APPENDIX A

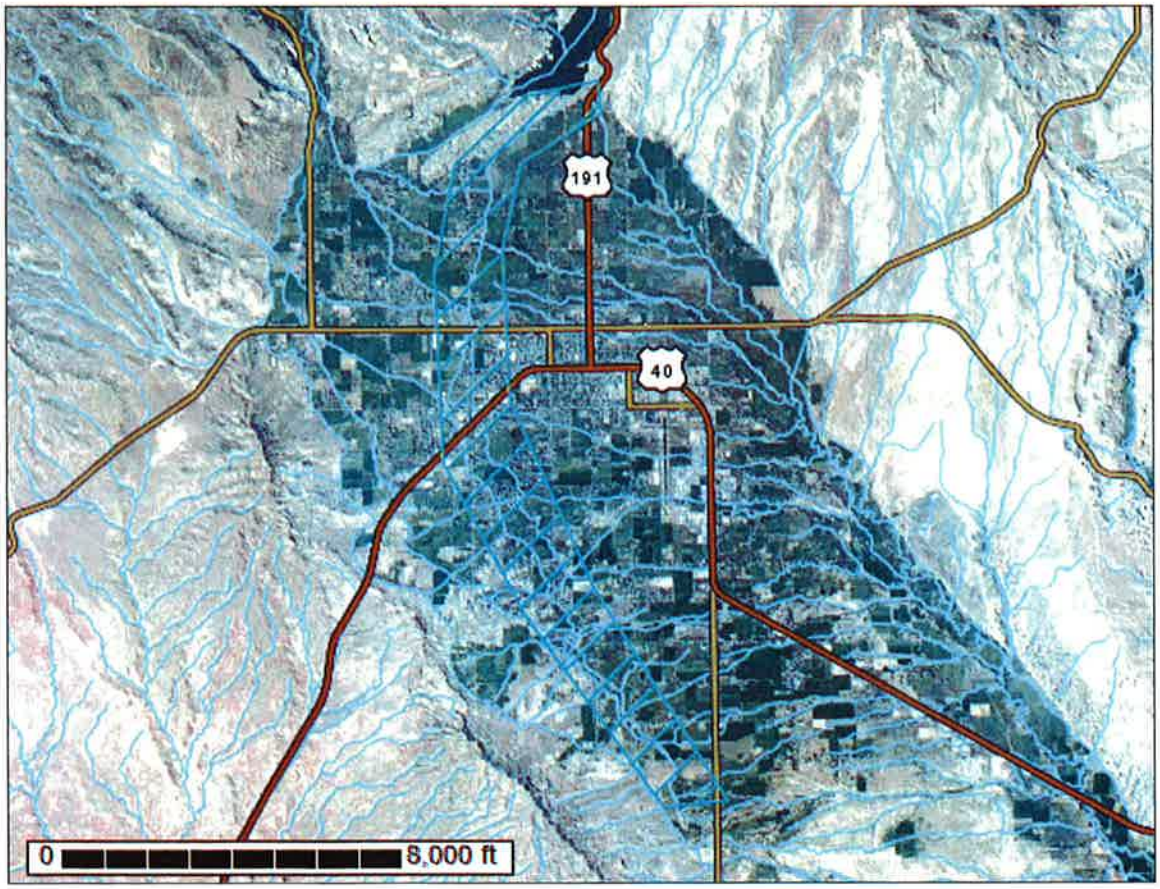
SOIL UNIT DESCRIPTIONS

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Uintah Area, Utah - Parts of Daggett, Grand and Uintah Counties



September 13, 2013

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

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

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

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

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

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

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

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

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

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

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

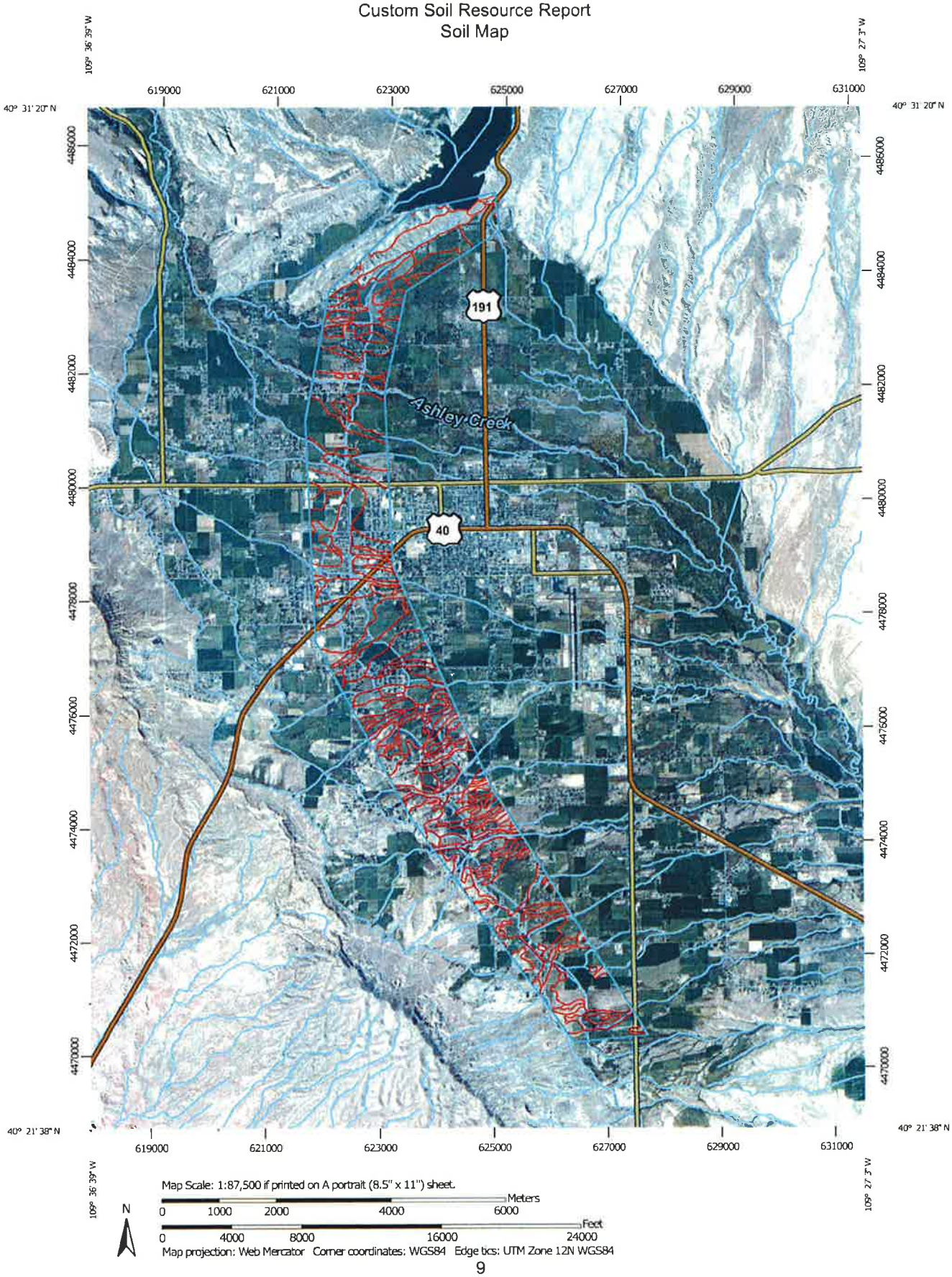
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree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

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

Soil Map

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

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Uintah Area, Utah - Parts of Daggett, Grand and Uintah Counties
Survey Area Data: Version 7, Oct 5, 2009

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

Date(s) aerial images were photographed: Jun 27, 2010—Sep 7, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Uintah Area, Utah - Parts of Daggett, Grand and Uintah Counties (UT047)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
1	Abracon loam, 1 to 3 percent slopes	75.7	1.3%
2	Abracon loam, 3 to 8 percent slopes	6.5	0.1%
6	Ashley loam, 0 to 2 percent slopes	200.2	3.5%
9	Badland-Montwel complex, 50 to 90 percent slopes	75.3	1.3%
23	Blackston loam, 0 to 2 percent slopes	74.5	1.3%
24	Blackston loam, 2 to 4 percent slopes	35.4	0.6%
25	Blackston loam, 4 to 8 percent slopes	33.7	0.6%
61	Crib loam, 1 to 3 percent slopes	18.4	0.3%
63	Dams	12.0	0.2%
71	Firstgap loam, 2 to 20 percent slopes	76.7	1.3%
77	Gerst-Rock outcrop complex, 4 to 40 percent slopes	199.7	3.5%
89	Green River loam, 0 to 2 percent slopes, rarely flooded	194.7	3.4%
91	Greybull clay loam, 4 to 20 percent slopes	134.6	2.3%
93	Greybull loam, 4 to 8 percent slopes	193.7	3.4%
95	Hanksville silty clay loam, 2 to 25 percent slopes	7.8	0.1%
109	Honlu very cobbly sandy loam, 8 to 15 percent slopes	0.0	0.0%
131	Lind loam, 0 to 2 percent slopes	53.0	0.9%
132	Lind loam, 2 to 4 percent slopes	570.8	9.9%
133	Mespun fine sand, 4 to 25 percent slopes	0.1	0.0%
153	Motto-Muff-Rock outcrop complex, 2 to 25 percent slopes	1.6	0.0%
160	Nakoy loamy fine sand, 1 to 5 percent slopes	12.6	0.2%
162	Nolava-Nolava, wet complex, 0 to 2 percent slopes	439.2	7.6%
163	Nolava-Nolava, wet complex, 2 to 4 percent slopes	764.7	13.3%

Uintah Area, Utah - Parts of Daggett, Grand and Uintah Counties (UT047)			
Map Unit Symbol	**Map Unit Name**	**Acres In AOI**	**Percent of AOI**
164	Nolava loam, 4 to 8 percent slopes	51.6	0.9%
166	Ohtog-Parohtog complex, 0 to 2 percent slopes	76.3	1.3%
181	Pits, gravel	36.7	0.6%
189	Riemod loam, 2 to 4 percent slopes	2.4	0.0%
192	Robido-Uver complex, 1 to 4 percent slopes	302.2	5.3%
206	Shotnick sandy loam, 2 to 4 percent slopes	229.0	4.0%
207	Shotnick sandy loam, 4 to 8 percent slopes	41.4	0.7%
209	Shotnick-Walkup complex, 0 to 2 percent slopes	422.4	7.4%
240	Turzo clay loam, 4 to 8 percent slopes	32.2	0.6%
243	Turzo-Umbo complex, 0 to 2 percent slopes	555.4	9.7%
244	Turzo-Umbo complex, 2 to 4 percent slopes	148.2	2.6%
251	Umbo clay loam, 0 to 2 percent slopes	220.5	3.8%
254	Utaline very gravelly sandy loam, 2 to 8 percent slopes	5.4	0.1%
255	Utaline very gravelly sandy loam, 8 to 25 percent slopes	0.8	0.0%
275	Wyasket loam, 0 to 2 percent slopes	174.7	3.0%
276	Wyasket loam, 2 to 4 percent slopes	171.5	3.0%
277	Wyasket peat, 0 to 2 percent slopes, ponded	67.6	1.2%
285	Water	25.8	0.4%
Totals for Area of Interest		**5,745.3**	**100.0%**

Map Unit Descriptions

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

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability

of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

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

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

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

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and

relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas.* Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Uintah Area, Utah - Parts of Daggett, Grand and Uintah Counties

1—Abracon loam, 1 to 3 percent slopes

Map Unit Setting

Elevation: 5,300 to 5,500 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 49 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition

Abracon and similar soils: 85 percent
Minor components: 15 percent

Description of Abracon

Setting

Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Slope alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: High (about 9.6 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Semidesert Loam (Wyoming Big Sagebrush) (R034XY212UT)

Typical profile

0 to 8 inches: Loam
8 to 12 inches: Loam
12 to 52 inches: Loam
52 to 60 inches: Loam

Minor Components

Cobbra

Percent of map unit: 5 percent

Solirec
Percent of map unit: 5 percent

Clapper
Percent of map unit: 5 percent

2—Abracon loam, 3 to 8 percent slopes

Map Unit Setting
Elevation: 5,500 to 6,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 49 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition
Abracon and similar soils: 85 percent
Minor components: 15 percent

Description of Abracon

Setting
Landform: Fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Slope alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: High (about 9.6 inches)

Interpretive groups
Farmland classification: Not prime farmland
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Semidesert Loam (Wyoming Big Sagebrush) (R034XY212UT)

Typical profile

0 to 4 inches: Loam
4 to 10 inches: Loam
10 to 51 inches: Loam
51 to 60 inches: Loam

Minor Components

Clapper, very cobbly loam

Percent of map unit: 8 percent
Ecological site: Semidesert Stony Loam (Utah Juniper-Pinyon) (R034XY247UT)
Other vegetative classification: Semidesert Stony Loam (Utah Juniper-Pinyon) (034XY247UT_2)

Hanksville

Percent of map unit: 7 percent
Ecological site: Desert Clay (Shadscale) (R034XY104UT)
Other vegetative classification: Desert Clay (Shadscale) (034XY104UT_2)

6—Ashley loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 5,000 to 5,700 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Ashley and similar soils: 85 percent
Minor components: 15 percent

Description of Ashley

Setting

Landform: Flood plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Coarse-loamy alluvium over fragmental alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 30 to 48 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Moderate (about 6.2 inches)

Interpretive groups
Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 3w
Land capability (nonirrigated): 6w
Hydrologic Soil Group: C
Ecological site: Semiwet Streambank (Narrfowleaf cottonwood) (R034XY019UT)

Typical profile
0 to 7 inches: Loam
7 to 16 inches: Loam
16 to 30 inches: Very fine sandy loam
30 to 36 inches: Sandy loam
36 to 60 inches: Cobbles, error

Minor Components

Turzo, clay loam
Percent of map unit: 8 percent
Landform: Terraces
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Nolava
Percent of map unit: 7 percent
Landform: Fan remnants
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

9—Badland-Montwel complex, 50 to 90 percent slopes

Map Unit Setting
Elevation: 5,200 to 5,800 feet
Mean annual precipitation: 5 to 10 inches
Mean annual air temperature: 45 to 49 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition
Badland: 55 percent
Montwel and similar soils: 30 percent
Minor components: 15 percent

Description of Badland

Setting
Landform: Ridges, erosion remnants, hills
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

Properties and qualities

Slope: 50 to 90 percent
Depth to restrictive feature: 0 to 2 inches to paralithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 10 percent
Maximum salinity: Very slightly saline to strongly saline (4.0 to 20.0 mmhos/cm)
Sodium adsorption ratio, maximum: 30.0
Available water capacity: Very low (about 0.1 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 8e
Hydrologic Soil Group: D

Typical profile

0 to 2 inches: Clay
2 to 12 inches: Weathered bedrock

Description of Montwel

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Colluvium over residuum derived from shale, siltstone, and sandstone

Properties and qualities

Slope: 50 to 90 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 10 percent
Maximum salinity: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Moderate (about 6.4 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 8e
Hydrologic Soil Group: C
Ecological site: Desert Very Steep Shallow Loam (Shadscale) (R034XY133UT)

Typical profile

0 to 2 inches: Clay loam
2 to 24 inches: Clay loam
24 to 36 inches: Silty clay loam

36 to 40 inches: Weathered bedrock

Minor Components

Denco

Percent of map unit: 5 percent
Ecological site: Desert Clay (Shadscale) (R034XY104UT)
Other vegetative classification: Desert Clay (Shadscale) (034XY104UT_2)

Mikim, loam

Percent of map unit: 5 percent
Ecological site: Semidesert Loam (Wyoming Big Sagebrush) (R034XY212UT)

Rock outcrop

Percent of map unit: 5 percent

23—Blackston loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 4,900 to 5,700 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Blackston and similar soils: 85 percent
Minor components: 15 percent

Description of Blackston

Setting

Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Alluvium and slope alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0

Available water capacity: Low (about 5.2 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 8 inches: Loam
8 to 19 inches: Loam
19 to 28 inches: Gravelly loam
28 to 36 inches: Extremely cobbly loam
36 to 44 inches: Extremely cobbly sandy loam
44 to 60 inches: Extremely cobbly loamy sand

Minor Components

Nolava

Percent of map unit: 8 percent
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Turzo, clay loam

Percent of map unit: 7 percent
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

24—Blackston loam, 2 to 4 percent slopes

Map Unit Setting

Elevation: 4,900 to 5,700 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Blackston and similar soils: 85 percent
Minor components: 15 percent

Description of Blackston

Setting

Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Alluvium and slope alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Low (about 5.2 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 8 inches: Loam
8 to 19 inches: Loam
19 to 28 inches: Gravelly loam
28 to 36 inches: Extremely cobbly loam
36 to 44 inches: Extremely cobbly sandy loam
44 to 60 inches: Extremely cobbly loamy sand

Minor Components

Nolava

Percent of map unit: 8 percent
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Turzo, clay loam

Percent of map unit: 7 percent
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

25—Blackston loam, 4 to 8 percent slopes

Map Unit Setting

Elevation: 4,900 to 5,700 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Blackston and similar soils: 85 percent
Minor components: 15 percent

Description of Blackston

Setting

Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Alluvium and slope alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Low (about 5.2 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 8 inches: Loam
8 to 19 inches: Loam
19 to 28 inches: Gravelly loam
28 to 36 inches: Extremely cobbly loam
36 to 44 inches: Extremely cobbly sandy loam
44 to 60 inches: Extremely cobbly loamy sand

Minor Components

Nolava

Percent of map unit: 8 percent

Hiko springs

Percent of map unit: 7 percent

61—Crib loam, 1 to 3 percent slopes

Map Unit Setting

Elevation: 4,900 to 6,300 feet

Mean annual precipitation: 5 to 12 inches
Mean annual air temperature: 45 to 49 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition
Crib and similar soils: 85 percent
Minor components: 15 percent

Description of Crib

Setting
Landform: Strath terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium over glaciofluvial deposits derived from sandstone, limestone, shale, and quartzite

Properties and qualities
Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 55 percent
Maximum salinity: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups
Farmland classification: Not prime farmland
Land capability classification (irrigated): 4w
Land capability (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: Semidesert Loam (Wyoming Big Sagebrush) (R034XY212UT)

Typical profile
0 to 11 inches: Loam
11 to 42 inches: Clay loam
42 to 60 inches: Extremely cobbly sandy clay loam

Minor Components

Lambsen
Percent of map unit: 8 percent

Crib, strongly saline
Percent of map unit: 7 percent
Landform: Strath terraces

63—Dams

Map Unit Composition

Dams: 100 percent

71—Firstgap loam, 2 to 20 percent slopes

Map Unit Setting

Elevation: 5,000 to 5,300 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Firstgap and similar soils: 85 percent
Minor components: 15 percent

Description of Firstgap

Setting

Landform: Structural benches, hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Slope alluvium over residuum derived shale and siltstone

Properties and qualities

Slope: 2 to 20 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Gypsum, maximum content: 60 percent
Maximum salinity: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: Moderate (about 7.2 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 5 inches: Loam
5 to 14 inches: Gypsiferous loam
14 to 25 inches: Gypsiferous clay loam
25 to 32 inches: Channery clay loam
32 to 48 inches: Clay loam
48 to 52 inches: Weathered bedrock

Minor Components

Uffens, loam

Percent of map unit: 5 percent
Ecological site: Desert Alkali Bench (Castlevalley saltbush) (R034XY101UT)
Other vegetative classification: Desert Alkali Bench (Castlevalley Saltbush) (034XY101UT_2)

Riemod

Percent of map unit: 5 percent

Greybull

Percent of map unit: 5 percent

77—Gerst-Rock outcrop complex, 4 to 40 percent slopes

Map Unit Setting

Elevation: 5,400 to 6,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 49 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition

Gerst and similar soils: 50 percent
Rock outcrop: 35 percent
Minor components: 15 percent

Description of Gerst

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Slope alluvium over residuum derived from shale and sandstone

Properties and qualities

Slope: 4 to 40 percent
Depth to restrictive feature: 6 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Very low (about 1.8 inches)

Interpretive groups
Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Semidesert Shallow Loam (Utah Juniper-Pinyon) (R034XY233UT)
Other vegetative classification: Semidesert Shallow Loam (Utah Juniper-Pinyon) (034XY233UT_2)

Typical profile
0 to 2 inches: Loam
2 to 12 inches: Parachannery loam
12 to 22 inches: Weathered bedrock

Description of Rock Outcrop

Setting
Landform: Ledges, cliffs, erosion remnants, escarpments
Down-slope shape: Convex
Across-slope shape: Convex

Properties and qualities
Slope: 4 to 40 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Available water capacity: Very low (about 0.0 inches)

Interpretive groups
Farmland classification: Not prime farmland
Land capability (nonirrigated): 8s
Hydrologic Soil Group: D

Typical profile
0 to 60 inches: Bedrock

Minor Components

Mespun
Percent of map unit: 9 percent

Denco, silty clay loam
Percent of map unit: 6 percent
Ecological site: Desert Clay (Shadscale) (R034XY104UT)
Other vegetative classification: Desert Clay (Shadscale) (034XY104UT_2)

89—Green River loam, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

Elevation: 4,600 to 5,000 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Green river and similar soils: 85 percent
Minor components: 15 percent

Description of Green River

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium derived from sandstone and shale

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Slightly saline to moderately saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: Low (about 5.4 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4w
Land capability (nonirrigated): 7w
Hydrologic Soil Group: C
Ecological site: Alkali Bottom (Alkali sacaton) (R034XY002UT)

Typical profile

0 to 2 inches: Loam
2 to 60 inches: Stratified coarse sand to loam

Minor Components

Ashley
Percent of map unit: 5 percent

Wyasket, silty clay loam
Percent of map unit: 5 percent
Landform: Drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: Alkali Bottom (Alkali sacaton) (R034XY002UT)

Shotnick, sandy loam
Percent of map unit: 5 percent

91—Greybull clay loam, 4 to 20 percent slopes

Map Unit Setting
Elevation: 4,800 to 5,000 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition
Greybull and similar soils: 85 percent
Minor components: 15 percent

Description of Greybull

Setting
Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Slope alluvium over residuum derived from shale

Properties and qualities
Slope: 4 to 20 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Very slightly saline to moderately saline (4.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: Moderate (about 6.7 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: Desert Shallow Loam (Shadscale) (R034XY121UT)

Typical profile

0 to 3 inches: Clay loam
3 to 9 inches: Loam, clay loam
9 to 26 inches: Clay loam, loam
26 to 36 inches: Weathered bedrock

Minor Components

Firstgap

Percent of map unit: 4 percent

Muff

Percent of map unit: 4 percent

Uffens, loam

Percent of map unit: 4 percent
Ecological site: Desert Alkali Bench (Castlevalley saltbush) (R034XY101UT)
Other vegetative classification: Desert Alkali Bench (Castlevalley Saltbush) (034XY101UT_2)

Nolava

Percent of map unit: 3 percent

93—Greybull loam, 4 to 8 percent slopes

Map Unit Setting

Elevation: 4,700 to 5,200 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Greybull and similar soils: 85 percent
Minor components: 15 percent

Description of Greybull

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Slope alluvium over residuum derived from shale

Properties and qualities

Slope: 4 to 8 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 3 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Low (about 5.6 inches)

Interpretive groups
Farmland classification: Not prime farmland
Land capability classification (irrigated): 4e
Land capability (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: Desert Shallow Loam (Shadscale) (R034XY121UT)

Typical profile
0 to 7 inches: Loam
7 to 39 inches: Loam
39 to 49 inches: Weathered bedrock

Minor Components

Turzo, clay loam
Percent of map unit: 8 percent
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Nolava
Percent of map unit: 7 percent

95—Hanksville silty clay loam, 2 to 25 percent slopes

Map Unit Setting
Elevation: 4,800 to 6,100 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 49 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition
Hanksville and similar soils: 85 percent
Minor components: 15 percent

Description of Hanksville

Setting
Landform: Hills
Landform position (three-dimensional): Side slope

Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Slope alluvium over residuum from shale

Properties and qualities

Slope: 2 to 25 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.01 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Gypsum, maximum content: 10 percent
Maximum salinity: Nonsaline to moderately saline (2.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: Desert Shallow Clay (Mat Saltbush) (R034XY117UT)

Typical profile

0 to 3 inches: Silty clay loam
3 to 33 inches: Silty clay
33 to 37 inches: Weathered bedrock

Minor Components

Leeko

Percent of map unit: 5 percent

Uffens, loam

Percent of map unit: 5 percent
Ecological site: Desert Alkali Bench (Castlevalley saltbush) (R034XY101UT)
Other vegetative classification: Desert Alkali Bench (Castlevalley Saltbush) (034XY101UT_2)

Greybull

Percent of map unit: 5 percent

109—Honlu very cobbly sandy loam, 8 to 15 percent slopes

Map Unit Setting

Elevation: 5,500 to 6,800 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 49 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition

Honlu and similar soils: 85 percent
Minor components: 15 percent

Description of Honlu

Setting

Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Slope alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Moderate (about 7.3 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Semidesert Loam (Wyoming Big Sagebrush) (R034XY212UT)

Typical profile

0 to 5 inches: Very cobbly sandy loam
5 to 15 inches: Gravelly loam
15 to 60 inches: Gravelly loam

Minor Components

Nolava

Percent of map unit: 5 percent

Cliff

Percent of map unit: 5 percent

Utaline

Percent of map unit: 5 percent

131—Lind loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 4,900 to 5,600 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Lind and similar soils: 85 percent
Minor components: 15 percent

Description of Lind

Setting

Landform: Structural benches, fan remnants
Down-slope shape: Linear, concave
Across-slope shape: Linear, convex
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 3 percent
Maximum salinity: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Moderate (about 8.8 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4w
Land capability (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 5 inches: Loam
5 to 11 inches: Loam
11 to 56 inches: Loam
56 to 60 inches: Sandy loam

Minor Components

Nolava wet
Percent of map unit: 5 percent

Hiko springs
Percent of map unit: 5 percent

Lind moderately saline
Percent of map unit: 5 percent

132—Lind loam, 2 to 4 percent slopes

Map Unit Setting
Elevation: 4,900 to 5,600 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition
Lind and similar soils: 90 percent
Minor components: 10 percent

Description of Lind

Setting
Landform: Fan remnants, structural benches
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities
Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 3 percent
Maximum salinity: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Moderate (about 9.0 inches)

Interpretive groups
Farmland classification: Not prime farmland
Land capability classification (irrigated): 4w
Land capability (nonirrigated): 7e
Hydrologic Soil Group: C

Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 6 inches: Loam
6 to 19 inches: Loam
19 to 60 inches: Loam

Minor Components

Nolava, wet

Percent of map unit: 5 percent

Lind, moderately saline

Percent of map unit: 5 percent

133—Mespun fine sand, 4 to 25 percent slopes

Map Unit Setting

Elevation: 5,000 to 6,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 49 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition

Mespun and similar soils: 85 percent
Minor components: 15 percent

Description of Mespun

Setting

Landform: Fan remnants, hills
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Convex, linear
Parent material: Eolian deposits derived from sandstone

Properties and qualities

Slope: 4 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.9 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: A

Ecological site: Semidesert Sand (Fourwing Saltbush) (R034XY214UT)
Other vegetative classification: Semidesert Sand (Fourwing Saltbush) (034XY214UT_1)

Typical profile
0 to 9 inches: Fine sand
9 to 60 inches: Loamy fine sand, fine sand

Minor Components

Begay
Percent of map unit: 3 percent

Reepo
Percent of map unit: 3 percent

Yarts, fine sandy loam
Percent of map unit: 3 percent
Landform: Alluvial flats
Ecological site: Semidesert Sandy Loam (Fourwing Saltbush) (R034XY216UT)
Other vegetative classification: Semidesert Sandy Loam (Fourwing Saltbush) (034XY216UT_2)

Milok
Percent of map unit: 3 percent

Montwel, very cobbly clay loam
Percent of map unit: 3 percent
Ecological site: Desert Shallow Loam (Shadscale) (R034XY121UT)

153—Motto-Muff-Rock outcrop complex, 2 to 25 percent slopes

Map Unit Setting
Elevation: 4,700 to 5,400 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition
Motto and similar soils: 40 percent
Muff and similar soils: 35 percent
Rock outcrop: 10 percent
Minor components: 15 percent

Description of Motto

Setting
Landform: Hills, structural benches
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Slope alluvium over residuum derived from shale and sandstone

Properties and qualities

Slope: 2 to 25 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Very slightly saline to slightly saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 60.0
Available water capacity: Very low (about 2.6 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Desert Shallow Clay (Mat Saltbush) (R034XY117UT)
Other vegetative classification: Desert Shallow Clay (Mat Saltbush) (034XY117UT_1)

Typical profile

0 to 2 inches: Very flaggy loam
2 to 12 inches: Clay loam
12 to 14 inches: Clay loam
14 to 17 inches: Extremely channery clay loam
17 to 21 inches: Unweathered bedrock

Description of Muff

Setting

Landform: Strath terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Slope alluvium over residuum derived from shale

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 3 percent
Maximum salinity: Very slightly saline to slightly saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 40.0
Available water capacity: High (about 10.9 inches)

Interpretive groups

Farmland classification: Not prime farmland

Land capability (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: Desert Alkali Bench (Castlevalley saltbush) (R034XY101UT)
Other vegetative classification: Desert Alkali Bench (Castlevalley Saltbush) (034XY101UT_2)

Typical profile

0 to 2 inches: Gravelly sandy loam
2 to 7 inches: Sandy loam
7 to 14 inches: Sandy clay loam, clay loam
14 to 29 inches: Sandy clay loam, clay loam, loam
29 to 39 inches: Weathered bedrock

Description of Rock Outcrop

Setting

Landform: Ledges, cliffs, erosion remnants, escarpments
Down-slope shape: Convex
Across-slope shape: Convex

Properties and qualities

Slope: 2 to 25 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Available water capacity: Very low (about 0.0 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 8s
Hydrologic Soil Group: D

Typical profile

0 to 60 inches: Bedrock

Minor Components

Badland

Percent of map unit: 3 percent

Uffens, sandy loam

Percent of map unit: 3 percent
Ecological site: Alkali Flat (Greasewood) (R034XY006UT)
Other vegetative classification: Alkali Flat (Black Greasewood) (034XY006UT_1)

Cadrina, extremely channery loam

Percent of map unit: 3 percent
Ecological site: Desert Shallow Loam (Shadscale) (R034XY121UT)

Montwel, clay loam

Percent of map unit: 2 percent
Ecological site: Desert Shallow Loam (Shadscale) (R034XY121UT)

Crustown

Percent of map unit: 2 percent

Jenrid

Percent of map unit: 2 percent

160—Nakoy loamy fine sand, 1 to 5 percent slopes

Map Unit Setting

Elevation: 4,700 to 5,300 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Nakoy and similar soils: 85 percent
Minor components: 15 percent

Description of Nakoy

Setting

Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Eolian deposits over alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Very high (about 12.4 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Sandy Loam (Indian Ricegrass) (R034XY115UT)

Typical profile

0 to 14 inches: Loamy fine sand
14 to 25 inches: Sandy loam, fine sandy loam
25 to 72 inches: Sandy loam, fine sandy loam
72 to 80 inches: Sandy loam

Minor Components

Hiko springs
Percent of map unit: 8 percent

Tipperary
Percent of map unit: 7 percent

162—Nolava-Nolava, wet complex, 0 to 2 percent slopes

Map Unit Setting
Elevation: 4,800 to 5,500 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition
Nolava and similar soils: 60 percent
Nolava, wet, and similar soils: 25 percent
Minor components: 15 percent

Description of Nolava

Setting
Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Very high (about 16.3 inches)

Interpretive groups
Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 10 inches: Loam
10 to 19 inches: Loam
19 to 34 inches: Clay loam, loam
34 to 60 inches: Loam, clay loam

Description of Nolava, Wet

Setting

Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 42 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Very high (about 16.6 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 7 inches: Loam
7 to 17 inches: Loam
17 to 60 inches: Clay loam, loam

Minor Components

Shotnick, sandy loam

Percent of map unit: 8 percent

Nakoy

Percent of map unit: 7 percent

163—Nolava-Nolava, wet complex, 2 to 4 percent slopes

Map Unit Setting

Elevation: 4,700 to 5,500 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Nolava and similar soils: 65 percent
Nolava, wet, and similar soils: 20 percent
Minor components: 15 percent

Description of Nolava

Setting

Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Very high (about 13.9 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 13 inches: Loam
13 to 20 inches: Loam
20 to 40 inches: Loam, clay loam
40 to 46 inches: Loam, clay loam
46 to 65 inches: Sandy clay loam

Description of Nolava, Wet

Setting

Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 42 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Very high (about 16.6 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 7 inches: Loam
7 to 17 inches: Loam
17 to 60 inches: Clay loam, loam

Minor Components

Shotnick, sandy loam

Percent of map unit: 5 percent

Abracon, loam

Percent of map unit: 5 percent

Nakoy

Percent of map unit: 5 percent

164—Nolava loam, 4 to 8 percent slopes

Map Unit Setting

Elevation: 4,700 to 5,500 feet

Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Nolava and similar soils: 85 percent
Minor components: 15 percent

Description of Nolava

Setting

Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Very high (about 18.0 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 4 inches: Loam
4 to 8 inches: Loam
8 to 43 inches: Clay loam, loam
43 to 60 inches: Loam, clay loam

Minor Components

Turzo, clay loam

Percent of map unit: 8 percent
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Utaline

Percent of map unit: 7 percent

166—Ohtog-Parohtog complex, 0 to 2 percent slopes

Map Unit Setting

Elevation: 4,600 to 5,400 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Ohtog and similar soils: 60 percent
Parohtog and similar soils: 30 percent
Minor components: 10 percent

Description of Ohtog

Setting

Landform: Alluvial flats
Landform position (three-dimensional): Rise, talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: High (about 9.9 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: Loamy Bottom (Basin Big Sagebrush) (R034XY009UT)

Typical profile

0 to 8 inches: Loam
8 to 28 inches: Loam
28 to 60 inches: Clay loam

Description of Parohtog

Setting

Landform: Alluvial flats
Landform position (three-dimensional): Talf, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: High (about 9.5 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: Loamy Bottom (Basin Big Sagebrush) (R034XY009UT)

Typical profile

0 to 10 inches: Loam
10 to 60 inches: Stratified sandy loam to clay loam

Minor Components

Shotnick, loamy sandy

Percent of map unit: 5 percent

Hiko springs

Percent of map unit: 3 percent

Tipperary

Percent of map unit: 2 percent

181—Pits, gravel

Map Unit Composition

Pits, gravel: 85 percent

Minor components: 15 percent

Description of Pits, Gravel

Interpretive groups
Farmland classification: Not prime farmland
Land capability (nonirrigated): 8s
Hydrologic Soil Group: A

Typical profile
0 to 6 inches: Extremely gravelly sand
6 to 60 inches: Extremely gravelly sand, extremely gravelly coarse sand, very gravelly coarse sand

Minor Components

Utaline, very gravelly sandy loam
Percent of map unit: 6 percent

Honlu, sandy loam
Percent of map unit: 6 percent
Ecological site: Semidesert Loam (Wyoming Big Sagebrush) (R034XY212UT)

Hiko springs, fine sandy loam
Percent of map unit: 3 percent
Ecological site: Desert Sandy Loam (Indian Ricegrass) (R034XY115UT)

189—Riemod loam, 2 to 4 percent slopes

Map Unit Setting
Elevation: 4,800 to 5,600 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition
Riemod and similar soils: 85 percent
Minor components: 15 percent

Description of Riemod

Setting
Landform: Fan remnants, strath terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Convex, linear
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities
Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 10 percent
Maximum salinity: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Very high (about 17.6 inches)

Interpretive groups
Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile
0 to 2 inches: Loam
2 to 11 inches: Loam
11 to 48 inches: Clay loam, loam
48 to 60 inches: Clay loam, loam

Minor Components

Hiko springs
Percent of map unit: 8 percent

Blackston
Percent of map unit: 7 percent

192—Robido-Uver complex, 1 to 4 percent slopes

Map Unit Setting
Elevation: 4,700 to 6,400 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 45 to 49 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition
Robido and similar soils: 45 percent
Uver and similar soils: 40 percent
Minor components: 15 percent

Description of Robido

Setting
Landform: Flood plains
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium derived from quartzite, sandstone, limestone, and shale

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Available water capacity: Moderate (about 8.0 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 3w
Land capability (nonirrigated): 6w
Hydrologic Soil Group: B
Ecological site: Semiwet Streambank (Narrfowleaf cottonwood) (R034XY019UT)

Typical profile

0 to 3 inches: Fine sandy loam
3 to 8 inches: Loam
8 to 29 inches: Sandy loam, fine sandy loam
29 to 60 inches: Extremely cobbly loamy sand, extremely cobbly sand

Description of Uver

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium derived quartzite, sandstone, limestone, and shale

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very low (about 2.1 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 6w
Land capability (nonirrigated): 6w
Hydrologic Soil Group: A
Ecological site: Semiwet Streambank (Narrfowleaf cottonwood) (R034XY019UT)

Typical profile

0 to 6 inches: Loam

6 to 15 inches: Extremely cobbly loamy sand
15 to 60 inches: Extremely cobbly sand

Minor Components

Ashley
Percent of map unit: 8 percent

Riverwash
Percent of map unit: 6 percent
Landform: Flood plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave

Gooseneck
Percent of map unit: 1 percent

206—Shotnick sandy loam, 2 to 4 percent slopes

Map Unit Setting
Elevation: 4,700 to 5,500 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition
Shotnick and similar soils: 85 percent
Minor components: 15 percent

Description of Shotnick

Setting
Landform: Alluvial flats
Landform position (three-dimensional): Talf, rise
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Eolian deposits and alluvium derived from sandstone, limestone, and shale

Properties and qualities
Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 1 percent

Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Very high (about 14.5 inches)

Interpretive groups
Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Sandy Loam (Indian Ricegrass) (R034XY115UT)

Typical profile
0 to 8 inches: Sandy loam
8 to 60 inches: Sandy loam, fine sandy loam

Minor Components

Cakehill
Percent of map unit: 3 percent

Uffens, loam
Percent of map unit: 3 percent
Landform: Alluvial flats
Ecological site: Desert Alkali Bench (Castlevalley saltbush) (R034XY101UT)
Other vegetative classification: Desert Alkali Sand (Fourwing Saltbush) (034XY102UT_1)

Tipperary
Percent of map unit: 2 percent

Umbo silty clay loam, silty clay loam
Percent of map unit: 2 percent
Ecological site: Wet Saline Meadow (Inland saltgrass) (R034XY024UT)

Jenrid
Percent of map unit: 2 percent

Nakoy
Percent of map unit: 2 percent

Badland
Percent of map unit: 1 percent

207—Shotnick sandy loam, 4 to 8 percent slopes

Map Unit Setting
Elevation: 4,700 to 5,500 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition
Shotnick and similar soils: 85 percent

Minor components: 15 percent

Description of Shotnick

Setting

Landform: Alluvial flats
Landform position (three-dimensional): Talf, rise
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Eolian deposits and alluvium derived from sandstone, limestone, and shale

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Very high (about 15.0 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Sandy Loam (Indian Ricegrass) (R034XY115UT)

Typical profile

0 to 4 inches: Sandy loam
4 to 60 inches: Fine sandy loam, sandy loam

Minor Components

Turzo, clay loam

Percent of map unit: 9 percent
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Jenrid

Percent of map unit: 6 percent

209—Shotnick-Walkup complex, 0 to 2 percent slopes

Map Unit Setting

Elevation: 4,700 to 5,500 feet
Mean annual precipitation: 5 to 12 inches
Mean annual air temperature: 45 to 49 degrees F

Frost-free period: 110 to 140 days

Map Unit Composition

Shotnick and similar soils: 65 percent
Walkup and similar soils: 25 percent
Minor components: 10 percent

Description of Shotnick

Setting

Landform: Alluvial flats
Landform position (three-dimensional): Rise, talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Eolian deposits and alluvium derived from sandstone, limestone, and shale

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Very high (about 13.7 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: Desert Sandy Loam (Indian Ricegrass) (R034XY115UT)

Typical profile

0 to 8 inches: Sandy loam
8 to 56 inches: Fine sandy loam, sandy loam
56 to 60 inches: Loamy sand

Description of Walkup

Setting

Landform: Alluvial flats
Landform position (three-dimensional): Talf, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium derived from sandstone, shale, and quartzite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Moderate (about 6.8 inches)

Interpretive groups
Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: Desert Sandy Loam (Indian Ricegrass) (R034XY115UT)

Typical profile
0 to 7 inches: Fine sandy loam
7 to 60 inches: Sandy loam

Minor Components

Stygee, silty clay loam
Percent of map unit: 4 percent
Ecological site: Alkali Flat (Greasewood) (R034XY006UT)
Other vegetative classification: Alkali Flat (Black Greasewood) (034XY006UT_1)

Tipperary
Percent of map unit: 3 percent

Umbo, silty clay loam
Percent of map unit: 2 percent
Ecological site: Wet Saline Meadow (Inland saltgrass) (R034XY024UT)

Shotnick, moderately deep
Percent of map unit: 1 percent
Landform: Alluvial flats
Ecological site: Desert Sandy Loam (Indian Ricegrass) (R034XY115UT)

240—Turzo clay loam, 4 to 8 percent slopes

Map Unit Setting
Elevation: 4,600 to 5,600 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition
Turzo and similar soils: 85 percent
Minor components: 15 percent

Description of Turzo

Setting

Landform: Alluvial flats
Landform position (three-dimensional): Talf, rise
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium derived from quartzite, sandstone, limestone, and shale

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: High (about 10.2 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 11 inches: Clay loam
11 to 32 inches: Clay loam
32 to 60 inches: Loam

Minor Components

Blackston

Percent of map unit: 5 percent

Chalkcliff

Percent of map unit: 5 percent

Shotnick, sandy loam

Percent of map unit: 5 percent

243—Turzo-Umbo complex, 0 to 2 percent slopes

Map Unit Setting

Elevation: 4,600 to 5,600 feet

Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Turzo and similar soils: 65 percent
Umbo and similar soils: 20 percent
Minor components: 15 percent

Description of Turzo

Setting

Landform: Alluvial flats
Landform position (three-dimensional): Talf, rise
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium derived from quartzite, sandstone, limestone, and shale

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: High (about 10.2 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 9 inches: Clay loam
9 to 32 inches: Clay loam
32 to 60 inches: Loam

Description of Umbo

Setting

Landform: Alluvial flats
Landform position (three-dimensional): Talf, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium derived from quartzite, sandstone, limestone, and shale

Properties and qualities

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

Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: High (about 11.4 inches)

Interpretive groups
Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile
0 to 10 inches: Clay loam
10 to 52 inches: Clay loam
52 to 60 inches: Clay loam

Minor Components

Turzo, loam
Percent of map unit: 4 percent
Ecological site: Alkali Flat (Greasewood) (R034XY006UT)
Other vegetative classification: Alkali Flat (Black Greasewood) (034XY006UT_1)

Ioka
Percent of map unit: 4 percent

Wyasket, silty clay loam
Percent of map unit: 4 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: Alkali Bottom (Alkali sacaton) (R034XY002UT)

Jenrid
Percent of map unit: 3 percent

244—Turzo-Umbo complex, 2 to 4 percent slopes

Map Unit Setting
Elevation: 4,600 to 5,600 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F

Frost-free period: 110 to 125 days

Map Unit Composition

Turzo and similar soils: 65 percent
Umbo and similar soils: 25 percent
Minor components: 10 percent

Description of Turzo

Setting

Landform: Alluvial flats
Landform position (three-dimensional): Talf, rise
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium derived from quartzite, sandstone, limestone, and shale

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: High (about 10.2 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 11 inches: Clay loam
11 to 32 inches: Clay loam
32 to 60 inches: Loam

Description of Umbo

Setting

Landform: Alluvial flats
Landform position (three-dimensional): Talf, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium derived from quartzite, sandstone, limestone, and shale

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: High (about 11.4 inches)

Interpretive groups
Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile
0 to 10 inches: Clay loam
10 to 52 inches: Clay loam
52 to 60 inches: Clay loam

Minor Components

Jenrid
Percent of map unit: 4 percent

Tipperary
Percent of map unit: 3 percent

Turzo, loam
Percent of map unit: 3 percent
Ecological site: Alkali Flat (Greasewood) (R034XY006UT)
Other vegetative classification: Alkali Flat (Black Greasewood) (034XY006UT_1)

251—Umbo clay loam, 0 to 2 percent slopes

Map Unit Setting
Elevation: 4,600 to 5,600 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition
Umbo and similar soils: 85 percent
Minor components: 15 percent

Description of Umbo

Setting

Landform: Alluvial flats
Landform position (three-dimensional): Talf, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium derived from quartzite, sandstone, limestone, and shale

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: High (about 10.5 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4w
Land capability (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 8 inches: Clay loam
8 to 30 inches: Clay loam
30 to 60 inches: Loam

Minor Components

Wyasket, loam

Percent of map unit: 8 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: Wet Saline Streambank (Coyote willow) (R034XY026UT)
Other vegetative classification: Wet Saline Streambank (Sandbar Willow) (034XY026UT_3)

Jenrid

Percent of map unit: 7 percent

254—Utaline very gravelly sandy loam, 2 to 8 percent slopes

Map Unit Setting

Elevation: 4,700 to 5,700 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Utaline and similar soils: 85 percent
Minor components: 15 percent

Description of Utaline

Setting

Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Low (about 5.3 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 3 inches: Very gravelly sandy loam
3 to 7 inches: Very gravelly loam
7 to 60 inches: Very gravelly loam

Minor Components

Nolava
Percent of map unit: 8 percent

Hiko springs
Percent of map unit: 7 percent

255—Utaline very gravelly sandy loam, 8 to 25 percent slopes

Map Unit Setting
Elevation: 4,700 to 5,700 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition
Utaline and similar soils: 85 percent
Minor components: 15 percent

Description of Utaline

Setting
Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Slope alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities
Slope: 8 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Low (about 5.3 inches)

Interpretive groups
Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Shadscale) (R034XY106UT)

Typical profile

0 to 3 inches: Very gravelly sandy loam
3 to 7 inches: Very gravelly loam
7 to 60 inches: Very gravelly loam

Minor Components

Greybull, clay loam

Percent of map unit: 5 percent

Hiko springs

Percent of map unit: 5 percent

Nolava

Percent of map unit: 5 percent

275—Wyasket loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 4,600 to 5,600 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Wyasket and similar soils: 85 percent
Minor components: 15 percent

Description of Wyasket

Setting

Landform: Flood plains, drainageways
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Very slightly saline to slightly saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: Very high (about 20.8 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 6w
Land capability (nonirrigated): 6w
Hydrologic Soil Group: D
Ecological site: Wet Saline Streambank (Coyote willow) (R034XY026UT)
Other vegetative classification: Wet Saline Streambank (Sandbar Willow) (034XY026UT_3)

Typical profile

0 to 9 inches: Loam
9 to 22 inches: Silty clay loam, silt loam
22 to 60 inches: Clay loam, silt loam, silty clay loam

Minor Components

Umbo, silty clay loam

Percent of map unit: 5 percent
Ecological site: Wet Saline Meadow (Inland saltgrass) (R034XY024UT)

Green river, loam

Percent of map unit: 5 percent
Ecological site: Alkali Bottom (Alkali sacaton) (R034XY002UT)

Turzo, loam

Percent of map unit: 5 percent
Ecological site: Alkali Flat (Greasewood) (R034XY006UT)
Other vegetative classification: Alkali Flat (Black Greasewood) (034XY006UT_1)

276—Wyasket loam, 2 to 4 percent slopes

Map Unit Setting

Elevation: 4,600 to 5,600 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F
Frost-free period: 110 to 125 days

Map Unit Composition

Wyasket and similar soils: 85 percent
Minor components: 15 percent

Description of Wyasket

Setting

Landform: Flood plains, drainageways
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Very slightly saline to slightly saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: Very high (about 20.8 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 6w
Land capability (nonirrigated): 6w
Hydrologic Soil Group: D
Ecological site: Wet Saline Streambank (Coyote willow) (R034XY026UT)
Other vegetative classification: Wet Saline Streambank (Sandbar Willow) (034XY026UT_3)

Typical profile

0 to 9 inches: Loam
9 to 22 inches: Silty clay loam, silt loam
22 to 60 inches: Clay loam, silt loam, silty clay loam

Minor Components

Green river, loam

Percent of map unit: 5 percent
Ecological site: Alkali Bottom (Alkali sacaton) (R034XY002UT)

Umbo, silty clay loam

Percent of map unit: 5 percent
Ecological site: Wet Saline Meadow (Inland saltgrass) (R034XY024UT)

Green river, fine sandy loam

Percent of map unit: 5 percent
Ecological site: River Floodplain (Fremont cottonwood) (R034XY011UT)
Other vegetative classification: River Flood Plain (Fremont Cottonwood) (034XY011UT_1)

277—Wyasket peat, 0 to 2 percent slopes, ponded

Map Unit Setting

Elevation: 4,800 to 5,600 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 45 to 47 degrees F

Frost-free period: 110 to 125 days

Map Unit Composition

Wyasket and similar soils: 85 percent
Minor components: 15 percent

Description of Wyasket

Setting

Landform: Flood plains, drainageways
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Very slightly saline to slightly saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: High (about 9.0 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 7w
Land capability (nonirrigated): 7w
Hydrologic Soil Group: D
Ecological site: Wet Saline Streambank (Coyote willow) (R034XY026UT)
Other vegetative classification: Wet Saline Streambank (Sandbar Willow) (034XY026UT_3)

Typical profile

0 to 4 inches: Slightly decomposed plant material
4 to 13 inches: Silt loam
13 to 26 inches: Silty clay loam
26 to 60 inches: Silty clay loam

Minor Components

Sugun, sandy loam

Percent of map unit: 8 percent

Ashley

Percent of map unit: 7 percent

285—Water

Map Unit Setting

Mean annual precipitation: 5 to 12 inches
Mean annual air temperature: 45 to 49 degrees F
Frost-free period: 110 to 140 days

Map Unit Composition

Water: 90 percent
Minor components: 10 percent

Minor Components

Riverwash

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Concave

Fluvaquents

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Present Plant Community (034XYPC1UT)

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APPENDIX B

FUGITIVE DUST REGULATIONS

R307. Environmental Quality, Air Quality.
R307-205. Emission Standards: Fugitive Emissions and Fugitive Dust.
R307-205-1. Purpose.

R307-205 establishes minimum work practices and emission standards for sources of fugitive emissions and fugitive dust for sources located in all areas in the state except those listed in section IX, Part H of the state implementation plan or located in a PM10 nonattainment or maintenance area.

R307-205-2. Applicability.

R307-205 applies statewide to all sources of fugitive emissions and fugitive dust, except for agricultural or horticultural activities specified in 19-2-114(1)-(3) and any source listed in section IX, Part H of the state implementation plan or located in a PM10 nonattainment or maintenance area.

R307-205-3. Definitions.

The following definition applies throughout R307-205:

"Material" means sand, gravel, soil, minerals or other matter that may create fugitive dust.

R307-205-4. Fugitive Emissions.

Fugitive emissions from sources which were constructed on or before April 25, 1971, shall not exceed 40% opacity. Fugitive emissions from sources constructed or modified after April 25, 1971, shall not exceed 20% opacity.

R307-205-5. Fugitive Dust.

(1) Storage and Handling of Materials. Any person owning, operating or maintaining a new or existing material storage, handling or hauling operation shall minimize fugitive dust from such an operation. Such control may include the use of enclosures, covers, stabilization or other equivalent methods or techniques as approved by the director.

(2) Construction and Demolition Activities.

(a) Any person engaging in clearing or leveling of land greater than one-quarter acre in size, earthmoving, excavation, or movement of trucks or construction equipment over cleared land greater than one-quarter acre in size or access haul roads shall take steps to minimize fugitive dust from such activities. Such control may include watering and chemical stabilization of potential fugitive dust sources or other equivalent methods or techniques approved by the director.

(b) The owner or operator of any land area greater than one-quarter acre in size that has been cleared or excavated shall take measures to prevent fugitive particulate matter from becoming airborne. Such measures may include:

(i) planting vegetative cover,

(ii) providing synthetic cover,

(iii) watering,

(iv) chemical stabilization,

(v) wind breaks, or

(vi) other equivalent methods or techniques approved by the director.

(c) Any person engaging in demolition activities including

razing homes, buildings, or other structures or removing paving material from roads or parking areas shall take steps to minimize fugitive dust from such activities. Such control may include watering and chemical stabilization or other equivalent methods or techniques approved by the director.

R307-205-6. Roads.

(1) The director may require persons owning, operating or maintaining any new or existing road, or having right-of-way easement or possessory right to use the same, to supply traffic count information as determined necessary to ascertain whether or not control techniques are adequate or additional controls are necessary.

(2) Any person who deposits materials that may create fugitive dust on a public or private paved road shall clean the road promptly.

R307-205-7. Mining Activities.

(1) Fugitive dust, construction activities, and roadways associated with mining activities are regulated under the provisions of R307-205-7 and not by R307-205-5 and 6.

(2) Any person who owns or operates a mining operation shall minimize fugitive dust as an integral part of site preparation, mining activities, and reclamation operations.

(3) The fugitive dust control measures to be used may include:

(a) periodic watering of unpaved roads,

(b) chemical stabilization of unpaved roads,

(c) paving of roads,

(d) prompt removal of coal, rock minerals, soil, and other dust-forming debris from roads and frequent scraping and compaction of unpaved roads to stabilize the road surface,

(e) restricting the speed of vehicles in and around the mining operation,

(f) revegetating, mulching, or otherwise stabilizing the surface of all areas adjoining roads that are a source of fugitive dust,

(g) restricting the travel of vehicles on other than established roads,

(h) enclosing, covering, watering, or otherwise treating loaded haul trucks and railroad cars, to minimize loss of material to wind and spillage,

(i) substitution of conveyor systems for haul trucks and covering of conveyor systems when conveyed loads are subject to wind erosion,

(j) minimizing the area of disturbed land,

(k) prompt revegetation of regraded lands,

(l) planting of special windbreak vegetation at critical points in the permit area,

(m) control of dust from drilling, using water sprays, hoods, dust collectors or other controls approved by the director,

(n) restricting the areas to be blasted at any one time,

(o) reducing the period of time between initially disturbing the soil and revegetating or other surface stabilization,

(p) restricting fugitive dust at spoil and coal transfer and loading points,

(q) control of dust from storage piles through use of enclosures, covers, or stabilization and other equivalent methods or techniques as approved by the director, or

(r) other techniques as determined necessary by the director.

R307-205-8. Tailings Piles and Ponds.

(1) Fugitive dust, construction activities, and roadways associated with tailings piles and ponds are regulated under the provisions of R307-205-8 and not by R307-205-5 and 6.

(2) Any person owning or operating an existing tailings operation where fugitive dust results from grading, excavating, depositing, or natural erosion or other causes in association with such operation shall take steps to minimize fugitive dust from such activities. Such controls may include:

(a) watering,

(b) chemical stabilization,

(c) synthetic covers,

(d) vegetative covers,

(e) wind breaks,

(f) minimizing the area of disturbed tailings,

(g) restricting the speed of vehicles in and around the tailings operation, or

(h) other equivalent methods or techniques which may be approvable by the director.

KEY: air pollution, fugitive emissions, mining, tailings
Date of Enactment or Last Substantive Amendment: July 7, 2005
Notice of Continuation: March 4, 2010
Authorizing, and Implemented or Interpreted Law: 19-2-101; 19-2-104; 19-2-109

APPENDIX C

VERNAL CITY NOISE ORDINANCE

Chapter 9.16 NOISE CONTROL

Section 9.16.030 Prohibited noises.

The following acts among others, are declared to be loud, disturbing and unnecessary noises in violation of the ordinance codified in this chapter, but the enumeration shall not be deemed to be exclusive, namely:

A. Horns, Signaling Devices, Etc.

1. a. The sounding of any horn or signaling device on any automobile, motorcycle, street car or other vehicle on any street or public place of the City, except as a danger warning,

b. The creation by means of any signaling device of any unreasonably loud or harsh sound, and

c. The sounding of any such device for an unnecessary and unreasonable period of time,

2. a. The use of any signaling device except one operated by hand or electricity,

b. The use of any horn, whistle or other device operated by engine exhaust, and

c. The sounding of any horn when the traffic is for any reason held up;

B. Radios, , Television sets, Etc. U sing, operating, or permitting to be played, used or operated, any radio receiving set, musical instrument, or other machine or device for the producing or amplifying of sound in such manner as to disturb the peace, quiet and comfort of the neighboring inhabitants or at any time with louder volume than is necessary for convenient hearing for the person or persons who are in the room, vehicle, chamber or location at which such machine or device is operated and who are voluntary listeners thereto. The operation of any such set, instrument, machine or device between the hours of 11:00 p.m. and 7:00 a.m. or in such a manner as to be plainly audible at a distance of fifty (50) feet from the building, structure or vehicle in which it is located, shall be prima facie evidence of violation of this section;

C. Yelling, Shouting, Etc. Yelling, shouting, hooting, whistling or singing in residential or noise sensitive places or from any public place or on the public streets, at any time or place so as to unreasonably annoy or disturb the quiet, comfort, or repose of persons of ordinary sensitivities in any office, or in any dwelling, hotel or other type of residence, or of any persons of ordinary sensitivities in the vicinity; Yelling, shouting, hooting, whistling or singing at any time or place between the hours of 11:00 p.m. and 7:00 a.m. or in such a manner as to be plainly audible at a distance of fifty (50) feet from the location at which the noise is occuring shall be prima facie evidence of violation of this section.

D. Animals, Birds, Etc. The keeping of any animal or bird which by causing frequent or long continued noise disturbs the comfort or repose of any persons of ordinanry sensitivities in the vicinity;

E. Motor vehicle.

1. No person shall drive or move or cause or knowingly permit to be driven or moved a motor vehicle or combination of vehicles at any time in such a manner as to exceed the following noise limits for the category of motor vehicle shown in the following table. Noise shall be measured at a distance of at least twenty-five feet (seven and one-half meters) from the near side of vehicle being monitored and at a height of at least four feet (1.2 meters) above the immediate surrounding surface.

2. The following maximum levels shall apply:

a. Motor vehicle with a manufacturer's gross vehicle weight rating (GVWR) or gross combination weight rating (GCWR) of 10,000 pounds or more or any combination of vehicles towed by such motor vehicles.

i. Speed limit 40 mph or less: 90 decibels.

ii. Speed limit over 40 mph: 94 decibels.

b. Any other vehicle or any combination of vehicles towed by any motor vehicle.

i. Speed limit over 40 mph or less: 80 decibels.

ii. Speed limit over 40 mph: 84 decibels.

3. This section shall apply to the total noise from a vehicle or combination of vehicles and shall not be construed as limiting or precluding the enforcement of any other provision of this chapter relating to motor vehicle mufflers for noise control.

4. Sound level measurement. Sound level measurement shall be made with a sound level meter.

5. No person shall operate or cause to be operated any motor vehicle unless the exhaust system of the vehicle is;

a. free from defects which affect sound reduction;

b. equipped with a muffler or other noise disipative device; and

c. not equipped with any cut-out, by-pass or similar device.

6. Dynamic braking devices, commonly referred to as Jacobs Brakes,. No motor vehicle shall be operated with a dynamic braking device engaged except for the aversion of imminent danger.

7. Responsibility for enforcement. The Chief of Police or his authorized representative shall have primary, but not exclusive, enforcement responsibility for this chapter as it relates to vehicular noise sources, and joint enforcement responsibility with appropriate law enforcement agencies as it relates to vehicular noise sources.

F. Defect In Vehicle or Load. The use of any automobile, motorcycle, or vehicle so out of repair, so loaded, or in such manner as to create loud and unnecessary grating, grinding, rattling or other noise;

G. Loading, Unloading, Opening Boxes. The creation of a loud and excessive noise in connection with loading or unloading of any vehicle, the opening and destruction of bales, boxes, crates and containers, and the loading or unloading of trash between the hours of 9:00 p.m. and 7:00 a.m.;

H. Construction or Repairing of Buildings. The erection (including excavation), demolition, alteration or repair of any building other than between the hours of 7:00 a.m. and 9:00 p.m. on weekdays, except in the case of urgent necessity in the interest of public health and safety, and then only with a permit from the Building Inspector, which permit may be granted for a period not to exceed three (3) days or less while the emergency continues, and which permit may be renewed for periods of three (3) days or less while the emergency continues. If the Building Inspector determines that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or excavation of streets and highways between the hours of 9:00 p.m. and 7:00 a.m., and if he further determines that loss or inconvenience would result to any party in interest, he may grant permission for such work to be done within the hours of 9:00 p.m. and 7:00 a.m., upon application being made at the time the permit for the work is awarded or during the progress of the work;

I. Schools, Courts, Churches, Hospitals. The creation of any excess noise on any street adjacent to any school, institution of learning, church or court while the same are in use, or adjacent to any hospital, which unreasonably interferes with the workings of such institution, or which disturbs or unduly annoys patients in the hospital, provided conspicuous signs are displayed on such streets indicating that the same is a school, hospital or court street;

J. Metal Rails, Pillars and Columns, Transportation Thereof. The transportation of rails, pillars or columns of iron, steel or other material, over and along streets and other public places upon carts, trays, cars, trucks, or in any other manner so loaded as to cause loud noises or as to disturb the peace and quiet of such streets or other public places;

K. Piledrivers, Hammers, Etc. The operation between the hours of 9:00 p.m. and 7:00 a.m. of any piledriver, steam shovel, pneumatic hammer, derrick, steam or electric hoist or other appliance, the use of which is attended by loud or unusual noise;

L. Machinery. The operation of any noise-creating machinery or other machinery outside of an industrial zone , which causes noise audible on adjoining property due to the explosion of operating gases or fluids, or noise created from electrical harnessing, unless the noise from such machinery is muffled and such machinery is equipped with a muffler device sufficient to deaden such noise. (Ord. 91-17 § 3; as amended during 1993 recodification)

(Ord. 2010-21, Amended, 11/03/2010, Prior Text; Ord. 2005-17, Amended, 09/07/2005, Prior Text; Ord. 2002-03, Amended, 05/15/2002, Prior Text)

APPENDIX D

AGENCY AND PUBLIC COORDINATION

United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Region
Provo Area Office
302 East 1860 South
Provo, UT 84606-7317

IN REPLY REFER TO
PRO-774
ENV-6.00

MAY 29 2013

Interested Parties

Subject: Proposed Vernal Unit Efficiency Project - Steinaker Canal Enclosure in Uintah County, Utah

Dear Ladies and Gentleman:

The Bureau of Reclamation's Provo Area Office, in cooperation with Uintah Water Conservancy District (District), proposes to rehabilitate the Steinaker Canal by enclosing it from the Steinaker Reservoir spillway to approximately 12 miles south of the spillway. Enclosed with this letter is an exhibit of the canal alignment.

Currently, the canal carries approximately 250 cubic feet per second of irrigation water to users in the Ashley Valley area. The District is developing the Vernal Unit Efficiency Project that would rehabilitate the canal by enclosing the entire canal in a pressurized pipe from Steinaker Reservoir to its end. Because of funding limitations, the District desires to enclose the canal in phases as funding becomes available; however, the Environmental Assessment (EA) is being developed for the entire 12-miles of the canal enclosure.

The purpose of the project is to:

- Improve water conveyance
- Improve water quality
- Increase public safety
- Reduce interference to canal operations from adjacent private development
- Reduce maintenance of the canal right-of-ways (ROWs)
- Prevent trash and debris from entering the canal
- Conserve water by preventing evaporation and seepage
- Provide added security to irrigation water delivery facilities

Steinaker Dam and Reservoir are located in Uintah County, Utah, about 3.5 miles north of Vernal, Utah. Steinaker Dam, a feature of the Vernal Unit of the Central Utah Project, was completed in 1962. Steinaker Reservoir is an offstream facility which receives diversions from Ashley Creek via the Steinaker Feeder Canal. Releases from Steinaker Dam are discharged into the Steinaker Canal. The reservoir has a total capacity of 38,173 acre-feet of water and a surface area of 820 acres.

An EA will be prepared as required by the National Environmental Policy Act (NEPA), and the Council on Environmental Quality and the Department of the Interior regulations implementing NEPA. This EA will analyze the potential impacts of the proposed action. As required by the NEPA implementing regulations, if potentially significant impacts to the human environment are identified, an Environmental Impact Statement will be prepared. If no significant impacts are identified, Reclamation will issue a Finding of No Significant Impact.

Reclamation encourages public participation throughout the NEPA process. The public has two opportunities to provide formal comments: during this initial public meeting and 30-day scoping period and again following release of the draft EA.

This letter begins the scoping process. The purpose of this letter is to give notice of the proposed action and invite interested parties to comment on the EA's scope of analysis or raise specific issues that interested parties feel should be analyzed in the EA. This letter is being sent to municipalities, organizations or agencies, and property owners within 1,000 feet of the canal corridor who may have an interest in the proposed action.

Comments may be provided at the public scoping meeting or be submitted to our office by close of business July 18, 2013. Written comments should be addressed to:

Bureau of Reclamation
Attention: Mr. Peter Crookston (PRO-774)
302 East 1860 South
Provo, Utah 84606-7317
E-mail: perookston@usbr.gov

At the conclusion of the scoping period, a draft EA will be prepared and made available to the interested public for review and comment. It is expected that this draft EA review period will occur in August 2013.

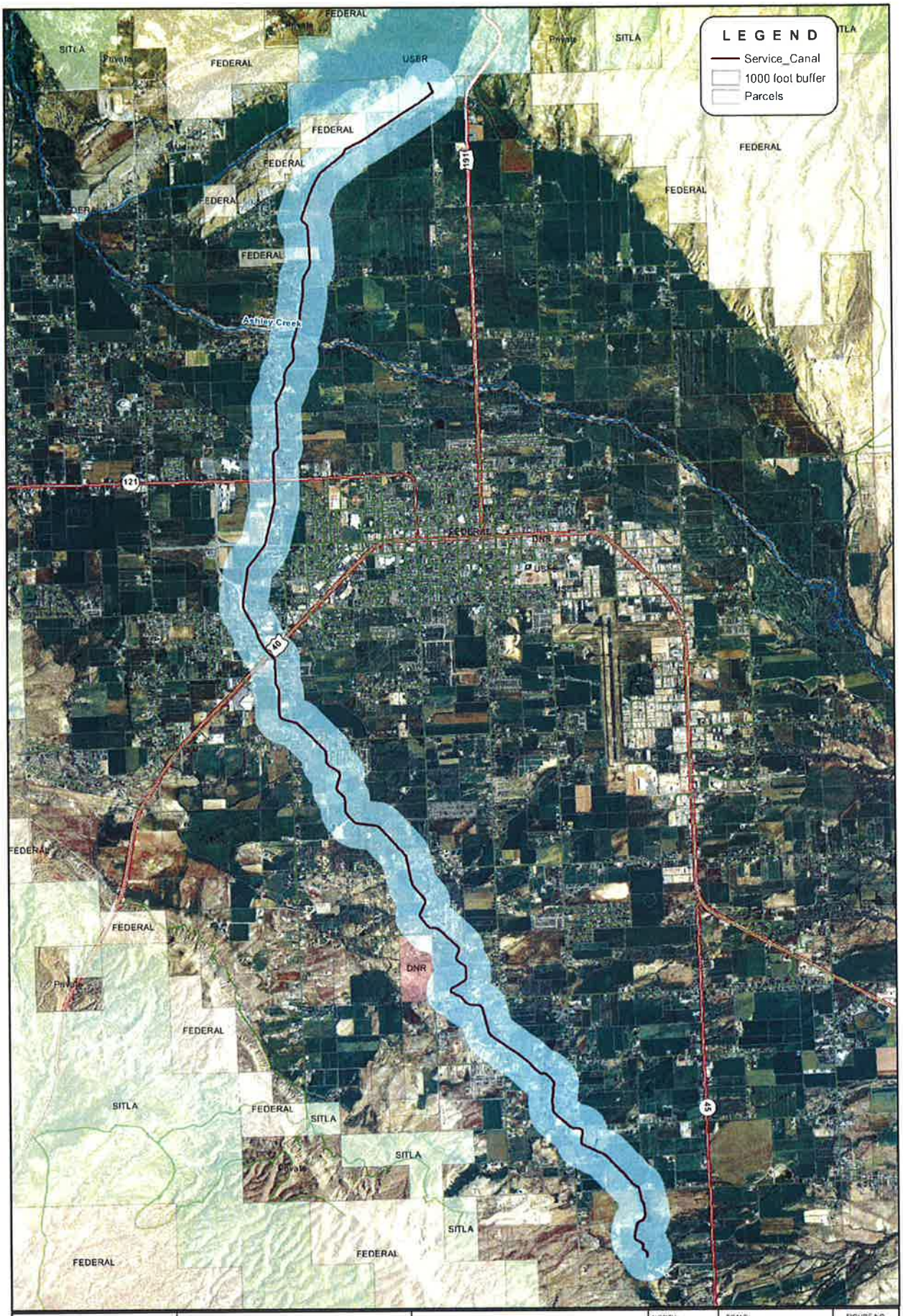
You are welcome to attend a public open house to learn more about the project on June 18, 2013, at the Uintah County Library located at 204 East 100 North, Vernal, Utah, from 5:00 to 7:00 p.m.

If you need further information, please contact Mr. Crookston at 801-379-1152 or for TTY (Teletype) access: please contact the Federal Relay Service at 800-877-8339.

Sincerely,

Curtis A. Pledger
Area Manager

Enclosure



Bowen Collins & Associates, Inc. CONSULTING ENGINEERS	UINTAH WATER CONSERVANCY DISTRICT STEINAKER CANAL	PROPERTY NOTIFICATION	NORTH	SCALE: 0 0.5 Miles	FIGURE NO 1

APPENDIX E

PUBLIC COMMENT SUMMARY

Steinaker Canal Rehabilitation Project
Public Scoping Questionnaire

June 18, 2013

** Note: Providing your contact information is voluntary. Please note that any contact information provided will be public record and published as part of the Steinaker Canal Rehabilitation Environmental Assessment.*

CONTACT INFORMATION (OPTIONAL)

Name:_____

Address, State and Zip: _____

Email and Phone Number: _____

Would you like to be added to the project email list? _____

PLEASE ANSWER A FEW QUESTIONS TO TELL US HOW WE ARE DOING

How did you hear about this meeting?

Do you have any suggestions for improving future meetings?

_____

COMMENTS

1. Are you affected by the rehabilitation of the Steinaker Canal? Yes No
   If so, please explain:

   _____

2. How close do you live to the canal? Please circle:

   A few hundred feet ¼ mile ½ mile 1 mile

   Other: _____

3. Are you <u>opposed</u>, <u>in favor</u> or <u>indifferent</u> to rehabilitating the canal? Please circle.

   Opposed In Favor Indifferent

4. Do you benefit and or receive water from the canal for irrigation use? Yes No

5. Do you feel that rehabilitating the canal will have environmental impacts? If so, please explain:

   _____

6. Please provide any additional comments that you feel would be helpful to the study team.

   _____

   _____

Thank You for Your Attendance and Comments!

Steinaker Canal Rehabilitation

Uintah Water Conservancy District & USBR

Review and Response Comments from Open House - June 18, 2013

Comment Name	Address	Email & Phone #	Date	Would you like to be added to the project email list?	How did you hear about this meeting?	Do you have any suggestions for improving future meetings?	Are you affected by the rehabilitation of the Steinaker Canal?	How close do you live to the canal?	Are you opposed, in favor, or indifferent, to rehabilitating the canal?	Do you benefit and/or receive water from the canal for irrigation use?	Do you feel that rehabilitating the canal will have environmental impacts?	Please provide any additional comments that you feel would be helpful to the study team	Type	Response / Clarification
Tom Bullard		435-621-1324	18 Jun 13	No	Mail	Have more information about funding, timeline	Yes, water use	1/2 mile	Opposed	Yes	Yes, less water for wildlife and water users	What is the cost? Why are you doing this?	Public	The total cost to rehabilitate the entire length of the project is unknown. The preparation of the environmental assessment is to determine if it will have significant impact to the environment
Calvin E. Bullard	1055 S 1500 W Vernal, UT 84078	bullard@easylink.com 435 789 8470	18 Jun 13		Mail		Yes, water use	A few hundred feet	Opposed	Yes	Ground water, animal use, plants, etc	Cost?	Public	The total cost to rehabilitate the entire length of the project is unknown. A preliminary design is needed to determine the cost
Thaco Frost	1547 N 1500 W	tfrost@easylink.com	18 Jun 13	Yes	Flyer		Yes. There is a seep that feeds his our spring	A few hundred feet	Opposed	Yes	?		Public	
Karl J. Bretzenbach	2288 S 500 W	karl_bretzenbach@yahoo.com	18 Jun 13	Yes	Mail	I would like a formal presentation about the evidence and justification and the particular details about the project	Yes	It runs through my property. I live 400 yards from the canal	Presently Opposed - with information could be convinced to support it	No	Yes. Marked reduction in aquatic habitat, reduced growth of trees, wildlife, birds	1. Can the large trees along the canal be maintained with minimal water loss? 2. Could land owners create habitat to replace that loss? 3. I get to my house over a bridge over this canal. I have questions about my access	Public	The EA will determine if the groundwater elevation will continue to sustain the vegetation that lines the canal. Landowners can create habitat on their own property. Access across the canal right of way will not be impacted
Jeanne Gross	1438 W 500 N	gross@easylink.com	18 Jun 13	Yes	Letter		Yes	A few hundred feet	Opposed	I have shares but no access	Absolutely. I believe it will affect plants, animals, kids canal for fixing humidity we are already only at 25%. As you close in more and more it will decrease illness goes up. Temps will go up. Ground water will also go down. Wells will be affected	Consider the unintended consequences and the unrecognized. Who is initiating this change? What does a 100 ft buffer mean? What schedule for usage will be followed? As humidity decreases so does rainfall. Humidity has a major role in plant growth. We are already considered a desert, we don't need to further that	Public	The water is owned by shareholders for irrigation purposes. The 100 corridor is owned by the Bureau of Reclamation. The use of this water will continue to be used by the existing users for irrigation purposes. Vegetation and buildings along the canal corridor will be evaluated in the EA
Brad Weber	3391 S 500 W	bradweber@utah.gov	18 Jun 13	Yes	Mail		Yes	The canal crosses my property. I have land on both sides with bridge access	In favor - less possible walking pare	No, but would like to access my steinaker shares from it	Possible loss of trees. Value of ground directly below will increase because it will stop the seepage	Care needs to be taken to ensure trees and continual livestock access across the right of way at least at every existing bridge and access for those individuals who are land locked because of the right of way	Public	Trees will be evaluated in the EA. Existing access will not be altered
Todd Thacker	4125 S 4900 E Vernal, UT 84078	435 790 5810	18 Jun 13	Yes	Radio		Yes, it will affect the Vernal area	2 miles	In favor	No		Good project	Public	
Carol Sowards Halverson	6316 Maplewood Cir. Murray, UT 84121 1913	801 272 2968	18 Jun 13		Letter	Should have a general explanation at first for everyone	Yes. Steinaker service canal traverses our property		In favor	Yes	Yes. What I want to know is it going to be earthquake proof?	Now water [run off] comes through culverts under the canal and across 3300 North and makes some of our property swampy in the spring. Will this help this situation?	Public	Pipelines are designed with best engineering practices and can withstand some movement. The location of faults will be evaluated in the EA. If the water is transported through an existing culvert, the culvert will be extended to contain the flow or water will not change
Arlette R. Hayes	4730 S 500 E Vernal UT 84078	1 435 781 0307	18 Jun 13	No computer	Letter		Yes. We had a terrible storm several years ago with major flooding and damage. Enclosing the canal will prevent future problems	1/4 mile	In favor	No. I have my own well	Will prevent flooding we experienced a few years ago	The 8 points listed for rehabilitating the canal are all sorely needed!!!	Public	The EA will address the purpose and need of the project
Sam Ramey	Vernal, UT 84078		18 Jun 13	No	Radio	Feedback opportunities, have an agenda	No	1 mile	In favor	No			Public	
Darlene Burns	1537 E 500 N Vernal, UT 84078	dburns@uintah.utah.gov	18 Jun 13	Yes	Personal invitation email		No	Over a mile	In favor	No	Positive ones, particularly on the USU property		Public	
Jennifer Buschkowsky	1117 W 1500 S Vernal, UT 84078	jenbusch1575@hotmail.com	18 Jun 13	Yes	Mail	Need formal presentation and the Q & A afterwards	Yes, we utilize the canal road for dog walking and walking with kids to get away from high traffic roads	1/4 mile	In favor	No		I am for a trail on top of the canal. Vernal City has little to offer for trail systems. Kids need safe areas to walk/ride without worrying about increasing traffic in Vernal! I would gladly pay extra property taxes to build a trail!!!	Public	Formal use of a trail is not part of this project. Trails within Uintah County will be managed by the County
Boyd Edwards	320 N Aggie Blvd Vernal, UT 84078	boyd.edwards@usu.edu 435-640-5954	18 Jun 13	Yes	Film Gawalt Show		Yes	1/4 mile	In favor	No	The impacts are positive with the introduction of water features at USU	Wonderful concept and implementation	Public	

Steinaker Canal Rehabilitation

Uintah Water Conservancy District & USBR

Review and Response Comments from Open House - June 18, 2013

Comment Name	Address	Email & Phone #	Date	Would you like to be added to the project email list?	How did you hear about this meeting?	Do you have any suggestions for improving future meetings?	Are you affected by the rehabilitation of the Steinaker Canal?	How close do you live to the canal?	Are you neutral, in favor, or indifferent to rehabilitating the canal?	Do you benefit and/or receive water from the canal for irrigation use?	Do you feel that rehabilitating the canal will have environmental impacts?	Please provide any additional comments that you feel would be helpful to the study team	Type	Response / Clarification
Margie Herrmann	3788 S Vernal Ave Vernal, UT 84078	435-789-2727 mherrmann@hotmail.com	18 Jun 13	Yes	Letter		No	A few hundred feet	Indifferent	No			Public	
David Gilman	1777 N 1500 W	dkweo@hotmail.com	18 Jun 13	Yes	Mail		Yes- my property borders the canal	A few hundred feet	In favor	Yes			Public	
Dwayne Holmes	4253 S 500 E Vernal UT 84078	1-435-789-4535	18 Jun 13	No	Newsletter		Yes. An alfalfa irrigator at his highly migrants	1/4 mile	In favor	Yes	Yes changing, covering an open canal changes many things		Public	
Cacy Johnson	1149 W 1500 S Vernal, UT 84078	rcady@yahoo.com	18 Jun 13	Yes	Letter to "Interested Parties"	Yes! Present project information to audience then have Q & A session with opportunity for formal presentations	Yes water levels, drainage, and availability of water shares from Ashley water users	Easement is on my property	Concerned	Possibly	Absolutely. Phase 2 growth throughout Vernal will suffer	A database of available hydrologic records (canal and ditch stage/discharge, water levels in monitoring wells), and a convenient reading room with key references would be very helpful	Public	The EA will discuss these comments
Anonymous			18 Jun 13				Yes. Irrigation water	A few hundred feet	In favor	Yes		Help save 40+ feet of water loss through seepage and other issues	Public	
Diane Eothkarp	1058 E 1500 S	diane.eothkarp@ut.usda.gov 435-781-3380	18 Jun 13	Yes	Work for county in public lands	Have more displays of proposed project	Yes. Own "S" stock	1 to 5 miles	In favor	Yes	Anytime soil is moved will be impacts	Where will the first phase (3 miles) end? When will the next phase begin? How much water is lost in the Ashley Canal and to what extent will the pipe be?	Public	The construction phasing of the project will be explained in the EA. The next phases are dependent upon funding. The water loss will be explained in the EA. A preliminary analysis shows that the average size of the pipeline will be 84 inch at the top of the canal to 48 inch at the bottom of the canal
Paul Hacking	254 Denise Wy	paul@uimsdd	18 Jun 13	Yes	University planning meetings		Yes. UBATC/USU campus interest		Opposed	No	I am enthused about the walking paths but want the pond to have water flow in and out	I feel that the pond on the university needs to have water flow in and out to make it an attractive feature for the walking path and USU/UBATC property	Public	The University's design of the pond is not part of this project
Paul Merkley	4617 N 1500 W Vernal, UT 84078	pmerkley@stinet.com	18 Jun 13	Yes	Letter	Looks good		A few hundred feet	In favor	No	Not if done right	I like the thought of the stream	Public	
Jake Gardner	1400 N 1500 W	jamesjagr@outlook.com 435-790-9737	18 Jun 13	Yes?	Mail	More of a presentation	Yes. Land access across canal	A few hundred feet	Indifferent	Yes		Like the idea of a pipe not a fan of walking and bike paths	Public	
Margie Gardner	1188 N 1500 W Vernal, UT	435-790-9797	18 Jun 13		Letter	More of a presentation	Yes. I have land access across the canal	A few hundred feet	Indifferent	Yes		I was in favor of the canal being in a pipe but I hate the idea of buried canal with improvements. Our livestock crosses the bridge between our property. That would stop that	Public	Access will not be impacted. Livestock and properties that straddle the pipeline will continue to have access from one side to the other
Kathleen Jackson	3847 S 1750 E Vernal, UT 84078	435-789-4377	18 Jun 13				Yes. We receive irrigation water through it most of the time	1 mile	In favor	Yes	No- it will be helpful in saving water	Improve safety factor	Public	
Elijah Jackson	3833 S 1750 E Vernal, UT	828-8768	18-Jun-13	No	My dad		Yes. by piping the canal it will save city water from other people and make the water go further with less losses and less trash in the canal will help with. ?	1 mile	In favor	Yes			Public	
Brent Jackson	3847 S 1750 E Vernal, UT 84078	435-789-4377	18 Jun 13	Yes	UWCD		Yes. would improve water conservation and security	1 mile	In favor	Yes	No it would help the environment by reducing weeds	There would also be a safety benefit	Public	

Steinaker Canal Rehabilitation
Uintah Water Conservancy District & USBR
Review and Response Comments from Letters Received -July, 2013

Comment Name	Address	Email & Phone #	Date	Please provide any comments that you feel would be helpful to the study team	Type	Response / Clarification
Craig Barnitz Utah Division of Environmental Response and Remediation	195 N 1950 W, Salt Lake City, UT 84114	cbarnitz@utah.gov 801-536-0071	15-Jul-13	"It is unclear if the activities conducted as part of the Steinaker Canal Enclosure project will have any impact on the aforementioned sites." This is in reference to three underground, "out of use and removed" storage tanks	Agency	The EA will evaluate the location of the three tanks and determine if an impact is anticipated.
Amy Defreese U.S. Dept. of the Interior Fish & Wildlife Service	2369 W Orion Circle, Suite 50 West Valley City, UT 84119	801-975-3330 x 128	18-Jul-13	Addresses NEPA with regards to migratory birds as well as mitigation and Section 7 responsibilities. Regarding the Endangered Species Act they comment that the Ute ladies-tresses is threatened under the ESA and that it occurs within the proposed project area. They would also like the EA to confer with them on actions that may jeopardize any proposed species	Agency	The EA will address the USFWS comments. A biological assessment will be written into the EA for T&E species
Chris Merritt Utah Division of State History	300 S Rio Grande St. Salt Lake City, UT 84101	lhunsaker@utah.gov 801-245-7263	4-Jun-13	"We look forward to the results of the scoping to determine the effects of the proposed project to the Steinaker Canal. The canal is now a historic site, and will need to be judged for eligibility to the National Register."	Agency	The Cultural Resource report will address sites found along the canal.
Paul and Jacque Johnson	1147 W 1500 S Vernal, UT 84078-4618		15-Jul-13	They are concerned that the rehabilitation of the Steinaker Canal will possibly dry up the flow to their well that is used to irrigate their property. They also do not want their water right to be infringed upon. They are concerned that the lowering of the watertable will result in killing many old established trees within the "seep zone" of the canal that provide shade and wind breaks	Public	Existing water rights are not anticipated to be impacted by this project. The purpose of this project is to minimize/eliminate seepage. The EA will evaluate the vegetation and groundwater impacts of the project
Suzanne Call	No address provided	suzanniehcall@yahoo.com	8-Jul-13	The property owner is asking what will happen to the water that is saved from evaporation and seepage, what assurances they will have that the project will leave a portion open for the "Kids' Canal", and what assurances does Vernal have that the water won't be sold to another community. They also inquire what the pipeline will cost and who will pay for it, what affect piping the water will have on the surrounding water table, and if the water is piped, what will help this drainage. Their comments ask who the shareholders are that stand to benefit from the sale of the water to an out-of-town contractor, and what the environmental impact of piping the canal will be.	Public	No enlargement of the existing water rights are proposed, and the amount of diversions will remain approximately equal (within the range) to historic conditions. This is not a new appropriation, rather it is water that has always been available to the users of the Canal under various water rights. Historically, with the open Canal, it has not been possible to deliver the full allotment or right to all users. The District will continue to supply water to Central Canal irrigation as per their water rights. What is known to the community as the "kids canal" is actually the Central Canal and is used for irrigation purposes. The Central Canal has allowed the public to use it for recreational purposes. A cost analysis of the project is not part of the scope of an environmental assessment. The purpose of this pipeline is to continue to deliver to the existing users. The project is not delivering water to "out-of-town" contractors.
Cady Johnson	1339 W 1500 S PO Box 1639 Vernal, UT 84078	jrcady@yahoo.com	17-Jul-13	They comment that no cost benefit analysis has been provided for public review, they want to know if seepage has been quantified based on analysis of discharge measurements, what analyses have been performed, that the math doesn't add up, and how minor water losses justify the huge proposed expenditures. They also comment that the share price of Ashley Water Users shares should be tracked and publicized to identify speculative activity by shareholders. They ask if the proposed conservation measure qualifies as an Intentionally Created Surplus (ICS), where the review documents are prioritizing expenditures on the canal enclosure proposal, and if Vernal City government and Ashley Valley residents will have veto power over the proposal	Public	Seepage will be evaluated in the EA. A cost analysis for the project or the cost for water shares is not part of the environmental assessment. The purpose of the project is to rehabilitate an open, manmade canal into a pipeline to eliminate the loss of irrigation water. Water rights are associated with this water. This project will ensure the delivery of water for future years.

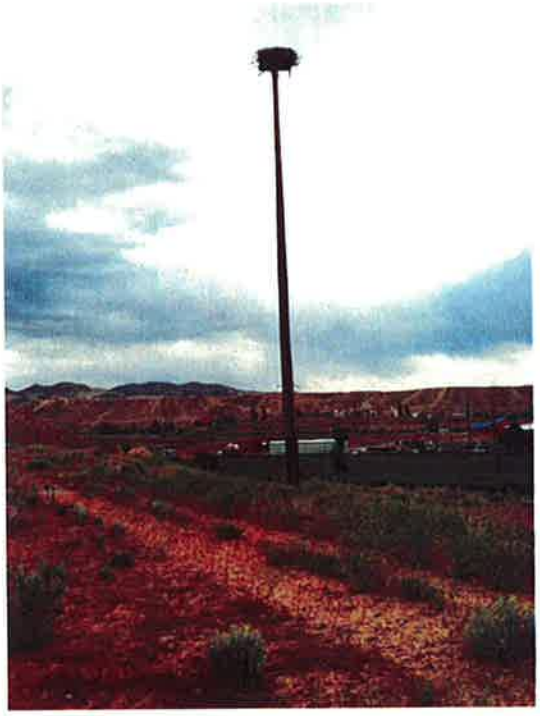
APPENDIX F

EXISTING SITE PHOTOS

Access Bridge

Ashely Creek

Dam Area - Wetlands



Inactive Bird Nest

Lower Turn Out

Road Crossing - Bridge and Turn-Out

Service Canal - Middle Reach (2)

Service Canal - Middle Reach

Service Canal - Upper Reach

Steinaker - Lower Section (2)

Steinaker - Lower Section

Steinaker - Middle Section

Steinaker Canal - Lower Section

Steinaker Reservoir

Upper Steinaker - Steinaker Dam Area

APPENDIX G

VISUAL SIMULATION

Covered Canal with Vault

Existing Conditions