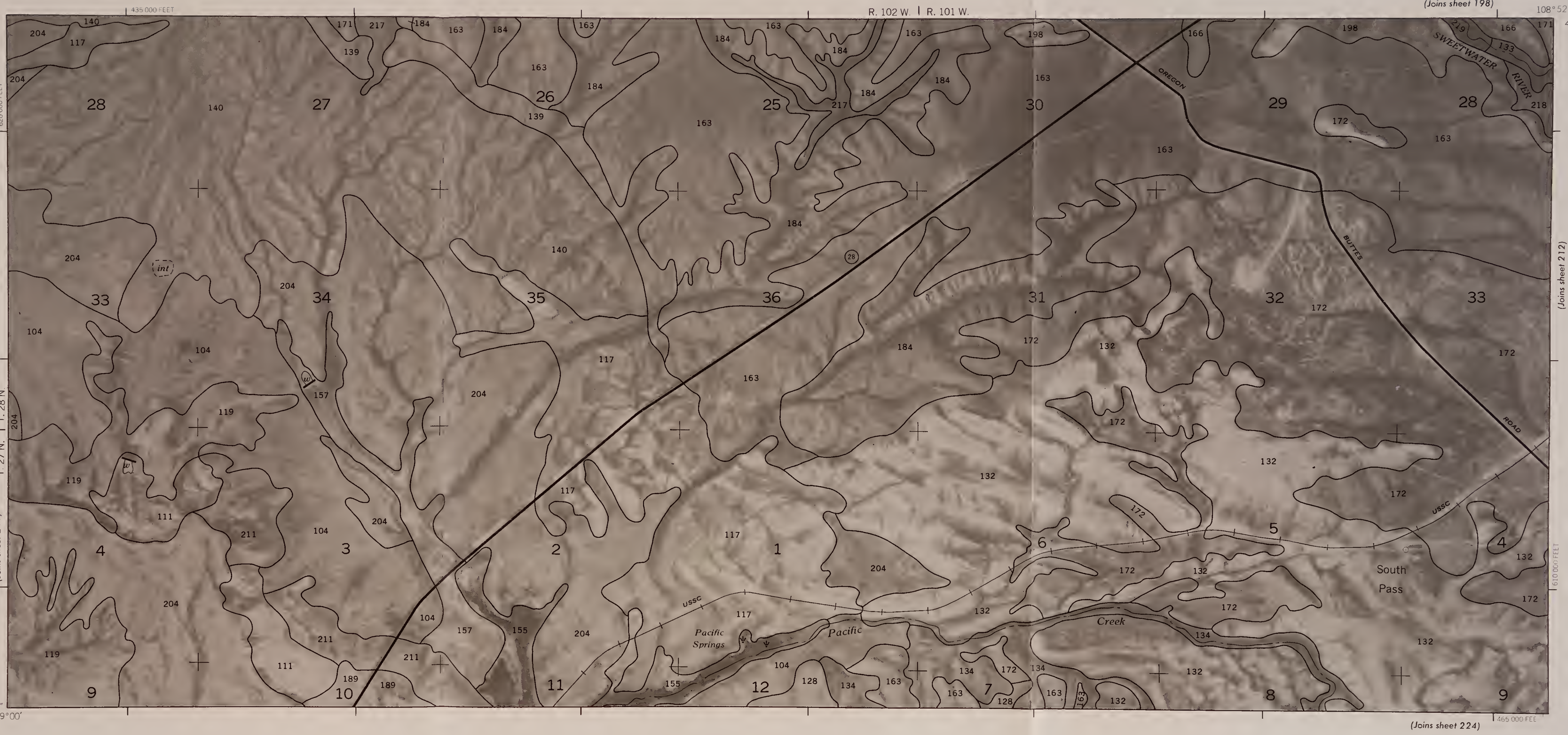
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 210

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING, NO. 211

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 212

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

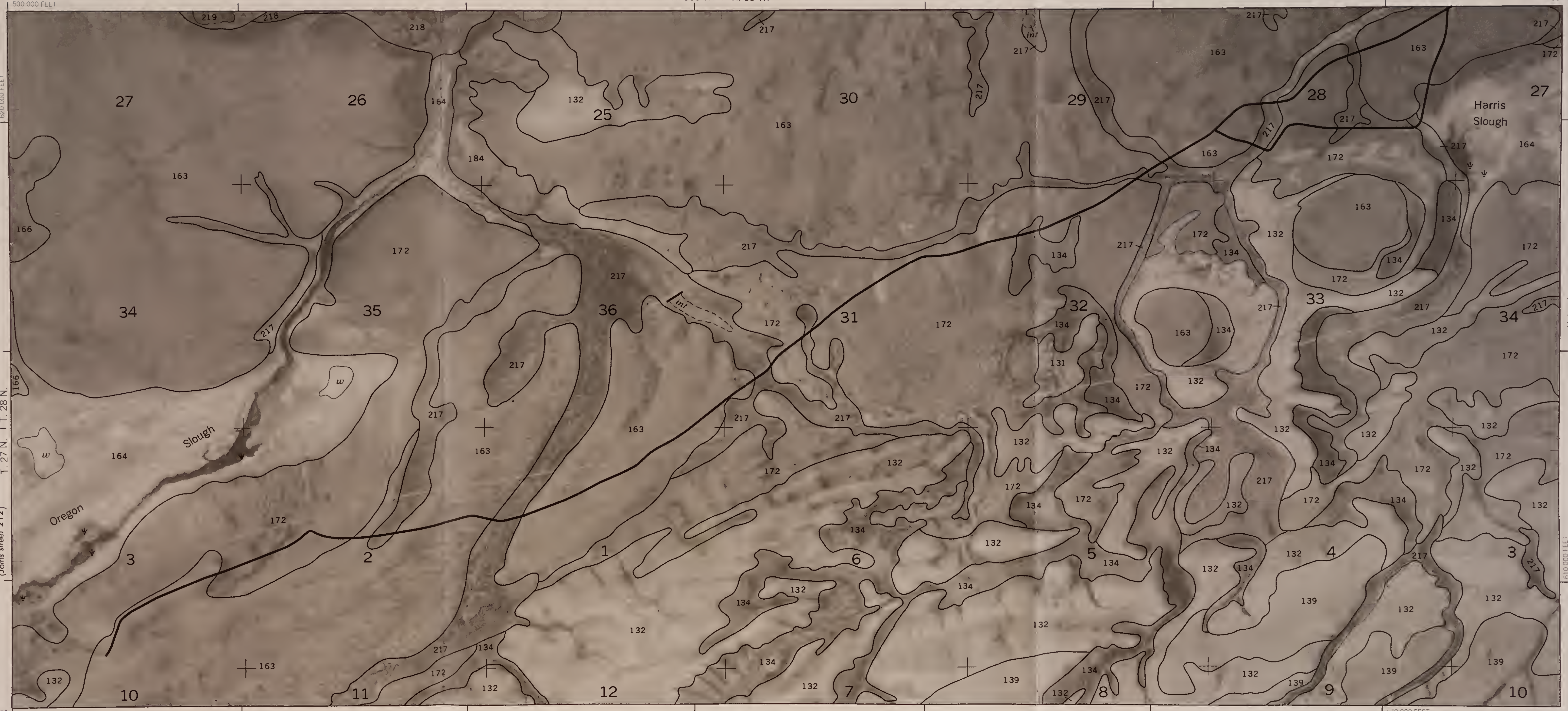
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 212

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 213



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 214

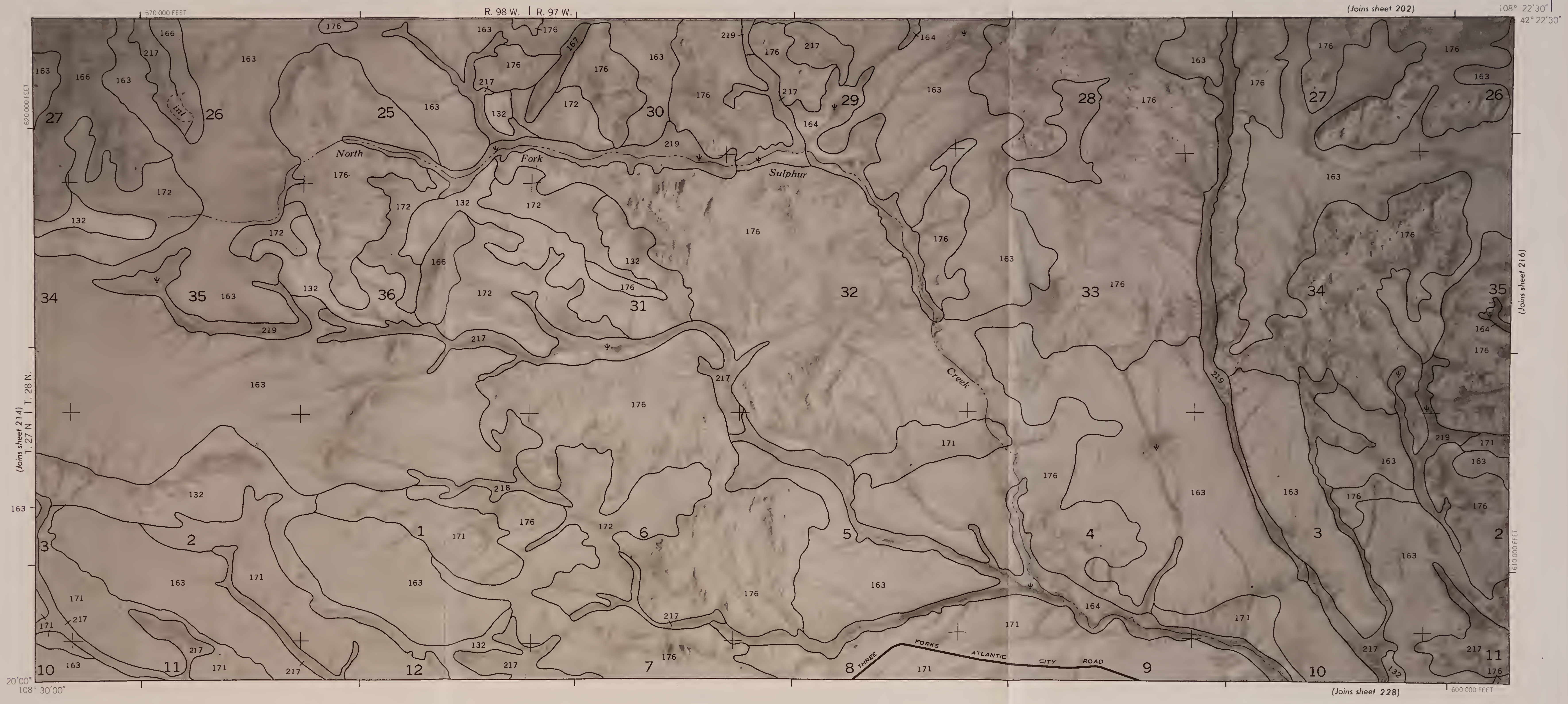
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 214

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

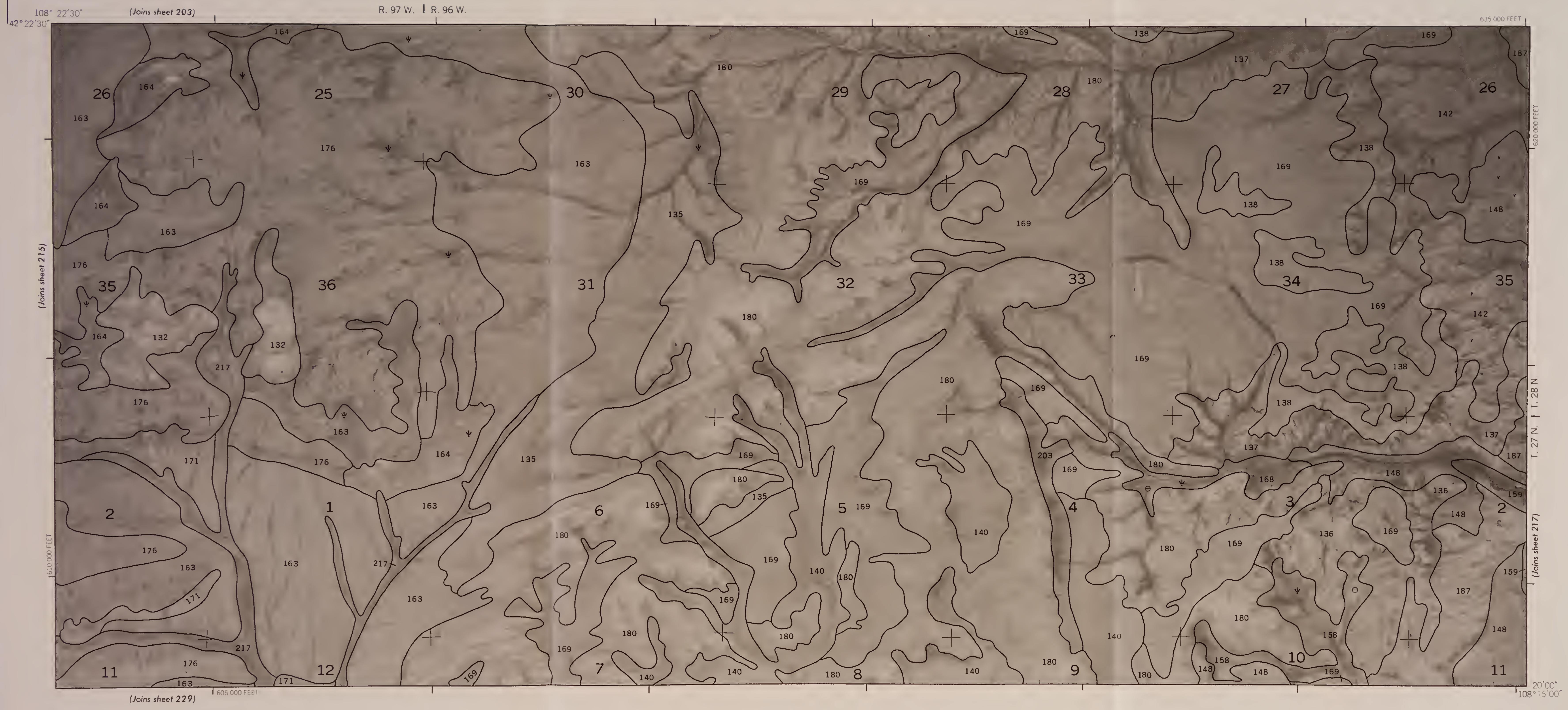
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 215



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

216

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 216



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

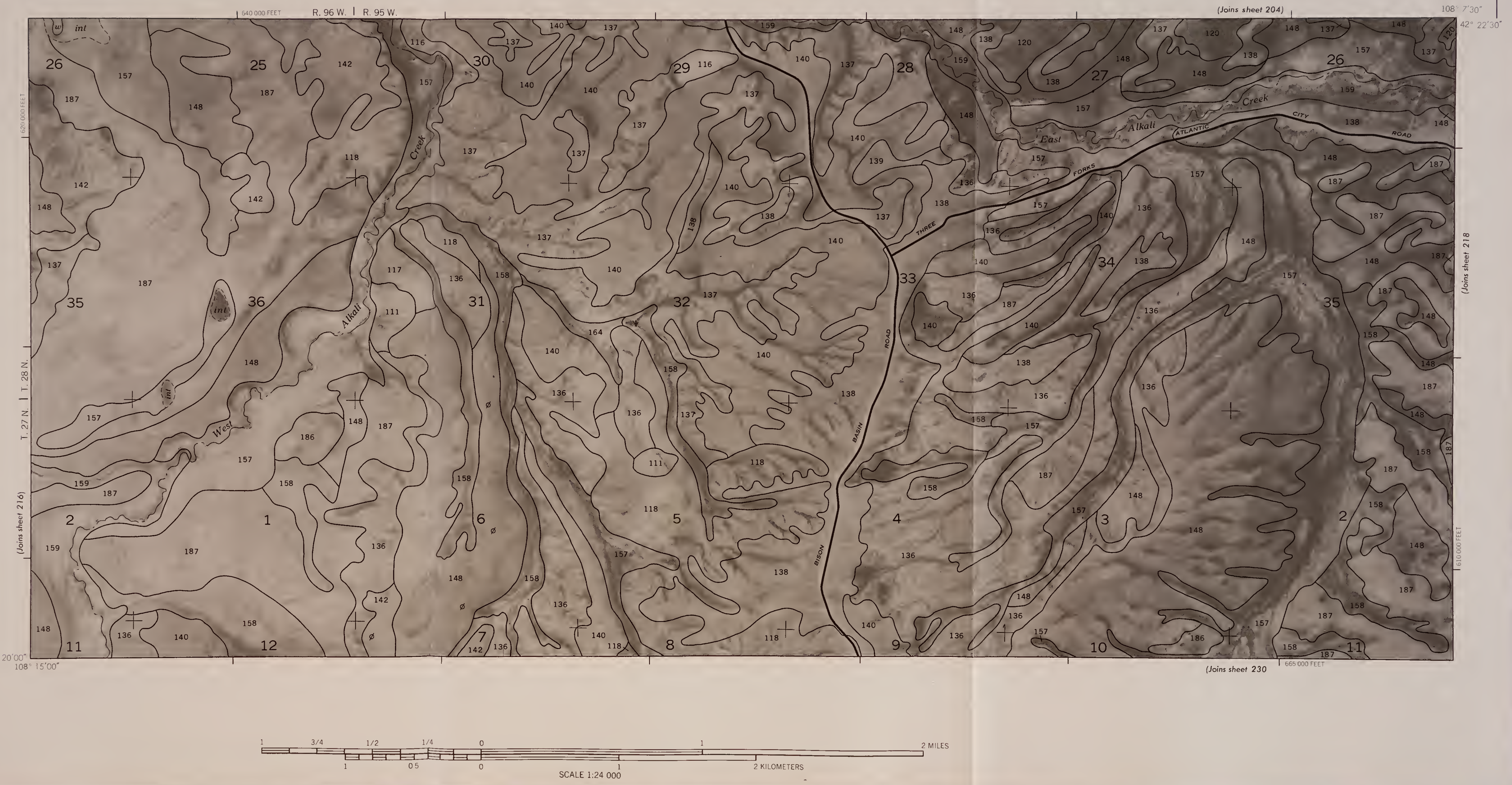
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 216

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

217

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 217



SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 218

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 218

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 219

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

220

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 220

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 220

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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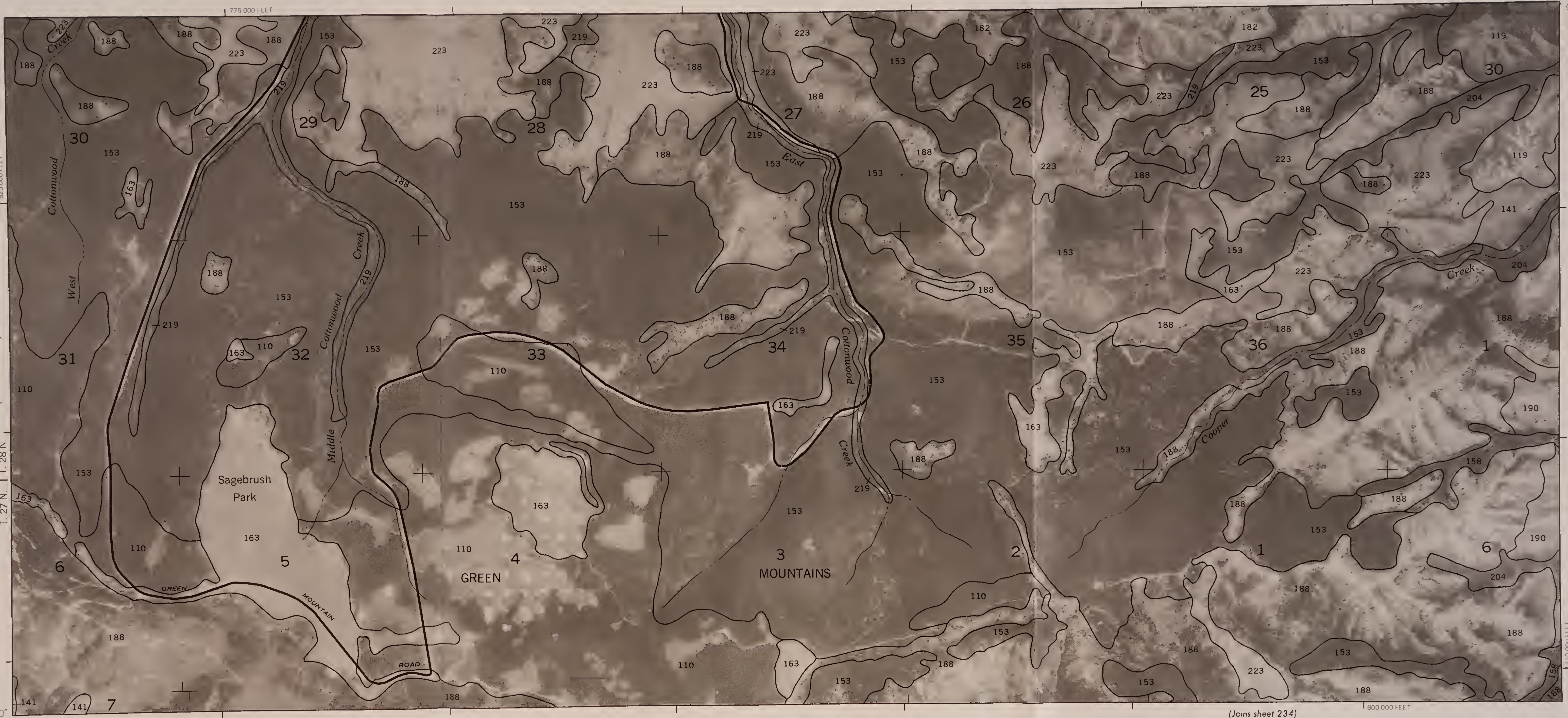
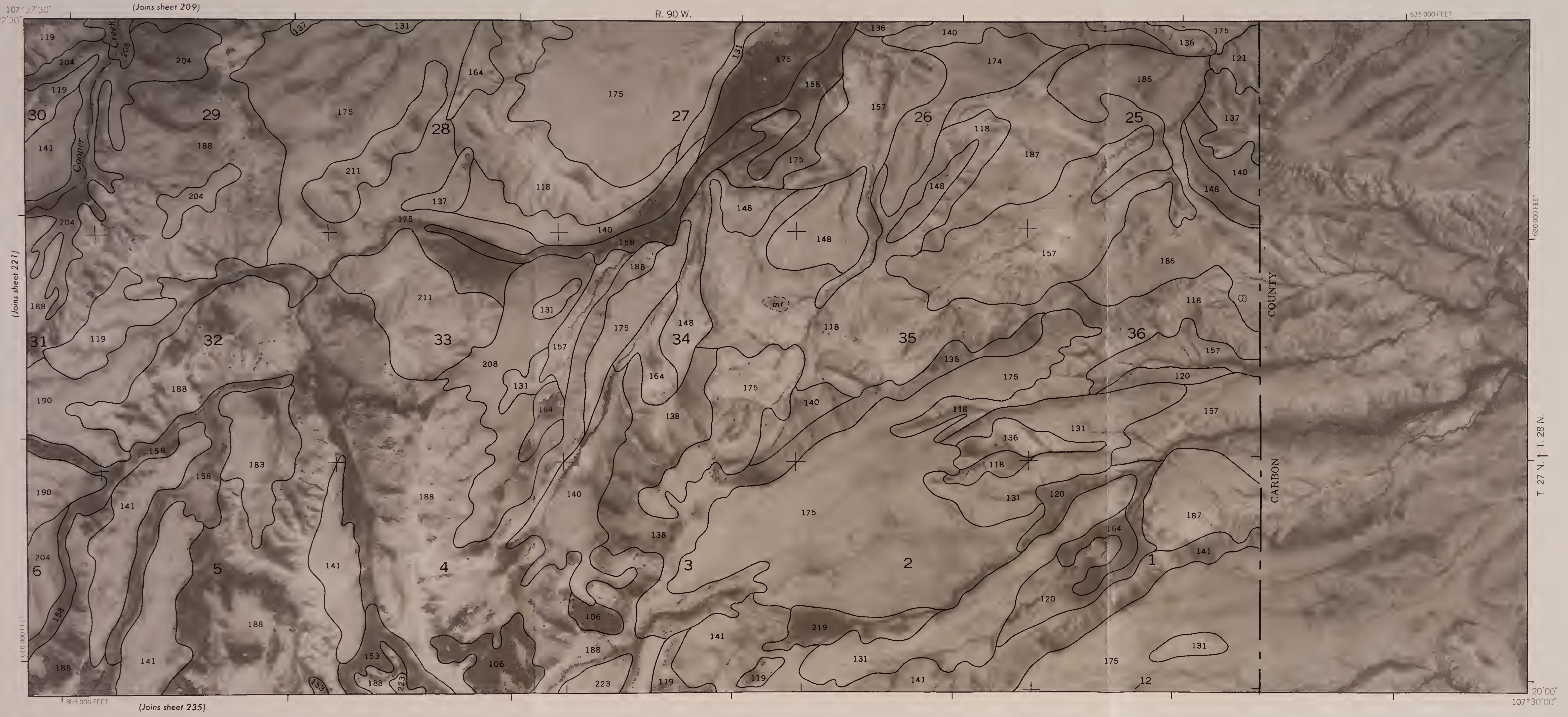
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 221



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 222

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 222

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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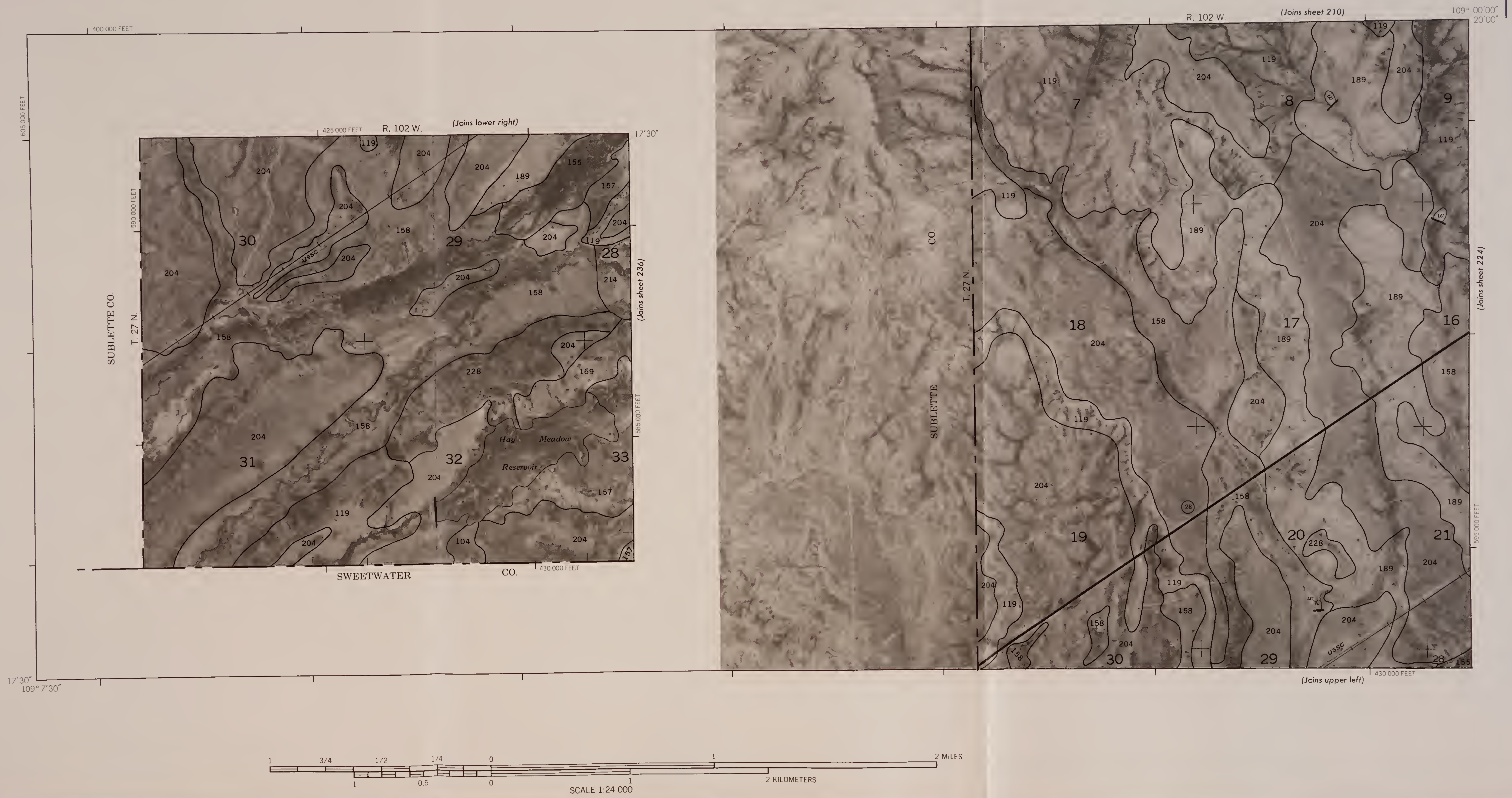
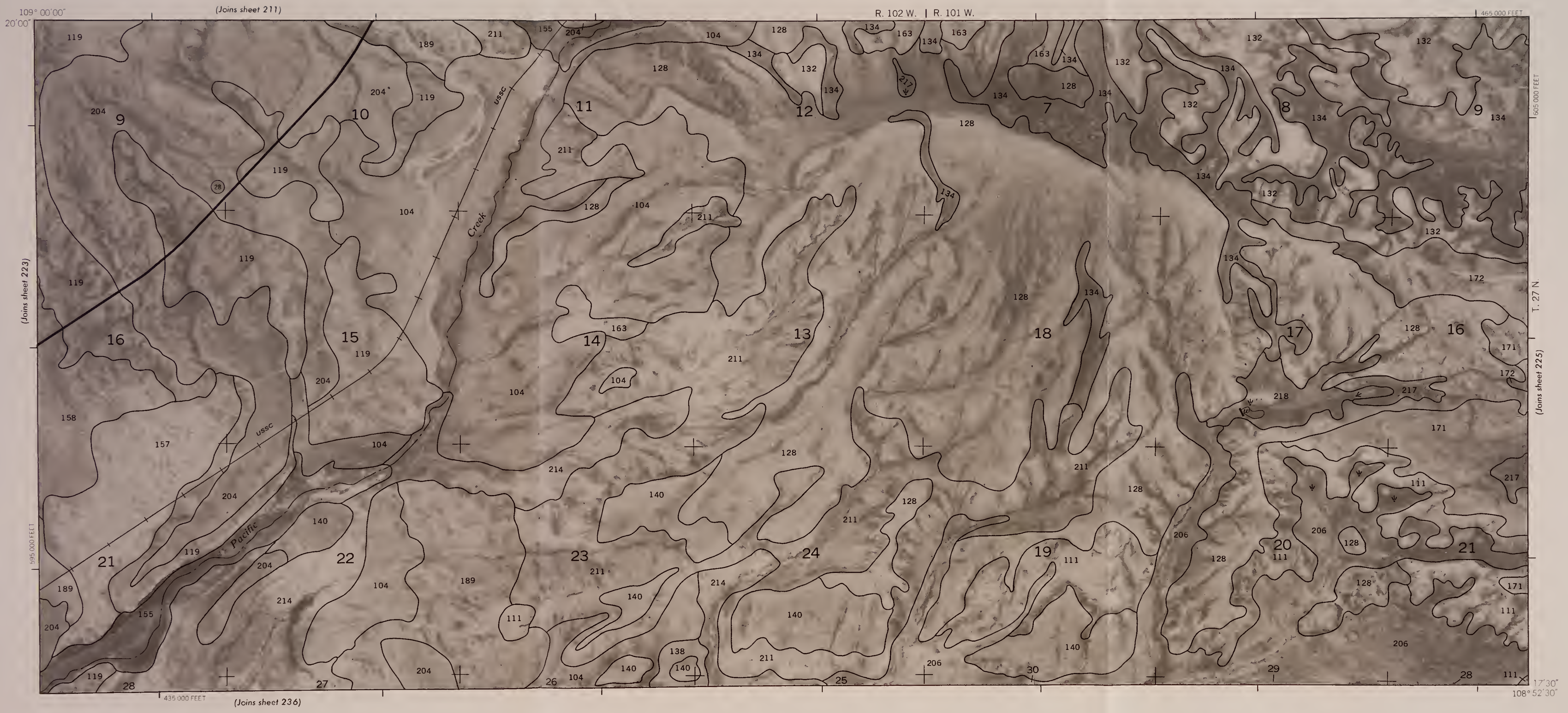
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 223



224

N

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 224



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 224

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 225

SCALE 1:24 000

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 226

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

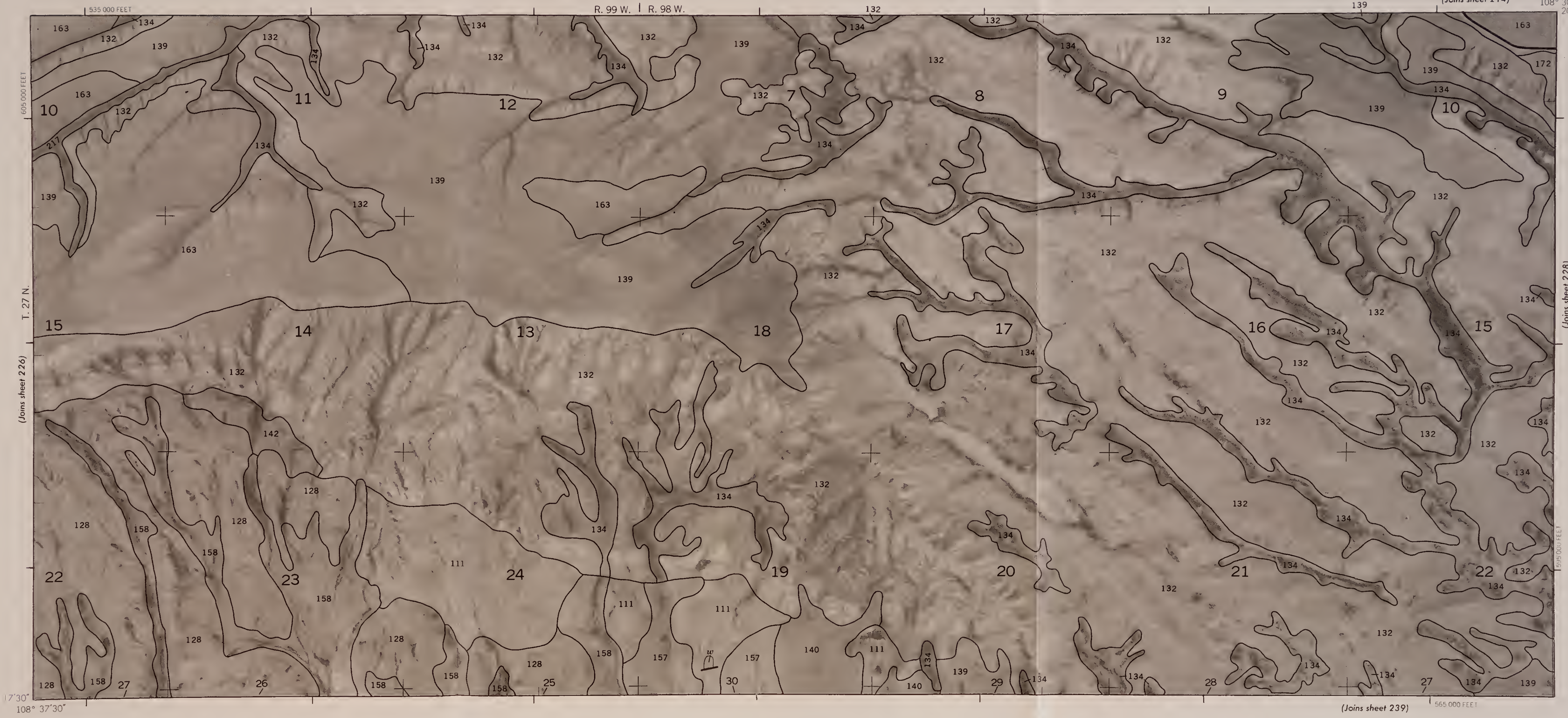
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 226

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 227



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 228

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 228

This soil survey map was compiled by the U S Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

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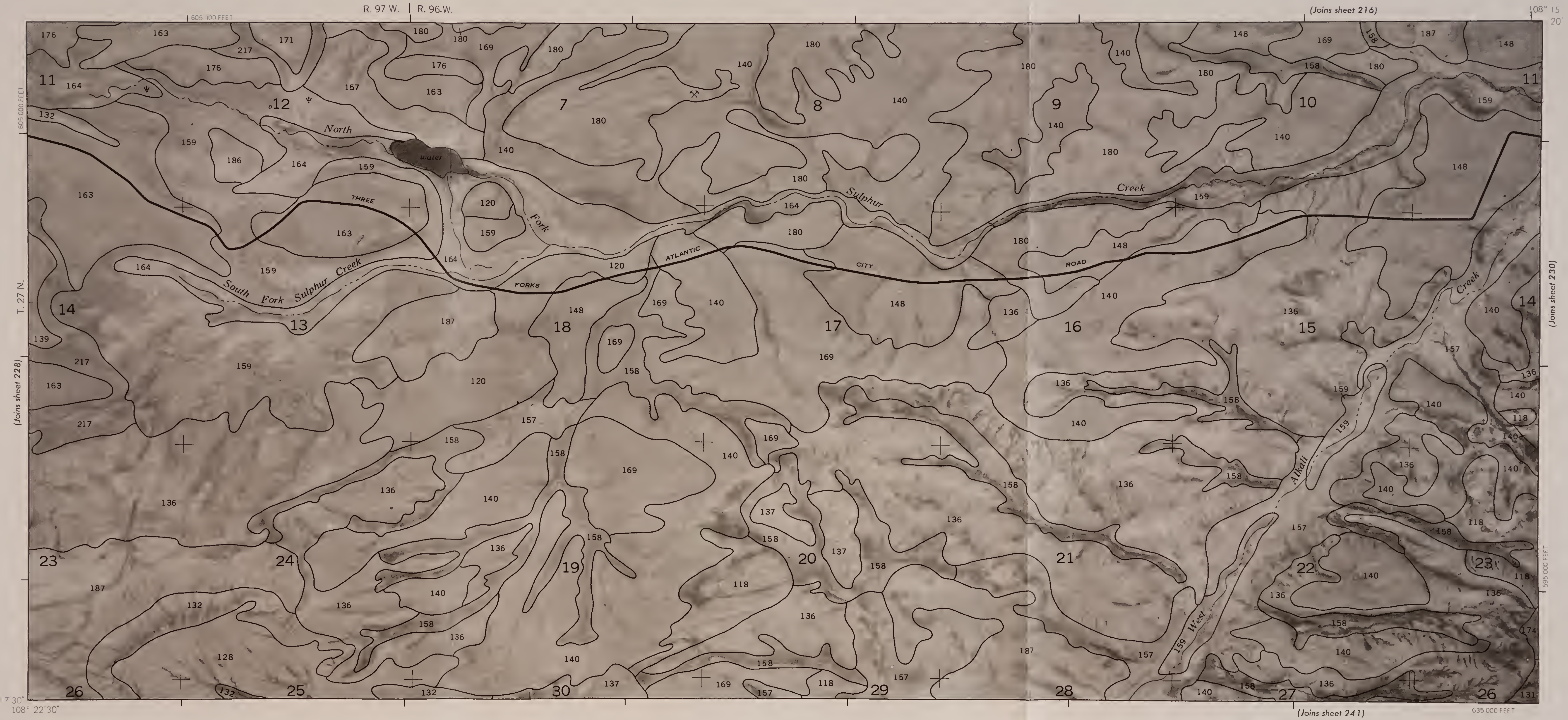
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 229



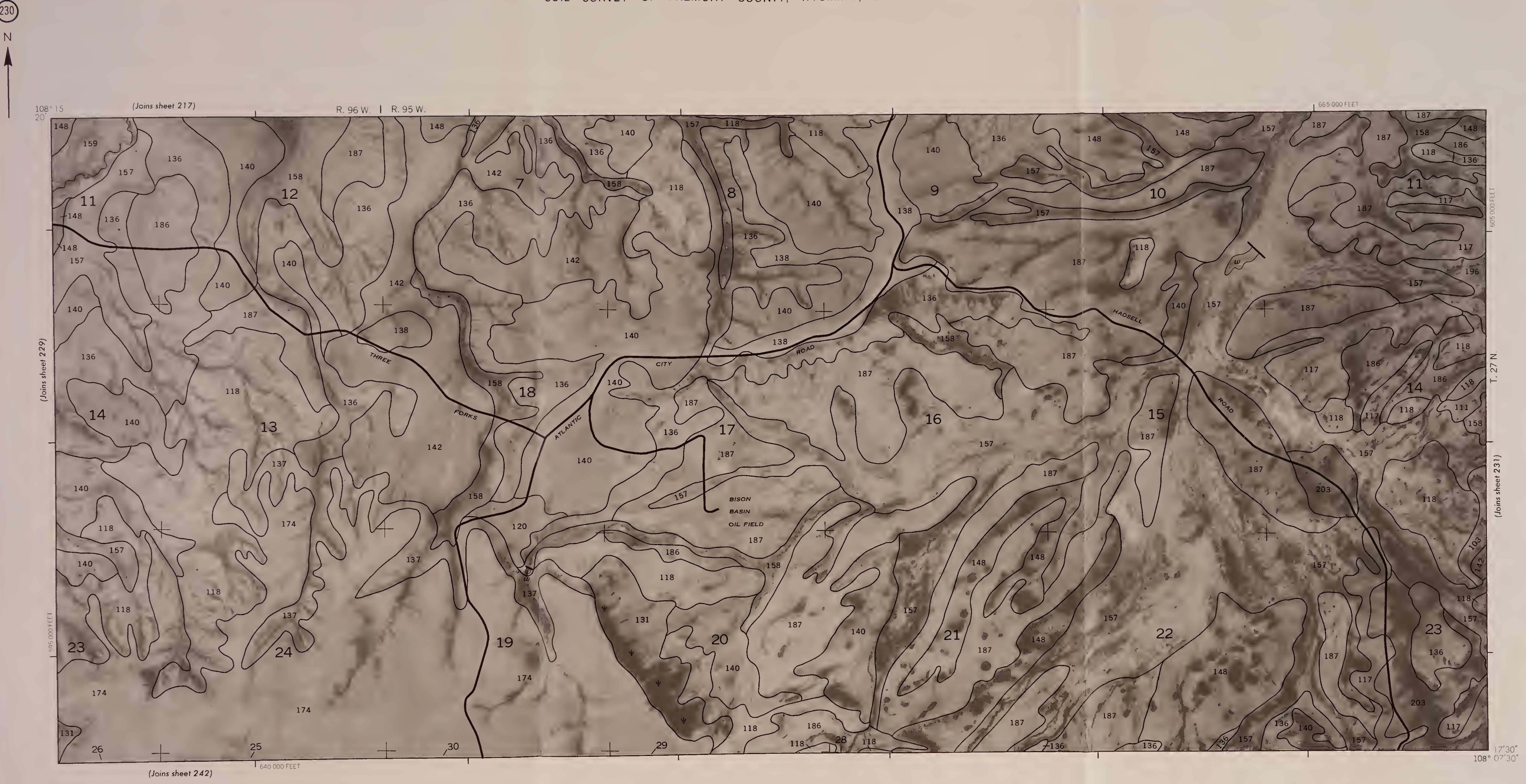
SCALE 1:24 000

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

(230)

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 230



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 230

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 231

N

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 232

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 232

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 233

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 234

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

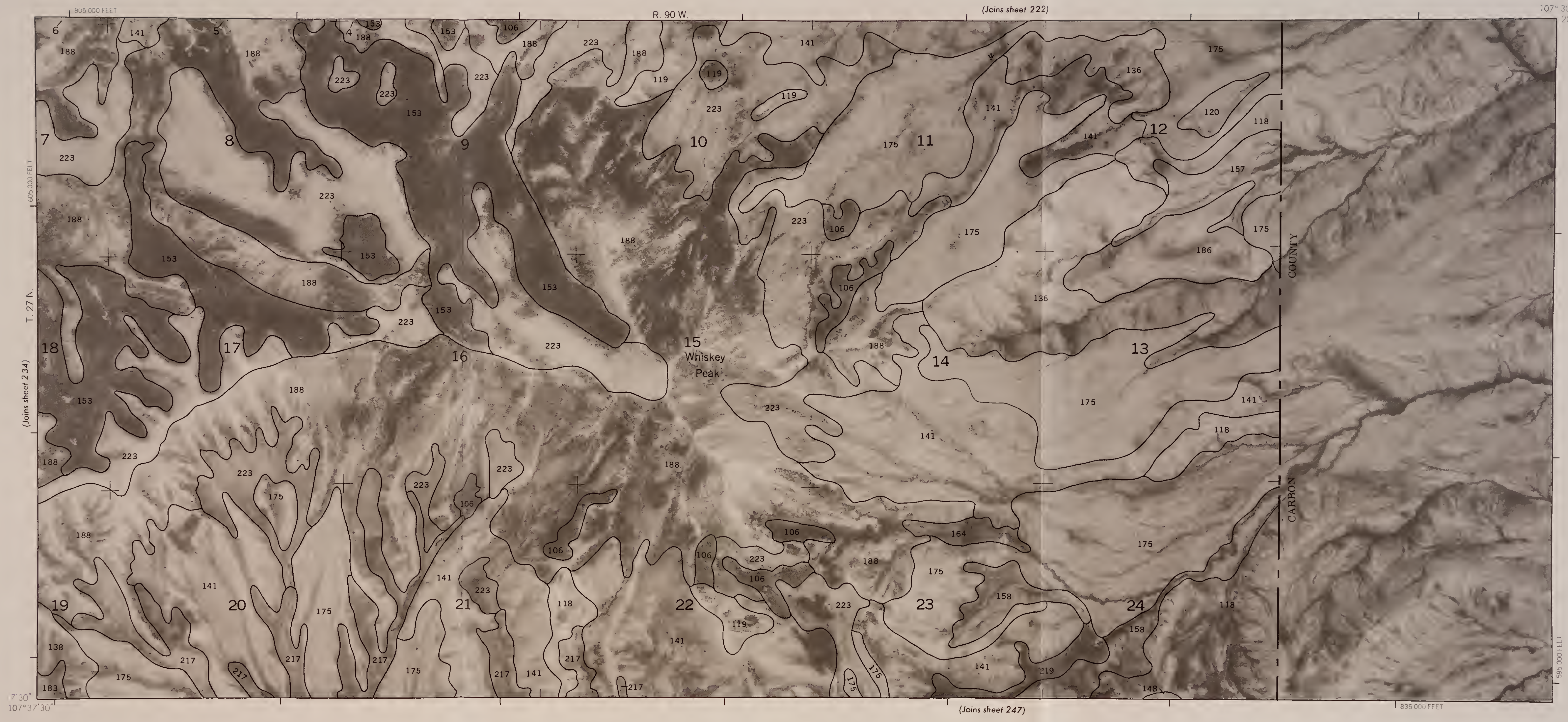
SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 234

235

N



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 235

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING, NO. 236

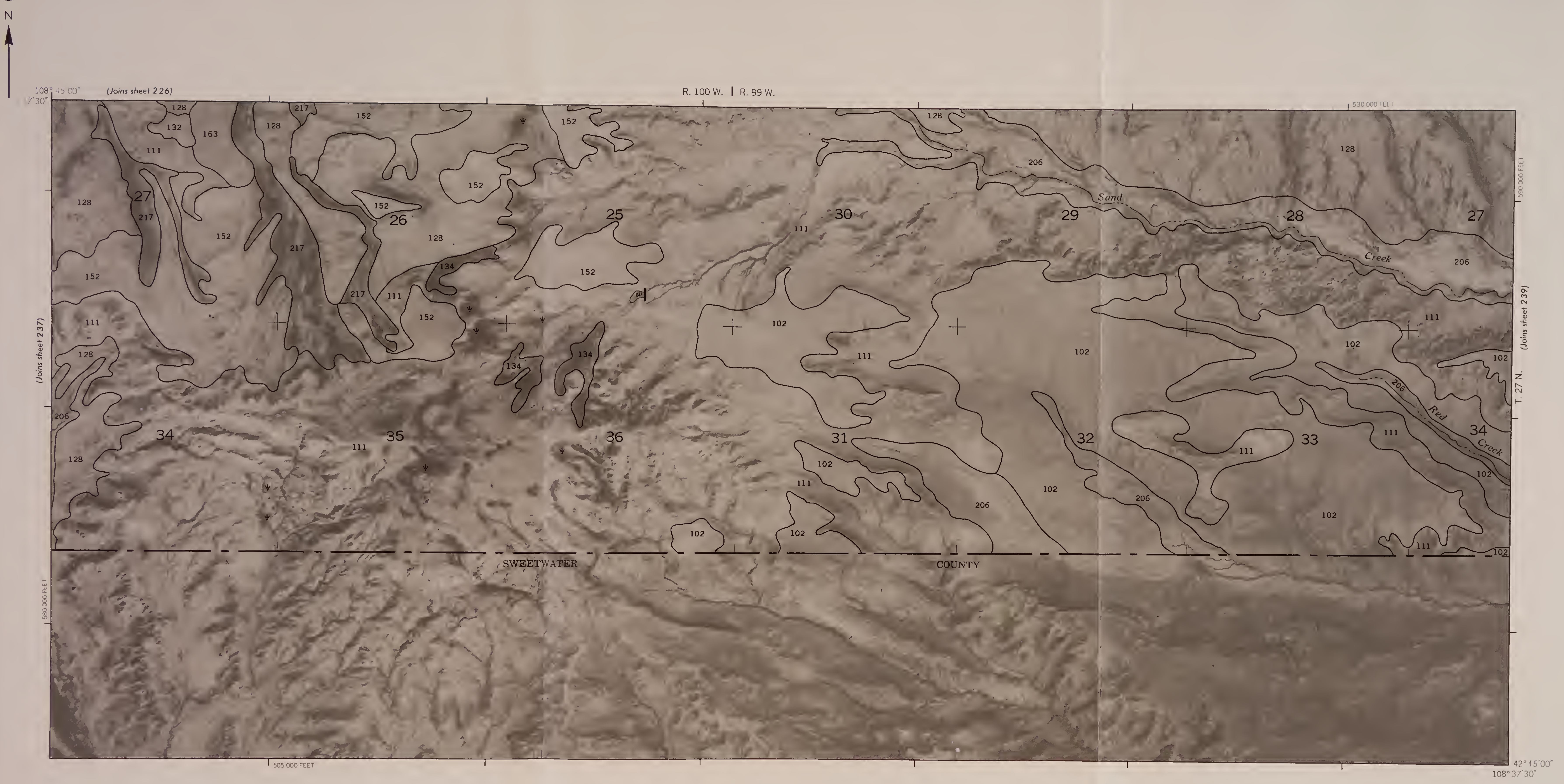
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 237

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 238



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

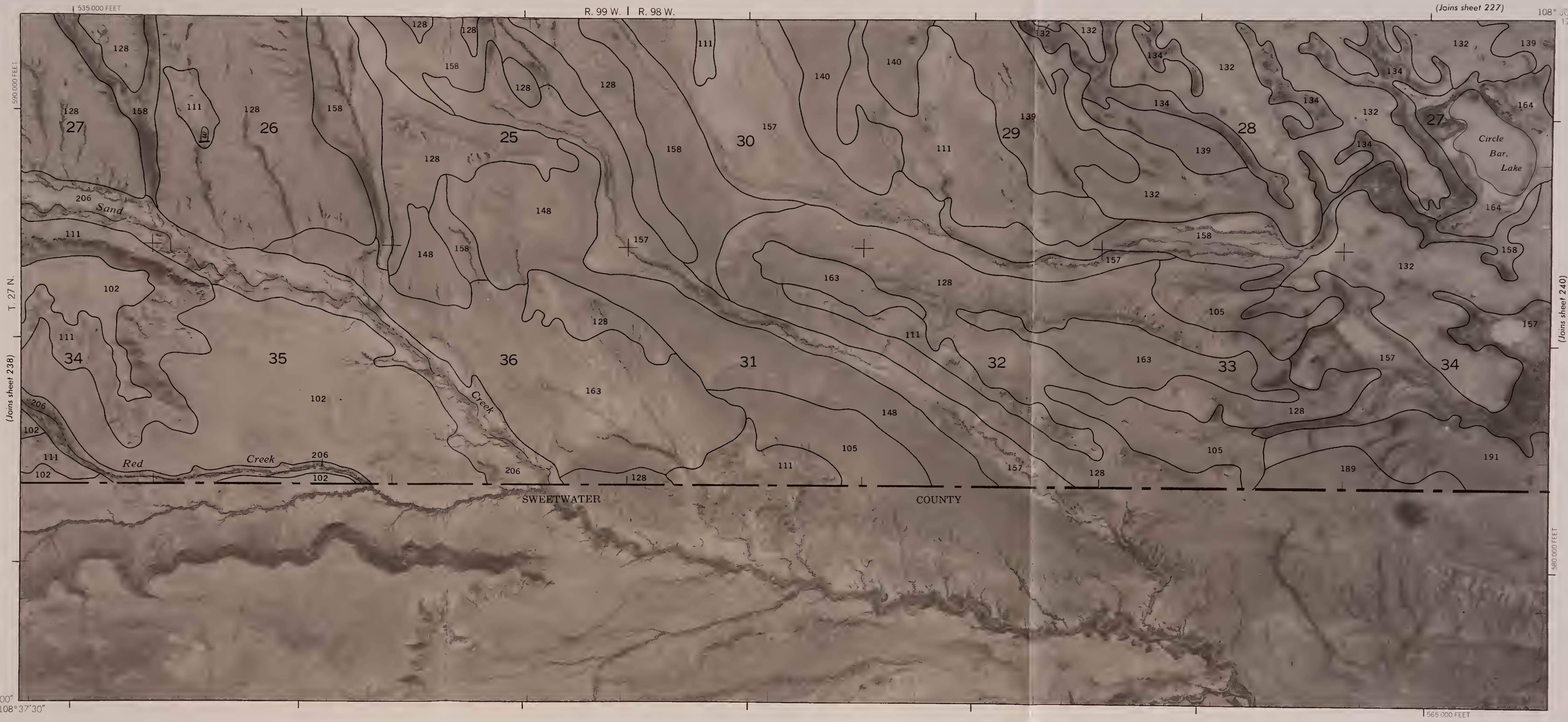
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 238

This soil survey map was compiled by the U S Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned

239

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 239

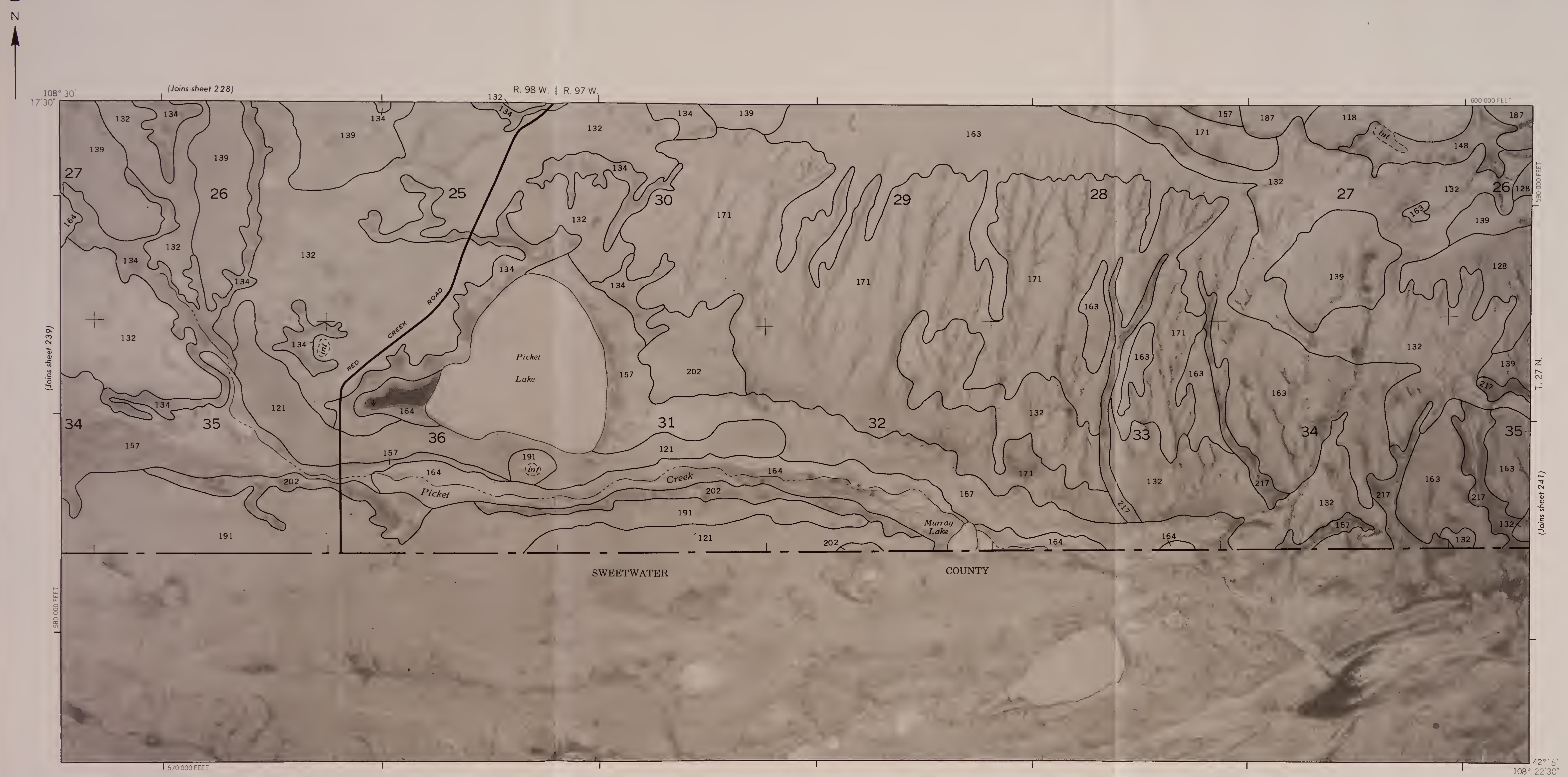


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 240



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 240

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

241

N

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 241

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 242

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

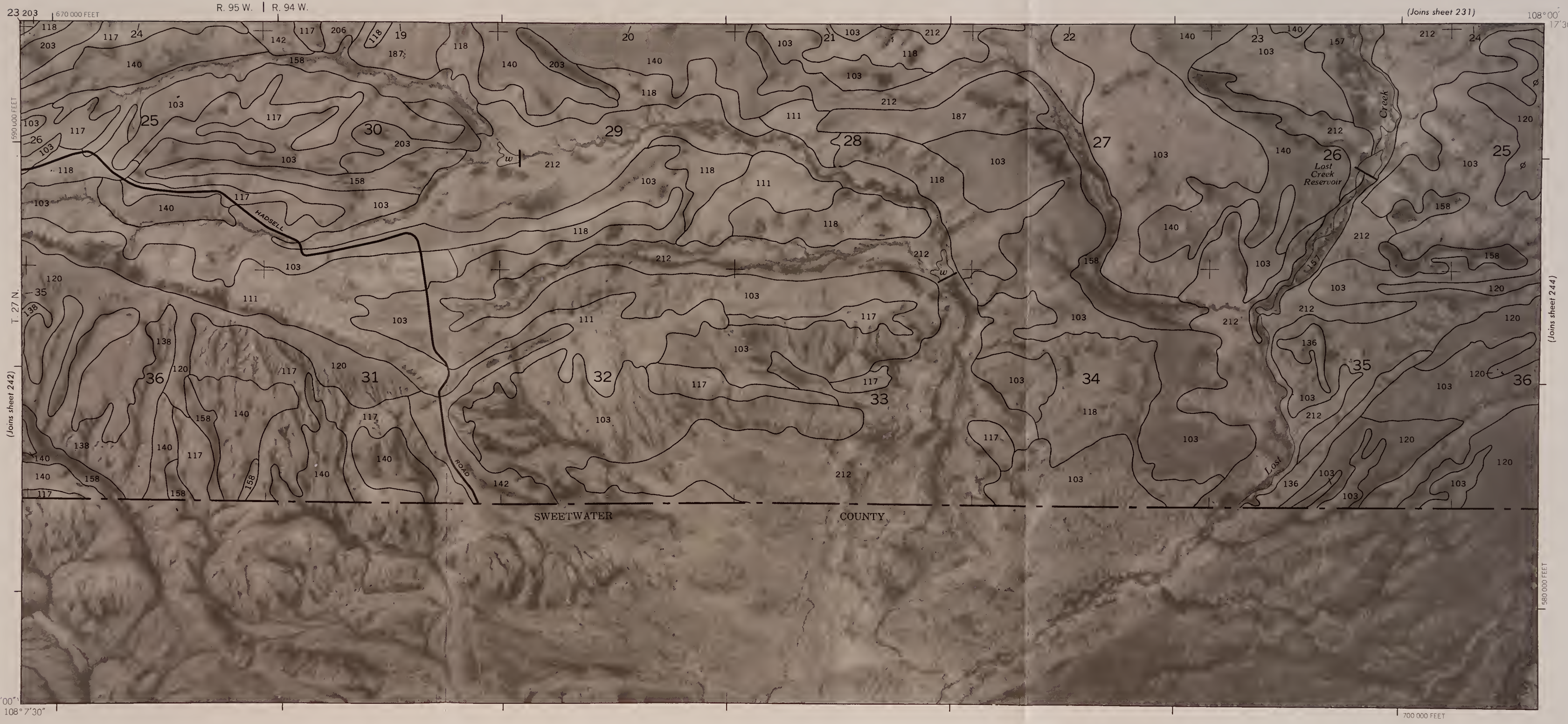
SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 242

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

243

N



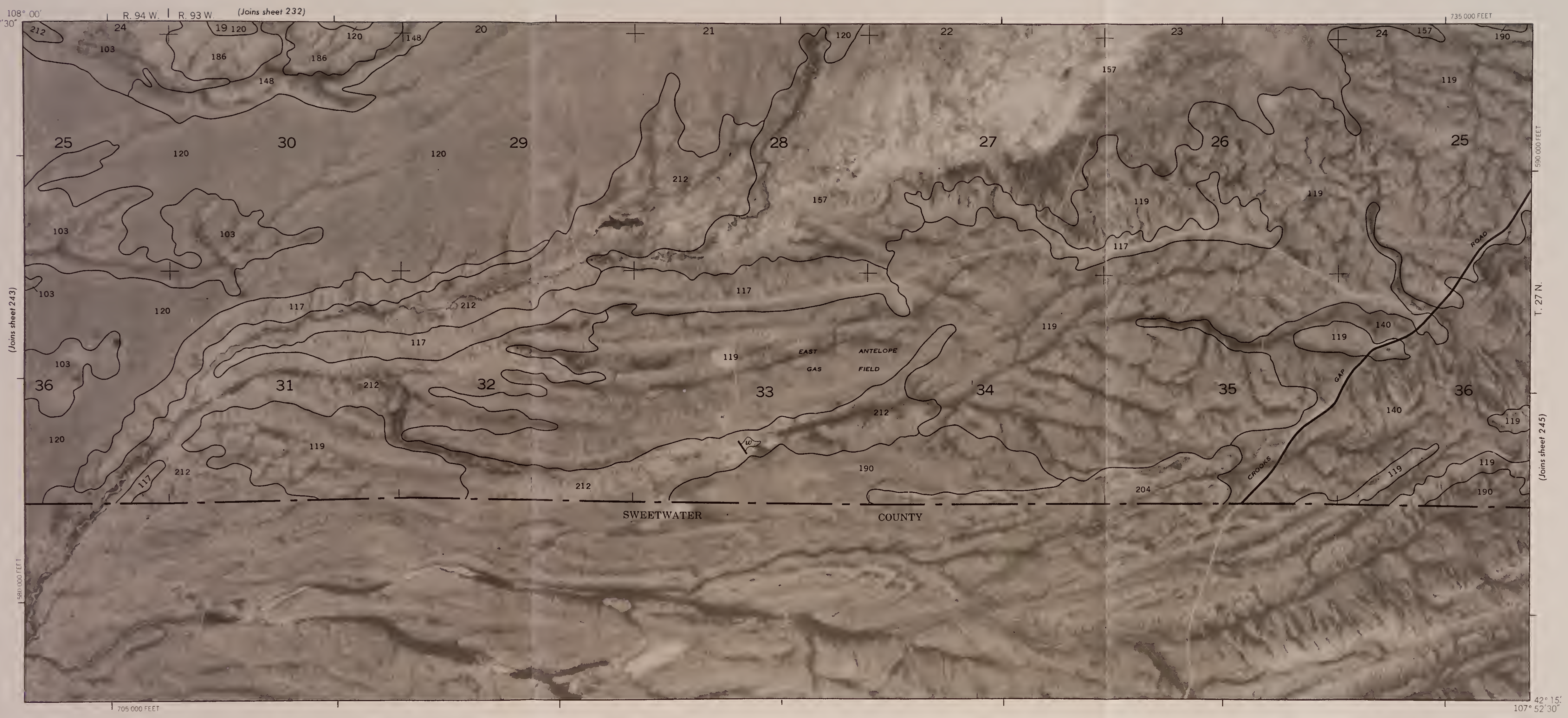
1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 243

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 244

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

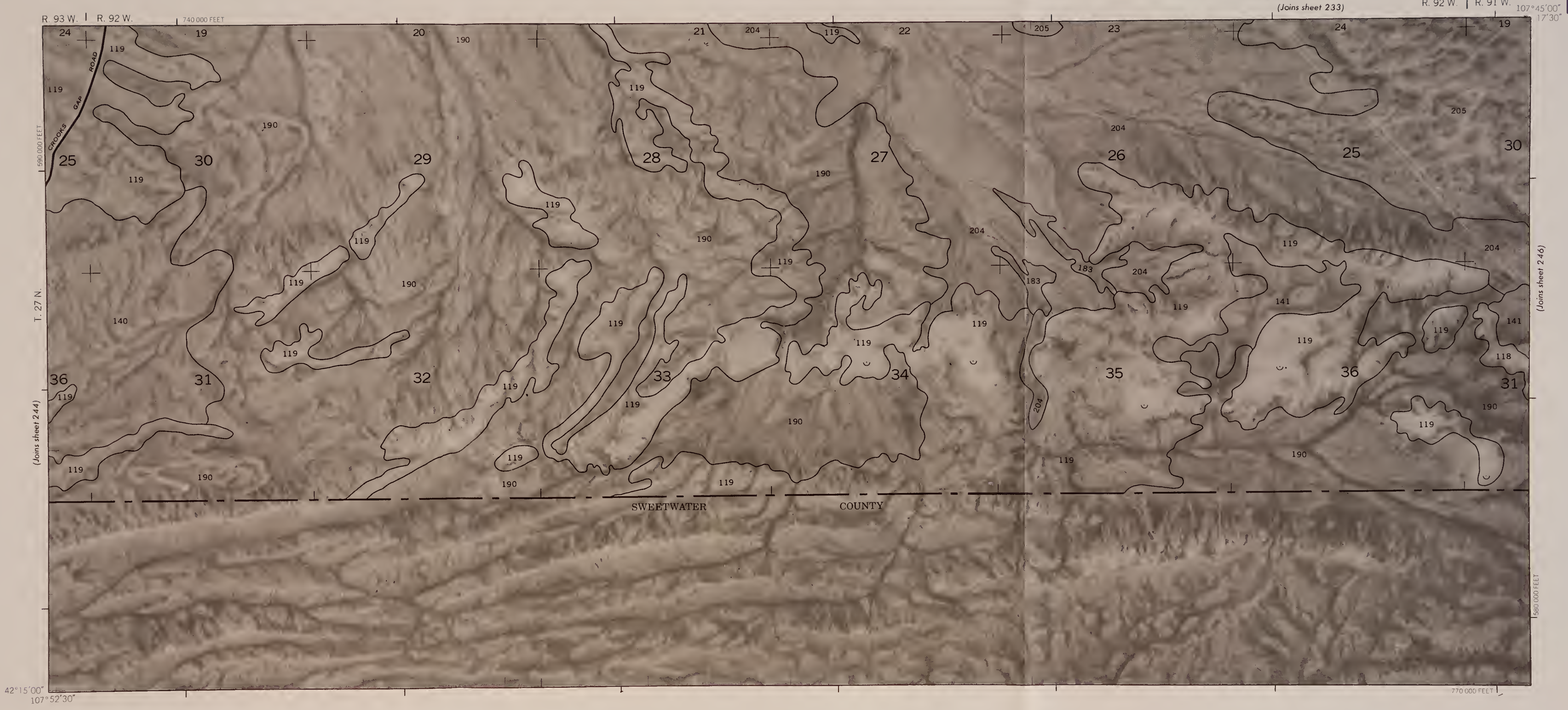
FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 244

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 245

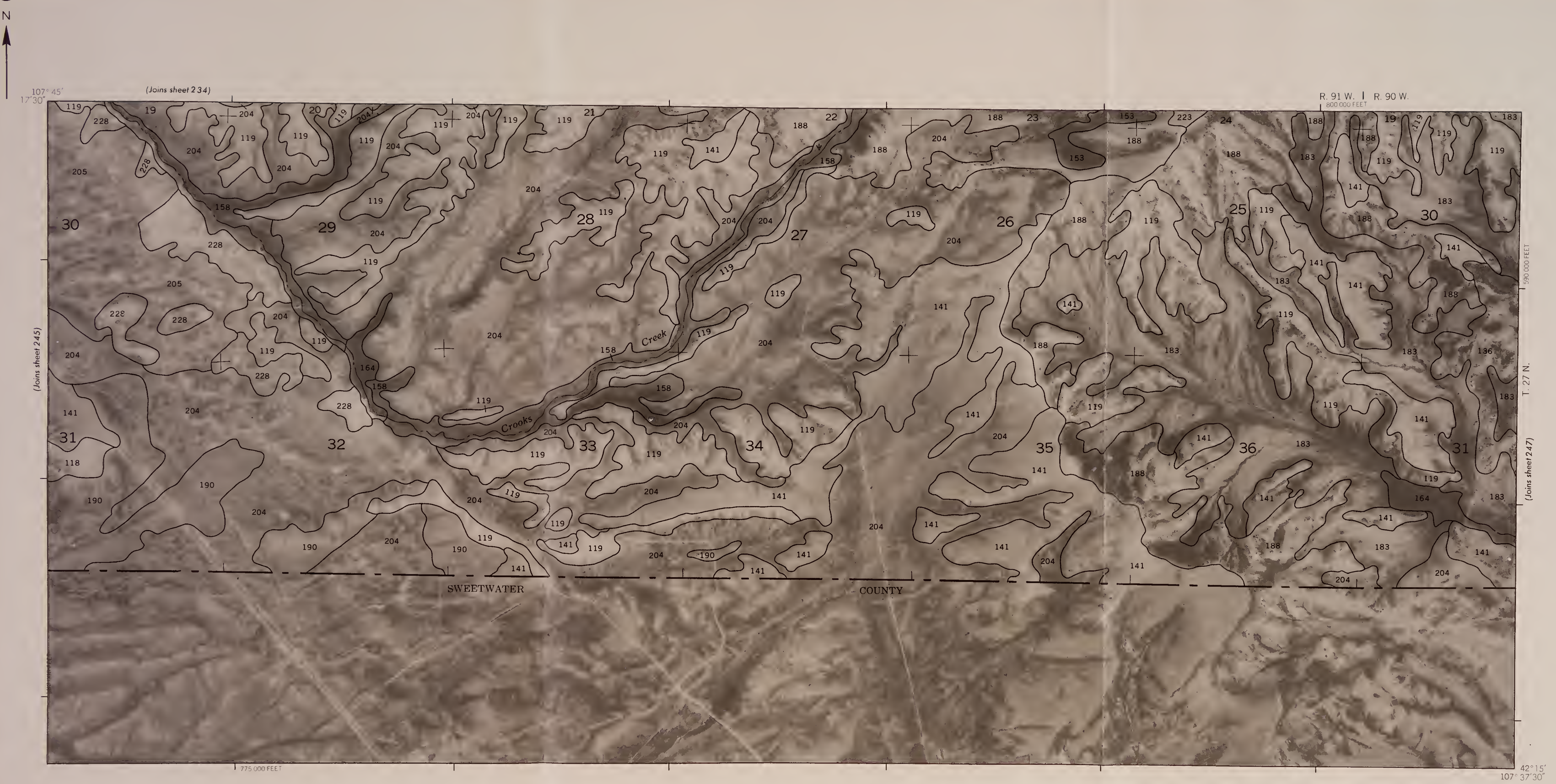
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 245



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF FREMONT COUNTY, WYOMING, EAST PART AND DUBOIS AREA — SHEET NUMBER 246



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 246

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

247

N

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

FREMONT COUNTY EASTERN PART AND DUBOIS AREA, WYOMING NO. 247

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000