

APPENDIX 2-3A

SOILS

11/01/93

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LIST OF SUPPLEMENTS

Supplement

- A. Soil Map Unit Descriptions
- B. Description of Soil Map
- C. Prime Farm Land Determination

LIST OF PLATES

Plates

- 1. Soil Mapping Units

APPENDIX 2-3A

SOILS

2.1 METHODOLOGY

The materials provided in the following report is a compilation of data provided by Mr. Dan Larson. Soil Scientist from Manti-LaSal National Forest. The material was compiled during two separate meetings November 1991 and is taken in part from work completed by Mr. Larson and excerpts from "Soil Survey of Parts of the Price River and Huntington River Watersheds" by John L. Swensen, Wesley Keetch and Laurel Stott, Dec. 1983.

The soil types and characters specific to the proposed lease area in addition to 1/2 Section surrounding the boundaries of the proposed lease are included.

It is important to note that Lease UTU-68082 expansion of an existing underground mine and (no) surface disturbance is anticipated on Lease UTU-68082.

SOIL SURVEY OF PARTS OF THE HUNTINGTON RIVER WATERSHEDS

INTRODUCTION

The Huntington River Watersheds are within the Manti-LaSal National forest in Central Utah. The soil survey area is in Emery County. Elevations range from a low of 7,600 feet west of Price to a high of nearly 11,000 feet. Most of the survey area is between elevations of 8,000 and 10,000 feet.

Physiographically, the survey area is in the High Plateau province (Thornbury, 1965). It is composed mainly of ridges and canyons. The main ridges are north-south, however, the side ridges or lateral ridges between the canyons have an east-west orientation. Soils in the area are developed primarily from sandstone and shale.

Grasses, forbs and mountain big sagebrush are the important plants on the ridges. The southerly exposures at the lower elevations have a vegetative cover of grasses, forbs, mountain big sagebrush, bitterbrush, birchleaf mountain mahogany, snowberry and Gambel oak. The northerly exposures and the southerly exposures at the higher elevations are forested with spruce, fir, and aspen.

The survey area contains approximately 8,230 acres. It is used for summer grazing for livestock, wildlife habitat and watershed. The detailed soil survey, of third order intensity (USDA-SCS, 1975B) was made by soil scientists who drove or walked over the land, digging holes, examining soil, describing soil profiles and taking notes on pertinent soil characteristics.

Soils have horizons similar in differentiating characteristics and arrangements in the soil profile were classified at the family level, using the USDA soil classification system, Soil Taxonomy (USDA-SCS, 1975A). These are the taxonomic units of this soil survey.

Mapping units are composed of these taxonomic units. Two basic kinds of mapping units were used. The one most commonly used is called a soil complex in which there is more than one taxonomic unit or miscellaneous land type. In a complex, the taxonomic units are associated in a pattern so intricate that it is impractical to separate them at the map scale being used. Mapping units in which only one taxonomic unit, plus allowable inclusions, is recognized are called consociations.

Mapping scale is 1:24,000. The minimum size of a mapping unit delineated is about 40 acres. Field work for this report was done by Dan Larson USFS Soil Scientist, Manti-LaSal National Forest.

2.3 NUMERICAL CLASSIFICATION OF SOILS IN AND ADJACENT TO
GENWAL COAL COMPANY'S PROPOSED LEASE:

<u>=</u>	<u>Name</u>	<u>Complex</u>	<u>Slope</u>
42	Aquic	Cryoborolls	5% - 15%
81	Bundo	Lucky Star	30% - 70%
100	Gralic	Behanin-Elwood Families	30% - 70%
301	Greyback	UNK - Bachelor Family	30% - 80%
401	Merino	Adel	8% - 60%
560	Greyback	Family	5% - 50%
561	Clayburn	Faim - Behanin Families	5% - 40%
711	Bundo	Lucky Star - Adel	30% - 70%
820	Lucky Star Bundo	- Adel	30% - 70%

The above Referenced units are delineated on Plate 3-1 Soil Map.

2.4 MAPPING UNIT DESCRIPTION

This section of the report presents descriptions of the mapping units. The descriptions contain types of landscape, the general area where the mapping unit is predominant, the climate, a generalized description of the soils, and some of the important kinds of vegetation. A separate page contains some of the engineering properties of the different kinds of soil as well as other pertinent soil characteristics such as pH and estimated ground cover. See Supplement A and B.

IDENTIFICATION LEGEND

<u>Map Unit No.</u>	<u>Name of Unit</u>	<u>Per Cent</u>
2.4.1 42 1	Aquic Cryoborolls, loamy-skeletal, mixed, loam 5 to 15 percent slopes	90
	INCLUSIONS:	
	1 Typic Cryoborolls, loamy-skeletal, mixed, 5 to 15 percent slopes.	8
	2 Aquic Cryorthents, loamy-skeletal, mixed, loam, 30 to 60 percent slopes	2
2.4.2. 81 1	Typic Paleboralfs, loamy-skeletal, mixed, fine sandy loam, 40 to 70 percent slopes	70
	2 Boralfic cryoborolls, loamy-skeletal, mixed, loam, 30 to 60 percent slopes	20
	INCLUSIONS:	
	1 Pachic Cryoborolls, fine-loamy, mixed, loam, 30 to 60 percent slopes	10
2.4.3 100 1	Typic Cryorthents, loamy-skeletal, mixed (nonacid), cobbly fine sandy, loam, 50 percent slopes	40
	2 Pachic Cryoborolls, loamy-skeletal, mixed, loam, 30 to 60 percent slopes	25
	3 Argic Cryoborolls, loamy-skeletal, mixed, very stony loam, 40 to 70 percent slopes	20
	INCLUSIONS;	
	1 Typic Cryoborolls, fine loamy, mixed,	7
	2 Typic, Cryorthents, fine-loamy, mixed, (calcareous) shallow, 40 to 60 percent slopes	6
	3 Rock Outcrops	2

2.4.4	301	1	Typic Cryoborolls, loamy-skeletal, mixed, cobbly loam, 30 to 50 percent slopes	35
		2	Lithic Cryorthents, loamy mixed (nonacid), stony, fine, sandy loam, 30 to 80 percent slopes	25
		3	Typic Cryorthents, fine-loamy, mixed, (calcareous), loam, 30 to 50 percent slopes	20
			INCLUSIONS:	
		1	Rock Outcrops	5
		2	Typic Cryorthents, fine-loamy, mixed, (calcareous), bouldery, loam, 5 to 30 percent slopes	5
		3	Argic Pachic Cryoborolls, fine-loamy, mixed, loam, 5 to 15 percent slopes	5
2.4.5	401	1	Pachic Cryoborolls, fine-loamy, mixed, loam 30 to 60 percent slopes, gullied	40
		2	Lithic Cryoborolls, loamy-skeletal, mixed, (nonacid), cobbly, loam, 8 to 60 percent slopes	23
		3	Typic Cryorthents, loamy, mixed (nonacid), shallow, cobbly, loam, 8 to 50 percent slopes	20
			INCLUSIONS:	
		1	Pachic Cryoborolls, fine-loamy, mixed, cobbly, clay loam, moderately deep, 8 to 30 percent slopes	15
		2	Rock Outcrops	2
2.4.6	560	1	Argic Pachic Cryoborolls, fine loamy, mixed, loam, 5 to 40 percent slopes	45

		2	Typic Cryoborolls, loamy-skeletal, mixed, cobbly loam, 30 to 50 percent slopes	40
			INCLUSIONS:	
		1	Typic Cryoborolls, fine-loamy, mixed, shallow	5
		2	Boralfic Cryoborolls, loamy-skeletal mixed, loam, 30 to 60 percent slopes	5
		3	Pachic Cryoborolls, coarse-loamy, over sandy or sandy-skeletal, mixed, fine sandy loam, 30 to 60 percent slopes	5
2.4.7.	561	1	Argic Pachic Cryoborolls, fine-loamy, mixed, loam, 5 to 20 percent slopes	55
		2	Argic Pachic Cryoborolls, fine, montmorillonitic, loam, 5 to 20 percent slopes	20
		3	Pachic Cryoborolls, loamy-skeletal mixed, loam, 10 to 30 percent slopes	15
			INCLUSIONS:	
		1.	Lithic Cryoborolls, loamy-skeletal, mixed	9
		2.	Rock Outcrops	1
2.4.8	711	1	Typic Paleboralfs, loamy skeletal, mixed, fine sandy loam, 40 to 70 percent slopes	50
		2	Boralfic Cryoborolls, loamy-skeletal, mixed, loam, 30 to 60 percent slopes	20
		3	Pachic Cryoborolls, fine-loamy, mixed, loam, 30 to 60 percent slopes	20

INCLUSIONS:

		1	Typic Cryorthents, loamy, mixed (nonacid), shallow, loam, 8 to 60 percent slopes	40
2.4.9	820	1	Boralfic Cryoborolls, loamy-skeletal, mixed, loam, 30 to 60 percent slopes	55
		2	Typic, Paleboralfs, loamy-skeletal, mixed, fine sandy loam, 40 to 70 percent slopes	20
		3	Pachic Cryoborolls, fine loamy, mixed, loam, 30 to 60 percent slopes	20

INCLUSIONS:

		1	Typic Cryorthents, loamy, mixed, (nonacid), shallow	5
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2.5 DATA ADEQUACY CHECK SHEET (USFS) SUMMATION:

2.5.1 Coal track boundaries delineated on Plate 1, Soil Mapping Units.

2.5.2 Forested area and vegetative types described in Soil Type write up on Soils Map, Plate 1, Soil Mapping Units.

2.5.3 Agricultural Concerns:

There is no agriculture within the proposed lease area. This is inclusive of: (1) hay/tame pastures, (2) intensive dryland agriculture, (3) or irrigated areas. There are no prime farm lands in or adjacent to the proposed lease area. See Supplement C, Prime Farm Land Determination - SCS.

2.5.4. Alluvial Valley Floors:

Due to the steepness of the canyons, there are no alluvial valley floors developed within the proposed lease area.

2.5.5 Riparian and Wetlands:

In 1990-1991, an Aquatic Inventory was implemented by Genwal Coal Company. As of November 1991, this data has not been fully catalogued to determine the extent of potential riparian areas. However, in reviewing air

photographs of the proposed lease area, no well defined riparian area or wetlands could be identified.

2.5.6 Interpret Soil Mapping Units:

Soils present in the tract relative to: (1) salinity, sodic characters are absent as representative by Supplements A and B. All other relevant information is addressed in Soil Characteristics delineated within the report.

2.5.7 Soil - Relative to Reclamation:

Due to the fact no surface disturbance is anticipated in conjunction with the proposed lease, soil volumes, reconstructive character, or seed methods have not been characterized.

2.6 BIBLIOGRAPHY

Soil Survey of Parts of the Price River and Huntington River Watersheds. January 1, 1983, Mesa Corp.

Soil Map Units, Dan Larson USFS, Manti-LaSal National Forest.

SUPPLEMENT A

SOIL MAP UNIT DESCRIPTION

SOIL MAP UNIT DESCRIPTION

SOIL SURVEY AREA Gooseberry Reservoir ORDER 3 DATE 4-19-64 BY W. J. G. B.
 SOIL MAP UNIT SYMBOL AND NAME 22 Aquic Cryoborolls, loamy-skeletal, mixed, loam, 5 to 15 percent slopes

1.00 SETTING This mapping unit occurs on alluvial fans at elevations of 3,300 to 3,500 feet. It is in the area east of the Gooseberry Reservoir, on north and northwest exposures. The average annual temperature is 42°F to 48°F. The average summer temperature is in the 50°F to 55°F range. The average annual precipitation is 25 to 40 inches. Freeze-free season is 40 to 60 days. The soils are very poorly drained, and are poorly drained. They developed in alluvium mainly from sandstone and shales in the 100 percent. The vegetation is grasses, forbs, cereals, wiregrass, and some willows.

2.00 MAP UNIT COMPOSITION

MAJOR SOILS AND/OR LAND AREAS (INCLUDE FAMILY NAME)	% IN M.U.	PHYSIOGRAPHY, PARENT MATERIAL AND SLOPE CHARACTERISTICS
210 Aquic Cryoboroll, loamy-skeletal, mixed, loam, 5 to 15 percent slopes.	90	Short concave slopes.
220		
230		
DISSIMILAR INCLUDED SOILS AND/OR LAND AREAS		
DISSIMILAR INCLUDED SOILS AND/OR LAND AREAS	% IN M.U.	PHYSIOGRAPHY, SHAPE OF UNIT, AND SLOPE CHARACTERISTICS
240 Typic Cryoborolls, loamy-skeletal, mixed, 5 to 15 percent slopes.	8	Short convex ridges.
250 Aquic Cryorthents, loamy-skeletal, mixed, 0 to 2 percent slopes.	2	Recent deposition.
260		



3.00 NARRATIVE DESCRIPTION OF PHOTO OR DIAGRAM Looking east from the Gooseberry Reservoir. Mapping unit 22 lies between the trees and the water.

4.00 TYPE LOCATION FOR MAP UNIT West side of Gooseberry Reservoir.

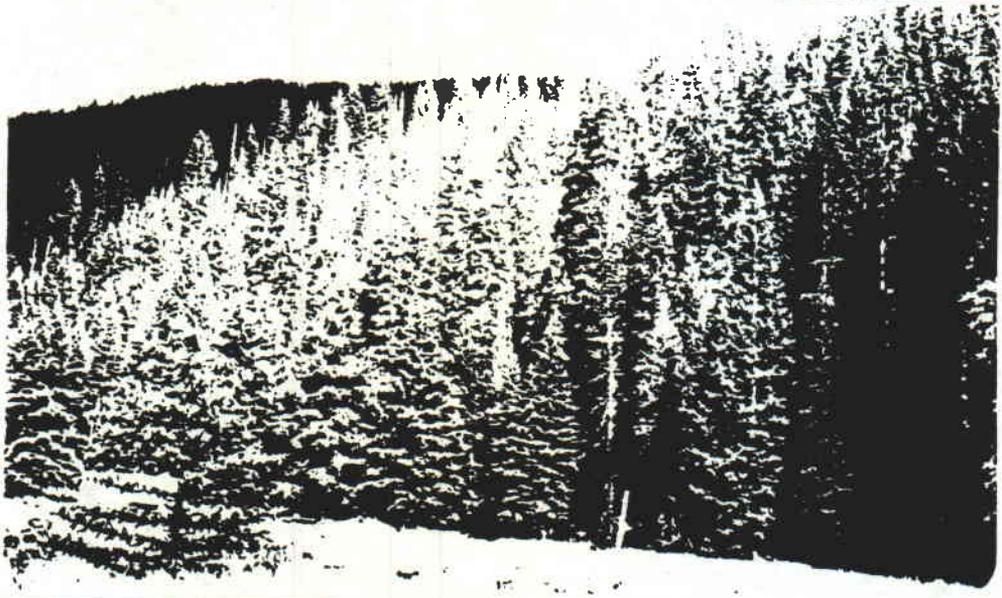
SOIL MAP UNIT DESCRIPTION

SOIL SURVEY AREA Pine River Watershed ORDER 3 DATE 11-2-53 BY W. H. ...
 SOIL MAP UNIT SYMBOL AND NAME S1 Typic Paleboralf, loamy-skeletal, mixed, fine sandy, loam, 40 to 70 percent slopes, -- Boralfic Cryoboralf, loamy-skeletal, mixed, loam, 30 to 60 percent slopes.

100 SETTING This mapping unit is on the north exposures of steep mountain slopes, at elevations of about 11,000 feet. It occurs mainly in the south part of the Trough Springs Ridge area. The average annual air temperature is 32°F to 36°F. The average summer temperature is near 50°F. Average annual precipitation is 25 to 30 inches. Freeze-free period is about 20 days. The soils are deep, excessively drained, very gravelly or cobbly, sandy loams. They are developed in colluvium from sandstone. Slopes are 30 to 70 percent. Vegetation is an almost pure stand of Alpine fir and spruce.

200 MAP UNIT COMPOSITION

MAJOR SOILS AND/OR LAND AREAS (INCLUDE FAMILY NAME)	% IN M.U.	PHYSIOGRAPHY, PARENT MATERIAL AND SLOPE CHARACTERISTICS
210 Typic Paleboralf, loamy-skeletal, mixed, fine sandy loam, 40 to 70 percent slopes.	70	Mainly concave mountain slopes.
220 Boralfic Cryoboralfs, loamy-skeletal, mixed, loam, 30 to 60 percent slopes.	30	
230		
DISSIMILAR INCLUDED SOILS AND/OR LAND AREAS	% IN M.U.	PHYSIOGRAPHY, SHAPE OF UNIT AND SLOPE CHARACTERISTICS
240 Pacific Cryoboralfs, fine-loamy, mixed, loam, 30 to 60 percent slopes.	10	Lower mountain slopes.
250		
260		



300 NARRATIVE DESCRIPTION OF PHOTO OR DIAGRAM Looking southeast in South Hughes Canyon.
A nearly pure stand of spruce and fir.

400 TYPE LOCATION FOR MAP UNIT South Hughes Canyon,

SOIL MAP UNIT DESCRIPTION #81

5.00 CHARACTERISTICS AND ESTIMATED PROPERTIES OF MAJOR SOILS AND/OR LAND AREAS

5.10 MAJOR COMPONENT NAME: <u>Typic Paleboralf, loamy-skeletal, mixed.</u>											
DEPTH (INS.)	USDA TEXTURE		> 3 IN (%BY VOL)	2MM-3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	LL.	
3-0	Organic										
0-6	CB-FSL		15-25	5-10	6.1-6.5	2.0-6.0	Low	.18-.10	5-10	20-30	
6-50	CBV-FSL		15-20	35-40	5.6-6.0	2.0-6.0	Low	.07-.08	5-10	20-30	
50-60	CBX-SCI		45-55	15-20	5.6-6.0	0.6-2.0	Low	.10-.12	5-10	20-30	
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		RANGE	AVERAGE
			K	T				Gravel 2MM-3"	Stone 10-24"		
0-6	A-4	SM-SC	.17	5	60	Somewhat excessive		Gravel 2MM-3"	0-15	5	
6-50	A-1	GM-GC	.15					Cobble 3-10"	0-5	0	
50-60	A-1, A-2	GM-GC						Stone 10-24"	0-5	-	
			POTENTIAL FROST ACTION		SOIL HYDROLOGIC GROUP	INFILTRATION	EROSION HAZARD		Boulder >24"		
			Moderate		A	Rapid	Water	Wind	Vegetation	10-30	20
							Low	Low	Litter	70-80	70
									Bare	0-10	5
FLOODING				HIGH WATER TABLE							
Frequency	Duration	Months	Depth (ft.)	Kind	Months						
None	-	-	None	-	-						
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK							
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness					
-	5	1.1	-	None	-	-					

5.11 SIMILAR INCLUDED SOILS WITH 5.10:

5.20 MAJOR COMPONENT NAME: Boralfic Cryoboroll, loamy-skeletal, mixed.

DEPTH (INS.)	USDA TEXTURE		> 3 IN (%BY VOL)	2MM-3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	LL.	
0-15	CB-T		5-15	5-15	6.1-6.5	2.0-6.0	Low	.14-.16	5-10	25-30	
15-38	CBV-VESL		30-40	15-25	5.6-6.0	2.0-6.0	Low	.08-.09	5-10	20-25	
38-57	CBX-CT		20-35	25-35	5.6-6.0	0.2-0.6	Low	.09-.11	0-15	30-35	
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		RANGE	AVERAGE
			K	T				Gravel 2MM-3"	Stone 10-24"		
0-15	A-2, A-4	GM-GC	.32	5	57"	Somewhat excessive		Gravel 2MM-3"	0-15	5	
15-38	A-2	GC-GM	.15					Cobble 3-10"	0-5	2	
38-57	A-2	GC						Stone 10-24"	-	-	
			POTENTIAL FROST ACTION		SOIL HYDROLOGIC GROUP	INFILTRATION	EROSION HAZARD		Boulder >24"		
			Moderate		B	Moderate	Water	Wind	Vegetation	50-70	62
							Mod.	Low	Litter	20-30	30
									Bare	0-5	1
FLOODING				HIGH WATER TABLE							
Frequency	Duration	Months	Depth (ft.)	Kind	Months						
None	-	-	None	-	-						
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK							
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness					
-	5	1.0	-	None	-	-					

5.21 SIMILAR INCLUDED SOILS WITH 5.20:

5.30 MAJOR COMPONENT NAME:

DEPTH (INS.)	USDA TEXTURE		> 3 IN (%BY VOL)	2MM-3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	LL.	
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		RANGE	AVERAGE
			K	T				Gravel 2MM-3"	Stone 10-24"		
			POTENTIAL FROST ACTION		SOIL HYDROLOGIC GROUP	INFILTRATION	EROSION HAZARD		Boulder >24"		
							Water	Wind	Vegetation		
									Litter		
									Bare		
FLOODING				HIGH WATER TABLE							
Frequency	Duration	Months	Depth (ft.)	Kind	Months						
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK							
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness					

5.31 SIMILAR INCLUDED SOILS WITH 5.30:

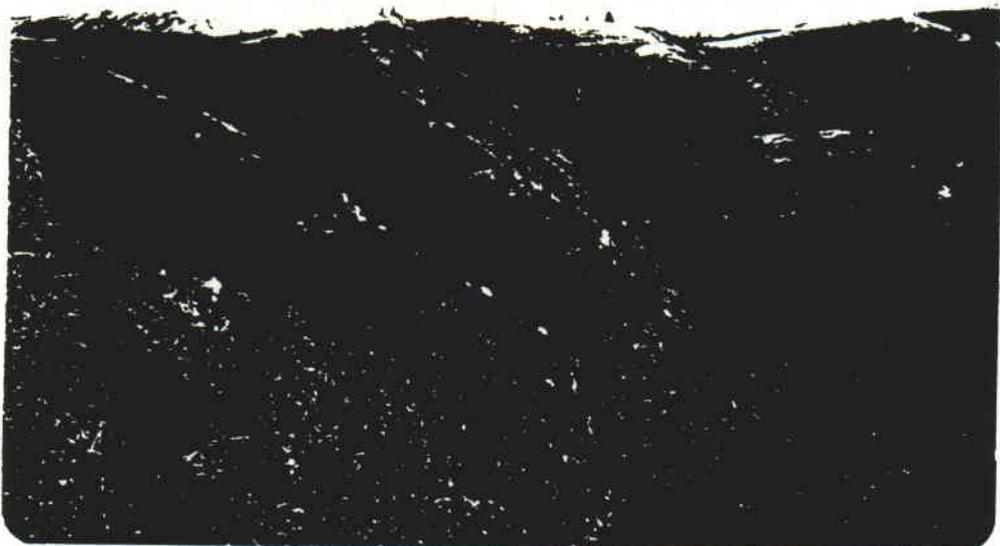
SOIL MAP UNIT DESCRIPTION

SOIL SURVEY AREA: Castle Valley Watershed

SOIL MAP UNIT SYMBOL AND NAME: 100 Typic Cryorthent, loamy-skeletal, mixed, (medium) fine sandy loam, 40 to 50 percent slopes, -Arctic Cryoboroll, loamy-skeletal, mixed, very fine to fine sandy loam, 40 to 70 percent slopes, -Arctic Cryoboroll, loamy-skeletal, mixed, very fine to fine sandy loam, 40 to 70 percent slopes.

100 SETTING: This mapping unit is located on the long, east-facing slopes of steep and very steep mountain slopes at elevations of 7,000 to near 11,000 feet. It occurs mainly in the area adjacent to the east of Castle Valley ridge. The average annual air temperature is 42°F to 49°F. The average summer temperature is 50°F to 55°F. Average annual precipitation is 25 to 30 inches. Freeze-free period is 50 to 70 days. The soils are deep, well drained, very gravelly or very stony loams, clay loams, or fine sandy loams. They are developed in colluvium from sandstone, granite, and gneiss. Slopes are 40 to 70 percent. Vegetation is snowberry, mountain sagebrush, grasses, forbs, serviceberry, and some oak on the lower slopes.

100 MAP UNIT COMPOSITION		
MAJOR SOILS AND/OR LAND AREAS (INCLUDE FAMILY NAME)	% IN M.U.	PHYSIOGRAPHY, PARENT MATERIAL AND SLOPE CHARACTERISTICS
110 Typic Cryorthent, loamy-skeletal, mixed, (medium) fine sandy loam, 40 to 50 percent slopes.	40	Concave and convex slopes, of medium length.
120 Arctic Cryoboroll, loamy-skeletal, mixed, loam, 40 to 60 percent slopes.	25	Generally short concave slopes.
130 Arctic Cryoboroll, loamy-skeletal, mixed, very stony loam, 40 to 70 percent slopes.	20	Very steep south slopes, with up to 70 percent of the surface covered by stone benches or rubble in some places.
DISSIMILAR INCLUDED SOILS AND/OR LAND AREAS		
	% IN M.U.	PHYSIOGRAPHY, SHAPE OF UNIT, AND SLOPE CHARACTERISTICS
140 Typic Cryoboroll, fine-loamy, mixed.	7	South slopes, short.
150 Typic Cryorthent, fine-loamy, mixed, (calcareous) shallow, 40 to 60 percent slopes.	6	South slopes, short.
160 ROCK OUTCROPS.	2	



1. NARRATIVE DESCRIPTION OF PHOTO OR DIAGRAM: The Cryorthent and Arctic Cryoboroll soils are on the long convex slopes that have brush and grass vegetation. The Pacific Cryoborolls are under the aspen.

400 TYPE LOCATION FOR MAP UNIT: East side of Castle Valley ridge.

SOIL MAP UNIT DESCRIPTION #100

5.00 CHARACTERISTICS AND ESTIMATED PROPERTIES OF MAJOR SOILS AND/OR LAND AREAS										
5.10 MAJOR COMPONENT NAME: Typic Cryorthent, loamy-skeletal, mixed (nonacid).										
DEPTH (INS.)	USDA TEXTURE	> 3 IN (% BY VOL)	2MM-3 IN (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	LL	
0-5	CB-FSL	10-20	5-10	6.1-6.5	2.0-6.0	Low	.08-.09	5-10	20-30	
5-60	CBV-SL	25-30	20-25	6.1-8.4	2.0-6.0	Low	.06-.08	SP-5	20-30	
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		AVERAGE
0-5	A-2, A-4	SM-SC	K	T	60	Well	Gravel 2M-3"	RANGE		10
5-60	A-1	GM	.17	5				10-30	20	
POTENTIAL FROST ACTION			SOIL HYDROLOGIC GROUP		INFILTRATION	EROSION HAZARD		Vegetation		55
Moderate			B		Moderate	Water Mod.	Wind Low	Litter		10
FLOODING			HIGH WATER TABLE							
Frequency	Duration	Months	Depth (Ft.)		Kind	Months				
None	-	-	None		-	-				
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK						
Potential	Allowable	Current	Natural	Depth (Ins.)	Cemented Pan Thickness	Bedrock Hardness				
5	5	1.8	-	None	-	-				
5.11 SIMILAR INCLUDED SOILS WITH 5.10:										
5.20 MAJOR COMPONENT NAME: Pachic Cryoboroll, loamy-skeletal, mixed.										
DEPTH (INS.)	USDA TEXTURE	> 3 IN (% BY VOL)	2MM-3 IN (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	LL	
0-5	L	-	-	6.1-6.5	0.6-2.0	Low	.16-.18	5-10	20-30	
5-14	L	5	5	6.1-6.5	0.6-2.0	Low	.16-.18	5-10	20-30	
14-40	STV-L	40-45	5-10	6.1-6.5	2.0-6.0	Low	.08-.10	5-10	20-35	
40	WB									
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		AVERAGE
0-5	A-4	CL-ML	K	T	40	Well	Gravel 2M-3"	RANGE		5
5-14	A-4	CL-ML	.32	2				0-10	2	
14-40	A-4	CL-ML	.32	2	40	Well	Stone 10-24"	-		-
POTENTIAL FROST ACTION			SOIL HYDROLOGIC GROUP		INFILTRATION	EROSION HAZARD		Vegetation		80
Moderate			B		Moderate	Water Mod.	Wind Low	Litter		10
FLOODING			HIGH WATER TABLE							
Frequency	Duration	Months	Depth (Ft.)		Kind	Months				
None	-	-	None		-	-				
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK						
Potential	Allowable	Current	Natural	Depth (Ins.)	Cemented Pan Thickness	Bedrock Hardness				
-	2	2.33	-	None	-	-				
5.21 SIMILAR INCLUDED SOILS WITH 5.20:										
5.30 MAJOR COMPONENT NAME: Argic Cryoborolls, loamy-skeletal, mixed.										
DEPTH (INS.)	USDA TEXTURE	> 3 IN (% BY VOL)	2MM-3 IN (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	LL	
0-7	STV-L	20-30	5-10	6.6-2.0	0.6-2.0	Low	.11-.13	5-10	25-30	
7-23	CBV-CL	20-30	10-15	6.1-6.5	0.2-0.6	Medium-Low	.12-.14	10-15	30-40	
23-39	CBX-FSL	40-50	15-20	5.6-6.0	2.0-6.0	Low	.06-.08	SP-5	20-35	
39-50	CBV-CL	10-15	5-10	5.6-6.0	2.0-6.0	Medium-Low	.12-.14	10-15	30-40	
50-60	CBX-FSL	25-35	25-35	5.6-6.0	2.0-6.0	Low	.06-.08	SP-5	20-35	
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		AVERAGE
0-7	A-4	CL-ML	K	T	60	Well	Gravel 2M-3"	RANGE		10
7-23	A-6	CL	.17	5				5-15	10	
23-39	A-2	GM	.20	5	60	Well	Stone 10-24"	10-30		15
39-50	A-6	CL						Boulder > 24"	0-5	
POTENTIAL FROST ACTION			SOIL HYDROLOGIC GROUP		INFILTRATION	EROSION HAZARD		Vegetation		50
Moderate			B		Moderate	Water High	Wind Low	Litter		10
FLOODING			HIGH WATER TABLE							
Frequency	Duration	Months	Depth (Ft.)		Kind	Months				
None	-	-	None		-	-				
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK						
Potential	Allowable	Current	Natural	Depth (Ins.)	Cemented Pan Thickness	Bedrock Hardness				
5	5	1.5	-	None	-	-				
5.31 SIMILAR INCLUDED SOILS WITH 5.30:										

SOIL MAP UNIT DESCRIPTION # 301

SOIL SURVEY AREA	Price River Watershed	ORDER:	3	DATE:	9-09-83	BY	Swenson
SOIL MAP UNIT SYMBOL AND NAME	301 Typic Cryoboroll, loamy-skeletal, mixed, cobbly loam, 30 to 50 percent slopes,-- Lithic Cryorthent, loamy, mixed, (nonacid)stony, fine sandy loam, 30 to 80 percent slopes,--Typic Cryorthent, fine-loamy, mixed, (calcareous), stony loam, 30 to 50 percent slopes.						
1.00 SETTING	This mapping unit is on south and west exposures of steep mountain slopes, at elevations of 8,000 to near 11,000 feet. It occurs mainly in the area north and east of Stuart Guard Station. The average annual air temperature is 32°F to 38°F. The average summer temperature is near 50°F. The average annual precipitation is 25 to 30 inches. The freeze-free period is 20 to 30 days. The soils range from deep to shallow, and some of the deep soils are very gravelly or very cobbly. They are well drained, loams and sandy loams, developed in colluvium and residuum from sandstone and shale. Rock fragments of gravel, cobble, stone and boulders cover 5 to 40 percent of the surface. Slopes are 30 to 50 percent. Vegetation is grass, forbs, mountain big sagebrush, snowberry, and some aspen and conifer.						
2.00 MAP UNIT COMPOSITION							
	MAJOR SOILS AND/OR LAND AREAS (INCLUDE FAMILY NAME)	% IN M.U.	PHYSIOGRAPHY, PARENT MATERIAL AND SLOPE CHARACTERISTICS				
2.10	Typic Cryoboroll, loamy-skeletal, mixed, cobbly loam, 30 to 50 percent slopes.	35	Convex, medium length slopes.				
2.20	Lithic Cryorthent, loamy, mixed, (nonacid), stony, fine sandy loam, 30 to 80 percent slopes.	25	Convex, medium length slopes.				
2.30	Typic Cryorthent, fine-loamy, mixed (calcareous) stony loam, 30 to 50 percent slopes.	20	Long, concave slopes.--some aspen and conifer.				
	DISSIMILAR INCLUDED SOILS AND/OR LAND AREAS	% IN M.U.	PHYSIOGRAPHY, SHAPE OF UNIT, AND SLOPE CHARACTERISTICS				
2.40	ROCK OUTCROP.	5					
2.50	Typic Cryorthents, fine-loamy, mixed, (calcareous) boulder loam, 5 to 30 percent slopes.	5	Short toe slopes.--sage-grass.				
2.60	Argic Pachic Cryoboroll, fine-loamy, mixed, loam, 5 to 15 percent slopes.	5	Short toe slopes.--aspen.				
							
3.00 NARRATIVE DESCRIPTION OF PHOTO OR DIAGRAM	The rock outcrop appears to be considerably more of the landscape than it is. The shallow soils are generally above the rock outcrop.						
4.00 TYPE LOCATION FOR MAP UNIT	Nuck Woodward Canyon.						

SOIL MAP UNIT DESCRIPTION

301

5.00 CHARACTERISTICS AND ESTIMATED PROPERTIES OF MAJOR SOILS AND/OR LAND AREAS										
5.10 MAJOR COMPONENT NAME: Typic Cryoboroll, loamy-skeletal, mixed.										
DEPTH (INS.)	USDA TEXTURE	> 3 IN (% BY VOL)	2MM-3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P1	LL	
0-1	CR-1	10-15	5-15	6.6-7.3	0.6-2.0	Low	.13-.15	5-10	20-35	
11-60	CBV-1	30-35	10-20	7.4-8.4	0.6-2.0	Low	.09-.11	5-10	20-35	
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		AVERAGE
			K	T				RANGE		
0-11	A-4	CL-NL	.28	5	60	Well		Gravel 2MM-3"	0-10	5
								Cobble 3-10"	7-20	15
11-60	A-4	SM-CL						Stone 10-24"	-	-
								Boulder >24"	-	-
								Vegetation	50-80	63
								Litter	10-20	15
								Bare	0-5	2
FLOODING				HIGH WATER TABLE						
Frequency	Duration	Months	Depth (ft.)	Kind	Months					
None	-	-	None	-	-					
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK						
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness				
-	5	1.13	-	-	-	-				
5.11 SIMILAR INCLUDED SOILS WITH 5.10: Argic Pacific Cryoboroll, fine-loamy, mixed.										
5.20 MAJOR COMPONENT NAME: Little Cryorthent, loamy, mixed (nonacid).										
DEPTH (INS.)	USDA TEXTURE	> 3 IN (% BY VOL)	2MM-3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P1	LL	
0-5	SL-PS1	10-15	5-10	7.4-7.8	2.0-6.0	Low	.14-.16	NP-5	20-25	
5-17	PS1	5-10	5-10	7.4-7.8	2.0-6.0	Low	.15-.17	NP-5	20-25	
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		AVERAGE
			K	T				RANGE		
0-5	A-4	CL-NL	.20	1	17	Well		Gravel 2MM-3"	10-20	10
								Cobble 3-10"	5-10	5
5-17	A-4	CL-NL						Stone 10-24"	10-15	10
								Boulder >24"	-	-
								Vegetation	40-65	55
								Litter	10-20	15
								Bare	5-10	5
FLOODING				HIGH WATER TABLE						
Frequency	Duration	Months	Depth (ft.)	Kind	Months					
None	-	-	None	-	-					
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK						
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness				
-	1	6.14	-	17	-	SOFT				
5.21 SIMILAR INCLUDED SOILS WITH 5.20: ROCK OUTCROPS										
5.30 MAJOR COMPONENT NAME: Typic Cryorthent, fine-loamy, mixed (calcareous).										
DEPTH (INS.)	USDA TEXTURE	> 3 IN (% BY VOL)	2MM-3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P1	LL	
0-12	SL-L	10-20	10-15	7.4-8.4	0.6-2.0	Low	.13-.15	5-10	20-30	
5-60	GR-L	5-10	10-20	7.9-8.4	0.6-2.0	Low	.13-.15	5-10	20-30	
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		AVERAGE
			K	T				RANGE		
0-12	A-4	CL-NL	.28	5	60	Well		Gravel 2MM-3"	10-20	10
								Cobble 3-10"	10-20	10
5-60	A-4	CL-NL	.28	5	60	Well		Stone 10-24"	10-15	10
								Boulder >24"	5-15	5
								Vegetation	30-50	50
								Litter	0-10	5
								Bare	5-15	10
FLOODING				HIGH WATER TABLE						
Frequency	Duration	Months	Depth (ft.)	Kind	Months					
None	-	-	None	-	-					
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK						
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness				
-	5	0.15	-	-	-	-				
5.31 SIMILAR INCLUDED SOILS WITH 5.30: Typic Cryorthent, fine-loamy, mixed, calcareous, calcareous, loamy.										

SOIL MAP UNIT DESCRIPTION #401

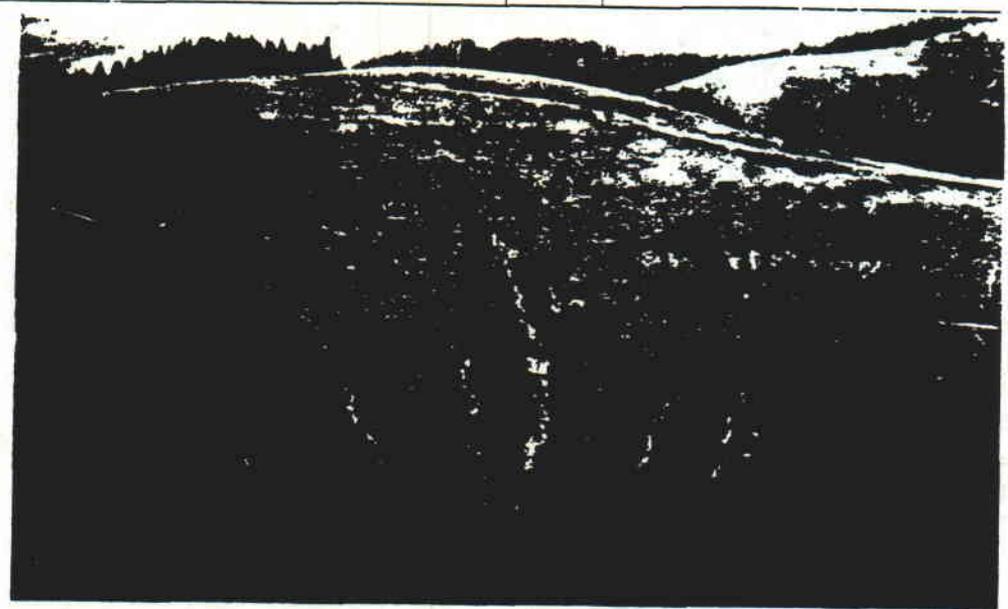
SOIL SURVEY AREA: Price River Watershed ORDER: 3 DATE: 9-12-83 BY: Swenson

SOIL MAP UNIT SYMBOL AND NAME: 401 Pachic Cryoboroll, fine-loamy, mixed, loam, 30 to 60 percent slopes, --Lithic Cryorthent, loamy-skeletal, mixed, (nonacid) cobbly loam, 8 to 60 percent slopes, --Typic Cryorthent, loamy, mixed, (nonacid), shallow cobbly, loam, 8 to 50 percent slopes.

1.00 SETTING This mapping unit is mainly on ridges and the adjacent sideslopes of steep mountain slopes at elevations of 8,600 to near 11,000 feet. It is confined almost exclusively to the Trough Springs Ridge area. The average annual air temperature is 32°F to 38°F. The average summer temperature is near 50°F. The average annual precipitation is 25 to 30 inches. The freeze-free period is 20 to 30 days. The shallow, very cobbly soils occupy the ridge tops. The shallow and moderately deep, loamy soils are below them, and the deeper soils are still further down the slopes. The soils are well drained, loams, silt loams, and sandy loams, developed in colluvium and residuum from sandstone and shale. Slopes are 8 to 60 percent. Vegetation is grasses, forbs, mountain big sagebrush, western coneflower, tall larkspur and scattered aspens.

2.00 MAP UNIT COMPOSITION

MAJOR SOILS AND/OR LAND AREAS (INCLUDE FAMILY NAME)	% IN M.U.	PHYSIOGRAPHY, PARENT MATERIAL AND SLOPE CHARACTERISTICS
2.10 Pachic Cryoboroll, fine-loamy, mixed, loam 30 to 60 percent slopes, gullied.	40	Concave lower mountain steep slopes. Mixed shale and sandstone P.M. Gullies are 2 to 10 feet deep and 100 to 1,000 feet apart.
2.20 Lithic Cryorthent, loamy-skeletal, mixed (nonacid) very cobbly loam, 8 to 60 percent slopes.	23	Convex, ridgetops, short slopes, sandstone parent material.
2.30 Typic Cryorthent, loamy, mixed, (nonacid) shallow, cobbly, clay loam, 8 to 50 percent slopes.	20	Convex, concave sideslopes below ridge tops. Shale and sandstone residuum P.M.
DISSIMILAR INCLUDED SOILS AND/OR LAND AREAS	% IN M.U.	PHYSIOGRAPHY, SHAPE OF UNIT, AND SLOPE CHARACTERISTICS
2.40 Pachic Cryoboroll, fine-loamy, mixed, cobbly, clay loam, moderately deep, 8 to 30 percent slopes.	15	Concave sideslopes between the shallow soils and deeper ones. Some rills and shallow gullies.
2.50 ROCK OUTCROP	2	Ridge tops.
2.60		



3.00 NARRATIVE DESCRIPTION OF PHOTO OR DIAGRAM The gullied portion is the Pachic Cryoboroll soil. The ridge top is the Lithic Cryorthent and the shallow Typic Cryorthent.

4.00 TYPE LOCATION FOR MAP UNIT Trough Springs Ridge.

SOIL MAP UNIT DESCRIPTION #401

5.00 CHARACTERISTICS AND ESTIMATED PROPERTIES OF MAJOR SOILS AND/OR LAND AREAS											
5.10 MAJOR COMPONENT NAME: Pacific Cryoboroll, fine-loamy, mixed.											
DEPTH (INS.)	USDA TEXTURE	> 3 IN (%BY VOL)	2MM-3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	LL		
0-42	Loam	-	10	5.6-6.0	0.6-2.0	Low	.14-.16	5-10	25-30		
42-50	Silt Loam	-	15	5.6-6.0	0.6-2.0	Low	.14-.16	5-10	25-30		
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		AVERAGE	
0-42	A-4	ML-CL	.32		50	Well		Gravel 2MM-3"	0-5	2	
42-50	A-4	ML-CL	.37	4	50	Well		Cobble 3-10"	0-1	-	
								Stone 10-24"	-	-	
								Boulder >24"	-	-	
			POTENTIAL FROST ACTION		SOIL HYDROLOGIC GROUP	INFILTRATION	EROSION HAZARD		Vegetation	80-97	92
			Moderate		B	Moderate	Water High	Wind Low	Litter	5-10	5
								Bare	0-5	1	
FLOODING					HIGH WATER TABLE						
Frequency	Duration	Months	Depth (ft.)		Kind	Months					
None	-	-	None		-	-					
SHEET AND RILL EROSION TONS/AC/YR					CEMENTED PAN OR BEDROCK						
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness					
-	4	3.3	-	50	-	Soft					
5.11 SIMILAR INCLUDED SOILS WITH 5.10: Pacific Cryoboroll, fine-loamy, mixed, moderately deep.											
5.20 MAJOR COMPONENT NAME: Lithic Cryorthent, loamy-skeletal, mixed (nonacid)											
DEPTH (INS.)	USDA TEXTURE	> 3 IN (%BY VOL)	2MM-3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	LL		
0-5	CBV-L	20-30	5-15	6.6-7.3	2.0-6.0	Low	.09-.11	5-10	20-		
5-12	CBX-L	30-40	20-30	6.6-7.3	2.0-6.0	Low	.08-.10	5-10	20-30		
12	WB										
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		AVERAGE	
0-5	A-4	GC	.28		12-20	Somewhat excessively		Gravel 2MM-3"	10-20	15	
5-12	A-2, A-4	GM-GC	.24	1	12-20	Somewhat excessively		Cobble 3-10"	20-40	20	
								Stone 10-24"	0-15	5	
								Boulder >24"	-	-	
			POTENTIAL FROST ACTION		SOIL HYDROLOGIC GROUP	INFILTRATION	EROSION HAZARD		Vegetation	30-60	45
			Moderate		C	Slow	Water Low	Wind Low	Litter	0-15	5
								Bare	5-15	10	
FLOODING					HIGH WATER TABLE						
Frequency	Duration	Months	Depth (ft.)		Kind	Months					
None	-	-	None		-	-					
SHEET AND RILL EROSION TONS/AC/YR					CEMENTED PAN OR BEDROCK						
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness					
-	1	6.33	-	12	-	Soft					
5.21 SIMILAR INCLUDED SOILS WITH 5.20:											
5.30 MAJOR COMPONENT NAME: Typic Cryorthent, loamy, mixed (nonacid), shallow.											
DEPTH (INS.)	USDA TEXTURE	> 3 IN (%BY VOL)	2MM-3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	LL		
0-5	CB-CL	10-15	0-10	6.6-7.3	0.2-0.6	Medium	.16-.18	10-15	30-35		
5-17	CB-CL	10-20	0-5	6.6-7.3	0.2-0.6	Medium	.15-.17	10-15	30-35		
17	WB										
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		AVERAGE	
0-5	A-7	ML-CL	.20		20"	Well		Gravel 2MM-3"	0-10	10	
5-17	A-7	ML-CL	.28	1	20"	Well		Cobble 3-10"	0-20	10	
								Stone 10-24"	0-5	0	
								Boulder >24"	-	-	
			POTENTIAL FROST ACTION		SOIL HYDROLOGIC GROUP	INFILTRATION	EROSION HAZARD		Vegetation	40-70	60
			Moderate		C	Slow	Water Mod.	Wind Low	Litter	10-20	15
								Bare	0-10	5	
FLOODING					HIGH WATER TABLE						
Frequency	Duration	Months	Depth (ft.)		Kind	Months					
None	-	-	None		-	-					
SHEET AND RILL EROSION TONS/AC/YR					CEMENTED PAN OR BEDROCK						
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness					
-	1	3.0	-	17	-	Soft					
5.31 SIMILAR INCLUDED SOILS WITH 5.30:											

SOIL MAP UNIT DESCRIPTION #560

SOIL SURVEY AREA Price River Watershed ORDER: J DATE: 9-13-83 by Swenson

SOIL MAP UNIT SYMBOL AND NAME: 560 Argic Pachic Cryoboroll, fine-loamy, mixed, loam 5 to 40 percent slopes.--Typic Cryoboroll, loamy-skeletal, mixed, cobbly loam, 30 to 50 percent slopes.

100 SETTING This mapping unit is on east, west and south exposures of steep mountain slopes at elevations of 8,000 to near 11,000 feet. It occurs mainly on the eastern slope of Castle Valley Ridge. Average annual air temperature is 32°F to 38°F. The average summer temperature is near 50°F. Average annual precipitation is 25 to 30 inches. The freeze-free period is 20 to 40 days. The soils are deep, well drained, loams and very cobbly loams, developed in colluvium from sandstone and shale. Vegetation is Aspen, grasses, forbs, elderberry, snowberry, and western coneflower.

200 MAP UNIT COMPOSITION

MAJOR SOILS AND/OR LAND AREAS (INCLUDE FAMILY NAME)	% IN M.U.	PHYSIOGRAPHY, PARENT MATERIAL AND SLOPE CHARACTERISTICS
210 Argic Pachic Cryoboroll, fine-loamy, mixed, loam, 5 to 40 percent slopes.	45	Short convex sideslopes on east and west exposures. Aspen.
220 Typic Cryoboroll, loamy-skeletal, mixed, cobbly loam, 30 to 50 percent slopes.	40	Long convex mountain slopes on mainly east exposures. Aspen.
230		
DISSIMILAR INCLUDED SOILS AND/OR LAND AREAS	% IN M.U.	PHYSIOGRAPHY, SHAPE OF UNIT, AND SLOPE CHARACTERISTICS
240 Typic Cryoboroll, fine-loamy, mixed, shallow, 50 to 70 percent slopes.	5	Short convex ridges. Sandstone and shale parent material. Aspen, sage-grass.
250 Boralfic Cryoboroll, loamy-skeletal, mixed, loam, 30 to 60 percent slopes.	5	Short convex slopes. Sagebrush, grass.
260 Pachic Cryoboroll, coarse-loamy, mixed, fine sandy loam, 30 to 60 percent slopes.	5	Medium length, convex slopes. Aspen.



300 NARRATIVE DESCRIPTION OF PHOTO OR DIAGRAM This unit occupies mountain slopes with small patches of aspen. The Argic Pachic Cryoboroll soils are under the aspen.

400 TYPE LOCATION FOR MAP UNIT East slope of Castle Valley Ridge.

SOIL MAP UNIT DESCRIPTION

5.00 CHARACTERISTICS AND ESTIMATED PROPERTIES OF MAJOR SOILS AND/OR LAND AREAS											
5.10 MAJOR COMPONENT NAME: <i>Argic Pacific Cryoborolls, fine loamy, mixed.</i>											
DEPTH (INS.)	USDA TEXTURE	> 3 IN (% BY VOL)	2MM 3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	LL		
0-4	CL	-	-	6.6-7.3	.6-2.0	Low	.16-.18	5-10	20-35		
4-28	CL	0-5	0-5	6.6-7.0	.2-.6	Med Low	.18-.19	10-15	30-40		
28-60	GMV-1	30-35	5-10	7.9-8.4	.6-2.0	Low	.16-.18	5-10	20-35		
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		RANGE	AVERAGE
0-4	A-4	CL-ML	.32	4	60	Well		Gravel 2MM 3"	0-10	5	
4-28	A-6	CL						Cobble 3-10"	-	-	
28-60	A-4	CL-ML						Stone 10-24"	-	-	
			POTENTIAL FROST ACTION		SOIL HYDROLOGIC GROUP	INFILTRATION	EROSION HAZARD		Vegetation	60-90	30
			Moderate		B	Moderate	Water Low	Wind Low	Litter	10-20	10
								Bare	0-10	5	
FLOODING				HIGH WATER TABLE							
Frequency	Duration	Months	Depth (Ft.)	Kind	Months						
None	-	-	None	-	-						
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK							
Potential	Allowable	Current	Natural	Depth (Ins.)	Cemented Pan Thickness	Bedrock Hardness					
-	4	.5	-	None	-	-					
5.11 SIMILAR INCLUDED SOILS WITH 5.10:											
5.20 MAJOR COMPONENT NAME: <i>Typic Cryoboroll, loamy-skeletal, mixed.</i>											
DEPTH (INS.)	USDA TEXTURE	> 3 IN (% BY VOL)	2MM 3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	LL		
0-11	GM-1	10-15	5-15	6.6-7.3	.6-2.0	Low	.16-.18	5-10	20-35		
11-60	GMV-1	30-35	10-20	7.4-8.4	.6-2.0	Low	.09-.11	5-10	20-35		
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		RANGE	AVERAGE
0-11	A-4	CL-MT	.28	4	60	Well		Gravel 2MM 3"	0-10	5	
11-60	A-4	GM-GC						Cobble 3-10"	10-20	15	
								Stone 10-24"	0-5	3	
			POTENTIAL FROST ACTION		SOIL HYDROLOGIC GROUP	INFILTRATION	EROSION HAZARD		Vegetation	60-90	60
			Moderate		B	Moderate	Water Low	Wind Low	Litter	10-20	15
								Bare	0-5	2	
FLOODING				HIGH WATER TABLE							
Frequency	Duration	Months	Depth (Ft.)	Kind	Months						
None	-	-	None	-	-						
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK							
Potential	Allowable	Current	Natural	Depth (Ins.)	Cemented Pan Thickness	Bedrock Hardness					
-	4	5.0	-	None	-	-					
5.21 SIMILAR INCLUDED SOILS WITH 5.20: <i>Boralfic cryoboroll, loamy skeletal, mixed.</i>											
5.30 MAJOR COMPONENT NAME:											
DEPTH (INS.)	USDA TEXTURE	> 3 IN (% BY VOL)	2MM 3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	LL		
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		RANGE	AVERAGE
								Gravel 2MM 3"			
								Cobble 3-10"			
								Stone 10-24"			
								Boulder > 24"			
			POTENTIAL FROST ACTION		SOIL HYDROLOGIC GROUP	INFILTRATION	EROSION HAZARD		Vegetation		
							Water	Wind	Litter		
									Bare		
FLOODING				HIGH WATER TABLE							
Frequency	Duration	Months	Depth (Ft.)	Kind	Months						
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK							
Potential	Allowable	Current	Natural	Depth (Ins.)	Cemented Pan Thickness	Bedrock Hardness					
5.31 SIMILAR INCLUDED SOILS WITH 5.30:											

SOIL MAP UNIT DESCRIPTION 761

SOIL SURVEY AREA: Price River Watershed OROLA 3 DATE: 9-13-83 BY: Swenson

SOIL MAP UNIT SYMBOL AND NAME: #561 Argic Pacific Cryoboroll, fine-loamy, mixed, loam, 5 to 40 percent slopes.-- skeletal, mixed, loam, 10 to 30 percent slopes.

100 SETTING This mapping unit is on ridges and the adjacent mountain slopes, on all exposures, at elevations of 8,400 to 10,300 feet. It occurs mainly west and northwest of Gooseberry Reservoir. Average annual air temperature is 32°F to 38°F. The average summer temperature is near 50°F. Average annual precipitation is 25 to 30 inches. The freeze-free period is 29 to 40 days. The soils are deep, well drained, clay, silty loams and very cobbly loams. They developed in alluvium, colluvium and residuum from shale and sandstone. Vegetation is aspen, grasses, western coneflower, elderberry and various forbs.

200 MAP UNIT COMPOSITION

MAJOR SOILS AND/OR LAND AREAS (INCLUDE FAMILY NAME)	% IN M.U.	PHYSIOGRAPHY, PARENT MATERIAL AND SLOPE CHARACTERISTICS
2.10 Argic Pacific Cryoboroll, fine-loamy, mixed, loam, 5 to 40 percent slopes.	55	Long convex mountain slopes.
2.20 Argic Pacific Cryoboroll, fine, montmorillonitic loam, 5 to 20 percent slopes.	20	Short concave mountain slopes.
2.30 Pacific Cryoboroll, loamy-skeletal, mixed, loam, 10 to 30 percent slopes.	15	Short convex mountain ridges.
DISSIMILAR INCLUDED SOILS AND/OR LAND AREAS	% IN M.U.	PHYSIOGRAPHY, SHAPE OF UNIT, AND SLOPE CHARACTERISTICS
2.40 Lithic Cryoboroll, loamy-skeletal, mixed.	9	Short convex ridges and side slopes.
2.50 ROCK OUTCROP	1	
2.60		



300 NARRATIVE DESCRIPTION OF PHOTO OR DIAGRAM: There does not seem to be a repetitive pattern of soils in this unit.

400 TYPE LOCATION FOR MAP UNIT: Northwest of Gooseberry Reservoir.

SOIL MAP UNIT DESCRIPTION

5.00 CHARACTERISTICS AND ESTIMATED PROPERTIES OF MAJOR SOILS AND/OR LAND AREAS										
5.10 MAJOR COMPONENT NAME: Argic Pachic Cryoboroll, fine-loamy, mixed.										
DEPTH (INS.)	USDA TEXTURE	> 3 IN (%BY VOL)	2MM 3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	CL	
0-17	L	-	0-10	6.1-6.5	0.6-2.0	Low	.16-.18	5-10	25	
17-60	CL	-	-	6.1-6.5	0.2-6.0	Medium	.18-.19	10-15	30-35	
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		AVERAGE
0-17	A-6	ML-CL	.32	4	40	Well		Gravel 2MM 3"	0-10	5
17-60	A-6	CL						Cobble 3 10"	-	-
								Stone 10 24"	-	-
								Boulder >24"	-	-
								Vegetation	60-90	75
								Litter	10-30	10
								Bare	0-10	10
FLOODING			HIGH WATER TABLE							
Frequency	Duration	Months	Depth (ft.)		Kind	Months				
None	-	-	None		-	-				
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK						
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness				
	3	9	-	60	-	Soft				
5.11 SIMILAR INCLUDED SOILS WITH 5.10:										
5.20 MAJOR COMPONENT NAME: Argic Pachic Cryoboroll, fine, montmorillonitic.										
DEPTH (INS.)	USDA TEXTURE	> 3 IN (%BY VOL)	2MM 3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	CL	
0-12	L	-	-	6.6-7.3	.6-2.0	Medium	.16-.18	0-15	25-35	
12-36	CL-C	-	-	6.6-7.3	.20-.60	High	.18-.19	5-25	40-50	
36-50	C	-	-	6.6-7.3	.06-.20	High	.18-.19	5-25	40-50	
36	WB									
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		AVERAGE
0-12	A-4, A-6	CL	.32	3	40	Well		Gravel 2MM 3"	-	-
12-36	A-7	CL-CH						Cobble 3 10"	-	-
26-36	A-7	CL-CH						Stone 10 24"	-	-
								Boulder >24"	-	-
								Vegetation	60-90	75
								Litter	10-30	20
								Bare	0-10	5
FLOODING			HIGH WATER TABLE							
Frequency	Duration	Months	Depth (ft.)		Kind	Months				
None	-	-	None		-	-				
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK						
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness				
	3	5	-	36	-	Soft				
5.21 SIMILAR INCLUDED SOILS WITH 5.20:										
5.30 MAJOR COMPONENT NAME: Pachic Cryoboroll, loamy-skeletal, mixed.										
DEPTH (INS.)	USDA TEXTURE	> 3 IN (%BY VOL)	2MM 3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	CL	
0-13	L	-	-	6.6-7.3	.6-2.0	Low	.17-.18	5-10	20-35	
13-25	STV-L	45-50	5	6.6-7.3	2.0-6.0	Low	.09-.11	5-10	20-35	
25-45	STX-L, CL	60-70	-	6.6-7.9	2.0-6.0	Low	.08-.10	0-15	25-35	
45	WB									
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		AVERAGE
0-13	A-4	CL-MI	.32	4	45"	Well		Gravel 2MM 3"	0-10	5
13-25	A-4	CL						Cobble 3 10"	-	-
25-45	A-6	CL						Stone 10 24"	-	-
								Boulder >24"	-	-
								Vegetation	60-90	75
								Litter	10-20	15
								Bare	0-10	5
FLOODING			HIGH WATER TABLE							
Frequency	Duration	Months	Depth (ft.)		Kind	Months				
None	-	-	None		-	-				
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK						
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness				
	4	1.5	-	45	-	Soft				
5.31 SIMILAR INCLUDED SOILS WITH 5.30:										

SOIL MAP UNIT DESCRIPTION #711

SOIL SURVEY AREA: Price River Watershed		ORDER: 3	DATE: 9-13-83	BY: Swenson
SOIL MAP UNIT SYMBOL AND NAME: 711 Typic Paleboralf, loamy-skeletal, mixed, fine sandy loam, 40 to 70 percent slopes.--Boralfic Cryoboroll, loamy-skeletal, mixed, loam, 30 to 60 percent slopes.--Pachic Cryoboroll, fine loamy, mixed, loam, 30 to 60 percent slopes.				
1.00 SETTING This mapping unit is mainly on northerly exposures of mountain slopes at elevations of 8,200 to almost 11,000 feet. It occurs on the south part of the Trough Springs Ridge area and on the east slope of Castle Valley Ridge. Average annual air temperature is 32°F to 38°F. The average summer temperature is near 50°F. The average annual precipitation is 25 to 30 inches. The freeze-free period is only 10 to 30 days. The soils are deep, well drained, to somewhat excessively drained, and are very cobbly fine sandy loams and loams. They developed in colluvium and local alluvium from sandstone. Vegetation is spruce, fir, aspen, grasses, snowberry, and various forbs.				
2.00 MAP UNIT COMPOSITION				
MAJOR SOILS AND/OR LAND AREAS (INCLUDE FAMILY NAME)		% IN M.U.	PHYSIOGRAPHY, PARENT MATERIAL AND SLOPE CHARACTERISTICS	
2.10	Typic Paleboralf, loamy-skeletal, mixed, fine sandy loam, 40 to 70 percent slopes.	50	Long convex mountain slopes and north exposures.	
2.20	Boralfic Cryoboroll, loamy-skeletal, mixed, loam, 30 to 60 percent slopes.	20	Long convex mountain slopes and north and east exposures.	
2.30	Pachic Cryoboroll, fine-loamy, mixed, loam, 30 to 60 percent slopes.	20	Short concave - convex slopes on all exposures but north.	
DISSIMILAR INCLUDED SOILS AND/OR LAND AREAS		% IN M.U.	PHYSIOGRAPHY, SHAPE OF UNIT, AND SLOPE CHARACTERISTICS	
2.40	Typic Cryorthent, loamy, mixed (nonacid) shallow, loam, 8 to 60 percent slopes.	10	Points and ridges.	
2.50				
2.60				
				
3.00 NARRATIVE DESCRIPTION OF PHOTO OR DIAGRAM The pure stands of conifer are on the Typic Paleboralf soils, the aspen is on the Boralfic Cryoborolls and the Pachic Cryoborolls.				
4.00 TYPE LOCATION FOR MAP UNIT North Hughes Canyon southeast of gas well.				

SOIL MAP UNIT DESCRIPTION #711

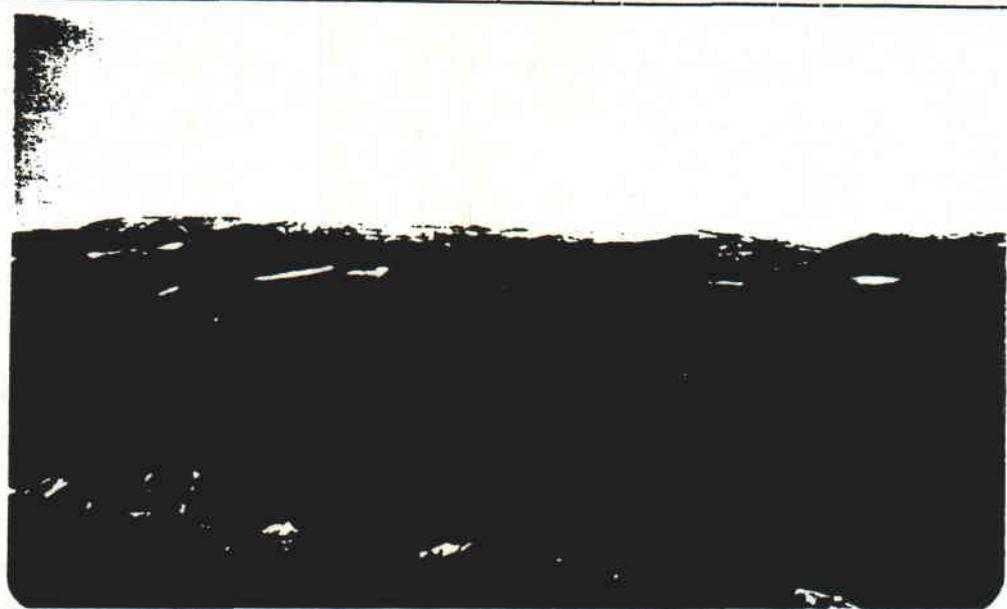
5.00 CHARACTERISTICS AND ESTIMATED PROPERTIES OF MAJOR SOILS AND/OR LAND AREAS											
5.10 MAJOR COMPONENT NAME: Typic Paleboralf, loamy-skeletal, mixed.											
DEPTH (INS.)	USDA TEXTURE	> 3 IN (%BY VOL)	2MM-3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	L.L.		
3-0	Organic										
0-6	CB-EST	15-25	5-10	6.1-6.5	2.0-6.0	Low	.08-.10	5-10	20-30		
6-50	CBV-FSL	15-20	35-40	5.6-6.0	2.0-6.0	Low	.07-.08	5-10	20-30		
50-60	CBX-SCL	45-55	15-20	5.6-6.0	0.6-2.0	Low	.10-.12	5-10	20-30		
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		RANGE	AVERAGE
0-6	A-4	SM-SC	.17	4	60	Somewhat excessive	-	Gravel 2MM-3"	0-15	5	
6-50	A-4	GM-GC	.15	4	60	excessive	-	Cobble 3-10"	0-5	2	
								Stone 10-24"	0-5	2	
50-60	A-1, A-2	GM-GC	POTENTIAL FROST ACTION		SOIL HYDROLOGIC GROUP	INFILTRATION	EROSION HAZARD	Boulder >24"	-	-	
			Moderate		A	Rapid	Water Mod. Wind Low	Vegetation	30-50	40	
								Litter	40-60	50	
								Bare	0-10	1	
FLOODING			HIGH WATER TABLE								
Frequency	Duration	Months	Depth (ft.)		Kind	Months					
None	-	-	None		-	-					
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK							
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness					
	4	1.1	-	None	-	-					
5.11 SIMILAR INCLUDED SOILS WITH 5.10:											
5.20 MAJOR COMPONENT NAME: Boralfic Cryoboroll, loamy-skeletal, mixed.											
DEPTH (INS.)	USDA TEXTURE	> 3 IN (%BY VOL)	2MM-3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	L.L.		
0-15	CB-L	5-15	5-15	6.1-6.5	2.0-6.0	Low	.14-.16	5-10	25-30		
15-38	CBV-VFSL	30-40	15-25	5.6-6.0	2.0-6.0	Low	.08-.09	5-10	20-25		
38-57	CBX-CL	20-35	25-35	5.6-6.0	0.2-0.6	Low	.09-.11	0-15	30-35		
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		RANGE	AVERAGE
0-15	A2-A4	GM-GC	.32	4	57	Somewhat excessive	-	Gravel 2MM-3"	0-15	5	
			.15	4	57	excessive	-	Cobble 3-10"	0-5	2	
15-38	A-2	GC-GM	POTENTIAL FROST ACTION		SOIL HYDROLOGIC GROUP	INFILTRATION	EROSION HAZARD	Stone 10-24"	0-2	-	
			Moderate		B	Moderate	Water Mod. Wind Low	Boulder >24"	-	-	
38-57	A-2	GC						Vegetation	50-70	62	
								Litter	20-30	30	
								Bare	0-5	1	
FLOODING			HIGH WATER TABLE								
Frequency	Duration	Months	Depth (ft.)		Kind	Months					
None	-	-	None		-	-					
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK							
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness					
	4	1.0	-	57	-	Soft					
5.21 SIMILAR INCLUDED SOILS WITH 5.20:											
5.30 MAJOR COMPONENT NAME: Pachic Cryoboroll, fine-loamy, mixed.											
DEPTH (INS.)	USDA TEXTURE	> 3 IN (%BY VOL)	2MM-3 IN. (% BY VOL)	REACTION (pH)	PERMEABILITY (INS./HR.)	SHRINK-SWELL POTENTIAL	A.W.C. (IN./IN.)	P.I.	L.L.		
0-42	L	-	10	5.6-6.0	0.6-2.0	Low	.14-.16	5-10	25-30		
42-50	SIL	-	15	5.7-6.0	0.6-2.0	Low	.14-.16	5-10	25-30		
DEPTH (INS.)	AASHTO	UNIFIED	EROS. FACTORS		EFFECTIVE ROOTING DEPTH	DRAINAGE CLASS	WATER YIELD CLASS	GROUND COVER (%)		RANGE	AVERAGE
0-42	A-4	ML-CL	.32	4	50	Well	-	Gravel 2MM-3"	0-5	3	
42-50	A-4	ML-CL	.37	4	50	Well	-	Cobble 3-10"	0-5	1	
			POTENTIAL FROST ACTION		SOIL HYDROLOGIC GROUP	INFILTRATION	EROSION HAZARD	Stone 10-24"	-	-	
			Moderate		B	Moderate	Water Mod. Wind Low	Boulder >24"	-	-	
								Vegetation	60-80	75	
								Litter	10-30	20	
								Bare	0-10	1	
FLOODING			HIGH WATER TABLE								
Frequency	Duration	Months	Depth (ft.)		Kind	Months					
None	-	-	None		-	-					
SHEET AND RILL EROSION TONS/AC/YR				CEMENTED PAN OR BEDROCK							
Potential	Allowable	Current	Natural	Depth (ins.)	Cemented Pan Thickness	Bedrock Hardness					
	4	3.3	-	50	-	Soft					
5.31 SIMILAR INCLUDED SOILS WITH 5.30:											

SOIL MAP UNIT DESCRIPTION #820

SOIL SURVEY AREA: Price River Watershed ORDER: 7 DATE: 9-14-83 BY: Swenson
 SOIL MAP UNIT SYMBOL AND NAME: 820 Boralfic Cryoboroll, loamy-skeletal, mixed, loam, 30 to 60 percent slopes.--
 Typic Paleboralf, loamy-skeletal, mixed, fine sandy loam, 40 to 70 percent slopes.--Pachic Cryoboroll, fine-
 loamy, mixed, loam, 30 to 60 percent slopes.

100 SETTING This mapping unit is typically on northerly exposure of steep mountain slopes, at elevations of 8,600 to near 11,000 feet. It occurs mainly in the north part of the Trough Springs Ridge area and then north to Fish Creek. Average annual air temperature is 32°F to 38°F. Average summer temperature is near 50°F. The average annual precipitation is 25 to 30 inches. The freeze-free period is only 10 to 30 days. The soils are deep, well drained to somewhat excessively drained, and are very cobbly, very fine sandy loams, or fine sandy loam, and loams. Vegetation is spruce, fir, aspen, grasses, western coneflower, elderberry and forbs.

2.00 MAP UNIT COMPOSITION		
MAJOR SOILS AND/OR LAND AREAS (INCLUDE FAMILY NAME)	% IN M.U.	PHYSIOGRAPHY, PARENT MATERIAL AND SLOPE CHARACTERISTICS
2.10 Boralfic Cryoboroll, loamy-skeletal, mixed, loam, 30 to 60 percent slopes.	55	Long convex-concave mountain slopes. Spruce, fir, aspen.
2.20 Typic Paleboralf, loamy-skeletal, mixed, fine sandy loam, 40 to 20 percent slopes.	20	Short concave slopes. Typically pockets of pure stands of spruce, fir.
2.30 Pachic Cryoboroll, fine-loamy, mixed, loam, 30 to 60 percent slopes.	20	Short slopes and southerly exposures- Aspen and grasses.
DISSIMILAR INCLUDED SOILS AND/OR LAND AREAS	% IN M.U.	PHYSIOGRAPHY, SHAPE OF UNIT, AND SLOPE CHARACTERISTICS
2.40 Typic Cryorthent, loamy, mixed, (nonacid) shallow.	5	Short convex ridges.
2.50		
2.60		



300 NARRATIVE DESCRIPTION OF PHOTO OR DIAGRAM The pure stands of spruce and fir are on the Typic Paleboralf and Boralfic Cryoboroll soils. The aspen is on the Pachic Cryoboroll soil.

400 TYPE LOCATION FOR MAP UNIT Picture taken from Trough Springs Ridge of a northerly exposure, north of James Canyon.

SUPPLEMENT B

SOIL MAP

MAP UNIT NAME: LUCKY STAR - BUNDO - ADEL COMPLEX; 30 TO 70% SLOPES

MAP UNIT SETTING

Landform: NORTHERLY EXPOSURE OF STEEP MOUNTAIN SLOPES.

Geology (parent material):

Broad vegetative type: SPRUCE, FIR, ASPEN, GRASSES, WESTERN
CONEFLOWER, ELDERBERRY, AND FORBS

Elevation range: 8,600 to 11,000 feet

Climatic factors (mean annual):

Precipitation: 25 to 30 inchesAir temperature: 32 to 38 degrees F.Freeze-free period: 10 to 30 days

COMPOSITION

55 percent ~~inclusions of~~: LUCKY STAR FAMILY20 percent ~~inclusions of~~: BUNDO FAMILY20 percent ~~inclusions of~~: ADEL FAMILY5 percent contrasting inclusions.LUCKY STAR FAMILY SOIL

Taxonomic classification: BORALFIC CRYBOROLL, LO-SK, MIXED.

Parent materials:

Landscape position: CONCAVE

Slope range: 40 to 80 percent

Vegetative community type: SPRUCE, FIR

Reference soil profile characteristics:

0 to 15 inches: COBBLY LOAM15 to 38 inches: VERY COBBLY VERY FINE SANDY LOAM38 to 57 inches: EXTREMELY COBBLY CLAY LOAM to inches: to inches: to inches:Depth class: DEEP - ^{40' 60}

Drainage class: SOMEWHAT EXCESSIVE

Saturated hydraulic conductivity (permeability): LOW

Available water capacity:

Hydrologic group: B

Potential rooting depth: 57 inches

Surface rock fragments:

Runoff:

Soil erodibility:

Erosion hazard (exposed soil):

AZASHTO classification: A-4

Potential for mass movement:

BUNDO FAMILY SOIL

Taxonomic classification: TYPIC PALEBORALF, LO-SK, MIXED.

Parent materials:

Landscape position: CONCAVE

Slope range: 40 to 70 percent

Vegetative community type: SPRUCE, FIR

Reference soil profile characteristics:

3 to 0 inches: ORGANIC
0 to 6 inches: COBBLY FINE SANDY LOAM
6 to 50 inches: VERY COBBLY FINE CLAY LOAM
50 to 69 inches: EXTREMELY COBBLY SANDY CLAY LOAM
 to inches:
 to inches:

Depth class: DEEP

Drainage class: SOMEWHAT EXCESSIVE

Saturated hydraulic conductivity (permeability): LOW

Available water capacity:

Hydrologic group: A

Potential rooting depth: 60 inches

Surface rock fragments:

Runoff:

Soil erodibility:

Erosion hazard (exposed soil):

AASHTO classification: A-4

Potential for mass movement:

ADEL FAMILY SOIL

Taxonomic classification: PACIFIC CRYOBOROLL, FI-LO, MIXED.

Parent materials:

Landscape position: SHORT SLOPES AND SOUTHERLY EXPOSURES

Slope range: 30 to 60 percent

Vegetative community type: ASPEN AND GRASSES

Reference soil profile characteristics:

0 to 42 inches: LOAM
42 to 50 inches: SILTY LOAM
 to inches:
 to inches:
 to inches:
 to inches:

Depth class: DEEP

Drainage class: WELL DRAINED

Saturated hydraulic conductivity (permeability): LOW

Available water capacity:

Hydrologic group: B

Potential rooting depth: 50 inches

Surface rock fragments:

Runoff:

Soil erodibility:

Erosion hazard (exposed soil):

AASHTO classification: A-4

Potential for mass movement:

MAP UNIT NAME: BUNDO - LUCKY STAR COMPLEX; 30 TO 70% SLOPES

MAP UNIT SETTING

Landform: NORTH EXPOSURES OF STEEP MOUNTAIN SLOPES

Geology (parent material): SANDSTONE

Broad vegetative type: ALPINE FIR AND SPRUCE

Elevation range: 8,600 to 11,000 feet

Climatic factors (mean annual):

Precipitation: 25 to 30 inchesAir temperature: 32 to 36 degrees F.Freeze-free period: 0 to 20 days

COMPOSITION

70 percent ~~inclusions of~~: BUNDO FAMILY20 percent ~~inclusions of~~: LUCKY STAR FAMILY percent ~~inclusions of~~: 10 percent contrasting inclusions.BUNDO FAMILY SOIL

Taxonomic classification: TYPIC PALEBORALF, LO-SK, MIXED

Parent materials: COLLUVIUM FROM SANDSTONE

Landscape position: CONCAVE

Slope range: 40 to 70 percent

Vegetative community type:

Reference soil profile characteristics:

3 to 0 inches: ORGANIC0 to 6 inches: CB-FSL6 to 50 inches: CBV-FSL50 to 60 inches: CBX-SCI to inches: to inches:

Depth class: DEEP

Drainage class: SOMEWHAT EXCESSIVE

Saturated hydraulic conductivity (permeability): LOW

Available water capacity:

Hydrologic group: A

Potential rooting depth: 60 inches

Surface rock fragments:

Runoff: RAPID

Soil erodibility:

Erosion hazard (exposed soil): LOW

AASHTO classification:

Potential for mass movement:

LUCKY STAR FAMILY SOIL

Taxonomic classification: BORALFIC CRYOBOROLL, LO-SK, MIXED.

Parent materials: COLLUVIUM FROM SANDSTONE

Landscape position:

Slope range: 30 to 60 percent

Vegetative community type: ALPINE FIR AND SPRUCE

Reference soil profile characteristics:

<u>0</u>	to	<u>15</u>	inches:	CB-L
<u>15</u>	to	<u>38</u>	inches:	CBV-VFSL
<u>38</u>	to	<u>57</u>	inches:	CBX-CL
_____	to	_____	inches:	
_____	to	_____	inches:	
_____	to	_____	inches:	

Depth class: DEEP

Drainage class: SOMEWHAT EXCESSIVE

Saturated hydraulic conductivity (permeability): LOW

Available water capacity:

Hydrologic group: B

Potential rooting depth: 57 inches

Surface rock fragments:

Runoff: MODERATE

Soil erodibility:

Erosion hazard (exposed soil): WATER: MODERATE; WIND: LOW

AASHTO classification: A-2

Potential for mass movement:

MAP UNIT NAME: GRALIC- BEHANIN - ELWOOD FAMILIES COMPLEX;30 TO 70% SLOPES

MAP UNIT SETTING

Landform: SOUTHERLY AND EASTERLY EXPOSURES/ STEEP MOUNTAINSIDES
 Geology (parent material): SANDSTONE AND SHALE OF BLACKHAWK FORMATION
 Broad vegetative type: SNOWBERRY, BIG SAGEBRUSH, ASPEN, SERVICEBERRY,
 AND OAK BRUSH ON LOWER ELEVATION.

Elevation range: 7,600 to 11,000 feet

Climatic factors (mean annual):

Precipitation: 22 to 30 inchesAir temperature: 32 to 38 degrees F.Freeze-free period: 20 to 80 days

COMPOSITION

40 percent ~~inclusions of~~: Gralic family25 percent ~~inclusions of~~: Behanin family20 percent ~~inclusions of~~: Elwood family15 percent contrasting inclusions.GRALIC FAMILY SOIL

Taxonomic classification: TYPIC CRYORTHENTS, LO-SK MIXED

Parent materials: SANDSTONE AND SHALE

Landscape position: LONG CONVEX SLOPES

Slope range: 30 to 50 percent

Vegetative community type:

Reference soil profile characteristics:

0 to 5 inches: PINKISH GRAY VERY COBBLY FINE SANDY LOAM5 to 25 inches: PINK VERY COBBLY SANDY LOAM25 to 60 inches: REDDISH YELLOW VERY COBBLY SANDY LOAM to inches: to inches: to inches:

Depth class: DEEP (40 TO 50 INCHES)

Drainage class: SOMEWHAT EXCESSIVELY DRAINED

Saturated hydraulic conductivity (permeability): HIGH

Available water capacity: 3 TO 5 INCHES

Hydrologic group: B

Potential rooting depth: 60 inches

Surface rock fragments:

Runoff: RAPID

Soil erodibility:

Erosion hazard (exposed soil):

AASHTO classification: A-2-4

Potential for mass movement:

BEHANIN FAMILY SOIL

Taxonomic classification: PACHIC CRYOBOROLLS, LO-SK, MIXED.
 Parent materials: SANDSTONE AND SHALE
 Landscape position: CONVEX
 Slope range: 30 to 60 percent
 Vegetative community type:

Reference soil profile characteristics:

0 to 6 inches: BROWN STONY LOAM
6 to 16 inches: BROWN VERY COBBLY LOAM
16 to 25 inches: LIGHT BROWNISH GRAY VERY COBBLY LOAM
25 to 60 inches: LIGHT BROWNISH GRAY EXTREMELY COBBLY LOAM
 _____ to _____ inches:
 _____ to _____ inches:

Depth class: DEEP
 Drainage class: EXCESSIVELY DRAINED
 Saturated hydraulic conductivity (permeability): HIGH
 Available water capacity: 5 TO 6 INCHES
 Hydrologic group: B
 Potential rooting depth: 60 inches
 Surface rock fragments:
 Runoff: RAPID
 Soil erodibility:
 Erosion hazard (exposed soil):
 AASHTO classification: A-4
 Potential for mass movement:

ELWOOD FAMILY SOIL

Taxonomic classification: ARGIC CRYOBOROLLS, LO-SK, MIXED.
 Parent materials: SANDSTONE AND SHALE
 Landscape position: USUALLY CONCAVE
 Slope range: 40 to 70 percent
 Vegetative community type:

Reference soil profile characteristics:

0 to 7 inches: DARK GRAY LOAM
7 to 14 inches: DARK GRAYISH BROWN LOAM
14 to 25 inches: GRAYISH BROWN VERY COBBLY CLAY LOAM
25 to 42 inches: GRAYISH BROWN VERY COBBLY CLAY LOAM
42 to + inches: SOFT WEATHERED SHALE
 _____ to _____ inches:

Depth class: DEEP
 Drainage class: WELL DRAINED
 Saturated hydraulic conductivity (permeability): HIGH
 Available water capacity: 4 TO 6 INCHES
 Hydrologic group: B
 Potential rooting depth: 42 inches

Surface rock fragments: 10% PEBBLES, 15% COBBLES, 15% STONE

Runoff: RAPID

Soil erodibility:

Erosion hazard (exposed soil):

AASHTO classification: A-6

Potential for mass movement:

I. INCLUDED AREAS

CONTRASTING INCLUSIONS: Roxal family soils on ridgetops; Gralic family soils on less than 30% slopes

II. MAJOR USES OF THE MAP UNIT

MAJOR CURRENT USES: Rangeland, recreation and wildlife habitat

III. MANAGEMENT CONSIDERATIONS

SOIL RELATED FACTORS: Low water holding capacity, steep slopes and rock fragments on the surface of Elwood family soils.

MAP UNIT NAME: GREYBACK - UNK - BACHELOR COMPLEX FAMILY;30 TO 80% SLOPES.

MAP UNIT SETTING

Landform: SOUTH AND WEST EXPOSURES OF STEEP MTN. SLOPES

Geology (parent material): COLLUVIUM, SANDSTONE AND SHALE

Broad vegetative type: GRASS-FORBS, MOUNTAIN BIG SAGEBRUSH, SNOWBERRY
ASPEN, AND CONIFER.

Elevation range: 8,000 to 11,000 feet

Climatic factors (mean annual):

Precipitation: 25 to 30 inchesAir temperature: 32 to 38 degrees F.Freeze-free period: 20 to 30 days

COMPOSITION

35 percent ~~inclusions of:~~ Greyback family25 percent ~~inclusions of:~~ UNK family20 percent ~~inclusions of:~~ Bachelor family20 percent contrasting inclusions.GREYBACK FAMILY SOIL

Taxonomic classification: TYPIC CRYOBOROLL, LO-SK, MIXED, COBBLY-LOAM

Parent materials: SANDSTONE AND SHALE, COLLUVIUM

Landscape position: CONVEX, MEDIUM LENGTH SLOPES

Slope range: 30 to 50 percentVegetative community type: GRASS-FORBS, BIG SAGEBRUSH, SNOWBERRY,
ASPEN, AND CONIFER

Reference soil profile characteristics:

0 to 11 inches: COBBLY LOAM11 to 60 inches: VERY COBBLY LOAM to inches: to inches: to inches: to inches:

Depth class: DEEP

Drainage class: WELL DRAINED

Saturated hydraulic conductivity (permeability): MODERATE

Available water capacity: .09 TO .14 INCHES

Hydrologic group: B

Potential rooting depth: 60 inches

Surface rock fragments: 5% GRAVEL, 15% COBBLE

Runoff:

Soil erodibility:

Erosion hazard (exposed soil): WATER: MODERATE; WIND: LOW

AASHTO classification: A-4

Potential for mass movement:

UNK FAMILY SOIL

Taxonomic classification: LITHIC CRYORTHENT, LOAMY, MIXED (NONACID)
 Parent materials: SANDSTONE AND SHALE, COLLUVIUM
 Landscape position: CONVEX, MEDIUM LENGTH SLOPES
 Slope range: 30 to 80 percent
 Vegetative community type:

Reference soil profile characteristics:

0 to 5 inches: STONY FINE SANDY LOAM
5 to 17 inches: FINE SANDY LOAM
 _____ to _____ inches:
 _____ to _____ inches:
 _____ to _____ inches:

Depth class: MODERATELY DEEP
 Drainage class: WELL DRAINED
 Saturated hydraulic conductivity (permeability): LOW
 Available water capacity:
 Hydrologic group: C
 Potential rooting depth: 17 inches
 Surface rock fragments:
 Runoff:
 Soil erodibility:
 Erosion hazard (exposed soil):
 AASHTO classification: A-4
 Potential for mass movement:

BACHELOR FAMILY SOIL

Taxonomic classification: TYPIC CRYORTHENTS, FI-LO, MIXED.
 Parent materials: SANDSTONE AND SHALE
 Landscape position: CONCAVE
 Slope range: 30 to 60 percent
 Vegetative community type: ASPEN AND CONIFER

Reference soil profile characteristics:

0 to 12 inches: STONY LOAM
12 to 60 inches: GRAVELLY LOAM
 _____ to _____ inches:
 _____ to _____ inches:
 _____ to _____ inches:
 _____ to _____ inches:

Depth class: DEEP
 Drainage class: WELL DRAINED
 Saturated hydraulic conductivity (permeability): LOW
 Available water capacity:
 Hydrologic group: B
 Potential rooting depth: 60 inches

Surface rock fragments:

Runoff:

Soil erodibility:

Erosion hazard (exposed soil): WATER EROSION: MODERATE

AASHTO classification: A-4

Potential for mass movement:

MAP UNIT NAME: BUNDO - LUCKY STAR - ADEL COMPLEX; 30 TO 70% SLOPES

MAP UNIT SETTING

Landform: NORTHERLY EXPOSURES OF MOUNTAIN SLOPES
 Geology (parent material): COLLUVIUM AND ALLUVIUM FROM SANDSTONE.
 Broad vegetative type: SPRUCE, FIR, ASPEN, GRASSES, SNOWBERRY, FORBS.
 Elevation range: 8,200 to 11,000 feet
 Climatic factors (mean annual):
 Precipitation: 25 to 30 inches
 Air temperature: 32 to 38 degrees F.
 Freeze-free period: 10 to 30 days

COMPOSITION

50 percent inclusions of: BUNDO FAMILY
20 percent inclusions of: LUCK STAR FAMILY
20 percent inclusions of: ADEL FAMILY
10 percent contrasting inclusions.

BUNDO FAMILY SOIL

Taxonomic classification: TYPIC PALEBORALF, LO-SK, MIXED.
 Parent materials: SANDSTONE
 Landscape position: CONVEX SLOPES
 Slope range: 40 to 70 percent
 Vegetative community type:

Reference soil profile characteristics:

3 to 0 inches: ORGANIC
0 to 6 inches: COBBLY FINE SANDY LOAM
6 to 50 inches: VERY COBBLY FINE SANDY LOAM
50 to 60 inches:
 _____ to _____ inches:
 _____ to _____ inches:

Depth class: DEEP
 Drainage class: SOMEWHAT EXCESSIVE
 Saturated hydraulic conductivity (permeability): LOW
 Available water capacity: .08 TO .12 INCHES
 Hydrologic group: A
 Potential rooting depth: 60 inches
 Surface rock fragments: 5% GRAVEL, 2% COBBLE, 2% STONE
 Runoff:
 Soil erodibility:
 Erosion hazard (exposed soil): WATER EROSION: MODERATE
 AASHTO classification: A-4
 Potential for mass movement:

LUCKY STAR FAMILY SOIL

Taxonomic classification: BORALFIC CRYOBOROLL, LO-SK, MIXED.

Parent materials:

Landscape position: CONVEX SLOPE

Slope range: 30 to 60 percent

Vegetative community type:

Reference soil profile characteristics:

<u>0</u>	to	<u>15</u>	inches:	COBBLY LOAM
<u>15</u>	to	<u>38</u>	inches:	VERY COBBLY CERY FINE SANDY LOAM
<u>38</u>	to	<u>57</u>	inches:	CBX-CL
<u> </u>	to	<u> </u>	inches:	
<u> </u>	to	<u> </u>	inches:	
<u> </u>	to	<u> </u>	inches:	

Depth class: DEEP

Drainage class: SOMEWHAT EXCESSIVE

Saturated hydraulic conductivity (permeability): LOW

Available water capacity:

Hydrologic group: B

Potential rooting depth: 57 inchesSurface rock fragments: 5% GRAVEL, 2% COBBLE

Runoff:

Soil erodibility:

Erosion hazard (exposed soil):

AASHTO classification: A-2

Potential for mass movement:

ADEL FAMILY SOIL

Taxonomic classification: PACHIC CRYOBOROLL, LO-SK, MIXED.

Parent materials:

Landscape position: CONCAVE

Slope range: 30 to 60 percent

Vegetative community type:

Reference soil profile characteristics:

<u>0</u>	to	<u>42</u>	inches:	LOAM
<u>42</u>	to	<u>50</u>	inches:	SILTY LOAM
<u> </u>	to	<u> </u>	inches:	
<u> </u>	to	<u> </u>	inches:	
<u> </u>	to	<u> </u>	inches:	
<u> </u>	to	<u> </u>	inches:	

Depth class: DEEP

Drainage class: WELL DRAINED

Saturated hydraulic conductivity (permeability): LOW

Available water capacity:

Hydrologic group: B

Potential rooting depth: 50 inches

Surface rock fragments:

Runoff:

Soil erodibility:

Erosion hazard (exposed soil):

AASHTO classification: A-4

Potential for mass movement:

MAP UNIT NAME: GREYBACK FAMILIES COMPLEX; 5 TO 50% SLOPES

MAP UNIT SETTING

Landform: SLOPING TO STEEP MOUNTAINSIDES
 Geology (parent material):
 Broad vegetative type:
 Elevation range: 8,500 to 10,000 feet
 Climatic factors (mean annual):
 Precipitation: 25 to 30 inches
 Air temperature: 34 to 38 degrees F.
 Freeze-free period: 40 to 80 days

COMPOSITION

45 percent ~~inclusions of~~: CLAYBURN FAMILY
45 percent ~~inclusions of~~: GREYBACK FAMILY
 _____ percent ~~inclusions of~~: _____
10 percent contrasting inclusions.

CLAYBURN _____ FAMILY SOIL

Taxonomic classification: ARGIC PACIFIC CRYOBOROLLS, FI-LO, MIXED.
 Parent materials: LIMESTONE AND SHALE
 Landscape position: SHORT CONVEX SLOPES
 Slope range: 5 to 40 percent
 Vegetative community type:

Reference soil profile characteristics:

0 to 9 inches: DARK BROWN LOAM
9 to 28 inches: DARK BROWN CLAY LOAM
28 to 60 inches: VERY PALE BROWN VERY COBBLY LOAM
 _____ to _____ inches:
 _____ to _____ inches:
 _____ to _____ inches:

Depth class: DEEP
 Drainage class: WELL DRAINED
 Saturated hydraulic conductivity (permeability): HIGH
 Available water capacity: 6 TO 8 INCHES
 Hydrologic group: B
 Potential rooting depth: 60 inches
 Surface rock fragments:
 Runoff: SLOW
 Soil erodibility:
 Erosion hazard (exposed soil):
 AASHTO classification: A-6
 Potential for mass movement:

GREYBACK FAMILY SOIL

Taxonomic classification: TYPIC CRYOBOROLLS, LO-SK, MIXED.
 Parent materials: LIMESTONE AND SHALE
 Landscape position: CONVEX MOUNTAIN SIDES
 Slope range: 30 to 50 percent
 Vegetative community type:

Reference soil profile characteristics:

0 to 11 inches: VERY DARK GRAYISH BROWN COBBLY LOAM
11 to 33 inches: VERY PALE BROWN VERY COBBLY LOAM
33 to 60 inches: LIGHT YELLOWISH BRWON VERY COBBLY LOAM
 _____ to _____ inches:
 _____ to _____ inches:
 _____ to _____ inches:

Depth class: DEEP (40 TO 60 INCHES)
 Drainage class: WELL DRAINED
 Saturated hydraulic conductivity (permeability): HIGH
 Available water capacity: 4 TO 6 INCHES
 Hydrologic group: B
 Potential rooting depth: 60 inches OR MORE
 Surface rock fragments:
 Runoff: MEDIUM
 Soil erodibility:
 Erosion hazard (exposed soil):
 AASHTO classification: A-6
 Potential for mass movement:

I. INCLUDED AREAS

CONTRASTING INCLUSIONS: --soils that have steeper slopes and
weathered shale at less than
20 inches.
--soils that contain less than 18% clay

II. MAJOR USES OF THE MAP UNIT

MAJOR CURRENT USES: Rangeland, recreation and wildlife
Management symbol and name: Rng - Range Forage
Production

II. MANAGEMENT CONSIDERATIONS

SOIL RELATED FACTORS:

MAP UNIT NAME: MERINO - ADEL COMPLEX; 8 TO 60% SLOPES

MAP UNIT SETTING

Landform: RIDGES AND THE ADJACENT SIDESLOPES OF STEEP MOUNTAIN SLOPES

Geology (parent material): SANDSTONE AND SHALE

Broad vegetative type: GRASSES, FORBS, MOUNTAIN BIG SAGEBRUSH
WESTERN CONEFLOWER, TALL LARKSPUR, SCATTERED ASPEN CLONES

Elevation range: 8,600 to 11,000 feet

Climatic factors (mean annual):

Precipitation: 25 to 30 inches

Air temperature: 32 to 38 degrees F.

Freeze-free period: 20 to 30 days

COMPOSITION

40 percent ~~inclusions of:~~ MERINO FAMILY

23 percent ~~inclusions of:~~ ADEL FAMILY-

20 percent inclusions of: N/A ? *Typic Cryoborolls, loamy, mixed, (shallow)*

17 percent contrasting inclusions.

MERINO FAMILY SOIL

Taxonomic classification: PACIFIC CRYOBOROLL, FINE-LOAMY, MIXED.

Parent materials: MIXED SHALE AND SANDSTONE

Landscape position: CONCAVE LOWER MOUNTAIN STEEP SLOPES

Slope range: 30 to 60 percent

Vegetative community type:

Reference soil profile characteristics:

0 to 42 inches: LOAM
42 to 50 inches: SILT LOAM
_____ to _____ inches:
_____ to _____ inches:
_____ to _____ inches:
_____ to _____ inches:

Depth class: DEEP

Drainage class: WELL DRAINED

Saturated hydraulic conductivity (permeability):

Available water capacity:

Hydrologic group: B

Potential rooting depth: 50 inches

Surface rock fragments:

Runoff: MODERATE

Soil erodibility:

Erosion hazard (exposed soil): WATER: HIGH; WIND: LOW

AASHTO classification: A-4

Potential for mass movement:

ADEL FAMILY SOIL

Taxonomic classification: LITHIC CRYORTHENT, LOAMY-SKELETAL, MIXED
(nonacid)

Parent materials: SANDSTONE

Landscape position: CONVEX, CONCAVE SIDESLOPES BELOW RIDGE TOPS

Slope range: 8 to 60 percent

Vegetative community type:

Reference soil profile characteristics:

<u>0</u>	to	<u>5</u>	inches:	CBV-L
<u>5</u>	to	<u>12</u>	inches:	CBX-L
<u>12</u>	to	<u>+</u>	inches:	WB
<u> </u>	to	<u> </u>	inches:	
<u> </u>	to	<u> </u>	inches:	
<u> </u>	to	<u> </u>	inches:	

Depth class:

Drainage class: SOMEWHAT EXCESSIVELY

Saturated hydraulic conductivity (permeability):

Available water capacity:

Hydrologic group: C

Potential rooting depth: 12-20 inches

Surface rock fragments:

Runoff: SLOW

Soil erodibility:

Erosion hazard (exposed soil): LOW

AASHTO classification:

Potential for mass movement:

 FAMILY SOIL

Taxonomic classification:

Parent materials:

Landscape position:

Slope range: to percent

Vegetative community type:

Reference soil profile characteristics:

<u> </u>	to	<u> </u>	inches:	
<u> </u>	to	<u> </u>	inches:	
<u> </u>	to	<u> </u>	inches:	
<u> </u>	to	<u> </u>	inches:	
<u> </u>	to	<u> </u>	inches:	
<u> </u>	to	<u> </u>	inches:	

Depth class:

Drainage class:

Saturated hydraulic conductivity (permeability):

Available water capacity:

Hydrologic group:

Potential rooting depth: _____ inches
Surface rock fragments:
Runoff:
Soil erodibility:
Erosion hazard (exposed soil):
AASHTO classification:
Potential for mass movement:

MAP UNIT NAME: CLAYBURN - FAIM - BEHANIN FAMILIES COMPLEX;5 TO 40% SLOPES

MAP UNIT SETTING

Landform: RIDGES AND MOUNTAINSIDES

Geology (parent material):

Broad vegetative type:

Elevation range: 8,400 to 10,300 feet

Climatic factors (mean annual):

Precipitation: 25 to 30 inchesAir temperature: 34 to 38 degrees F.Freeze-free period: 40 to 80 days

COMPOSITION

55 percent ~~inclusions of~~: CLAYBURN FAMILY20 percent ~~inclusions of~~: FAIM FAMILY15 percent ~~inclusions of~~: BEHANIN FAMILY10 percent contrasting inclusions.CLAYBURN FAMILY SOIL

Taxonomic classification: ARGIC PACIFIC CRYOBOROLLS, FI-LO, MIXED.

Parent materials:

Landscape position: CONVEX

Slope range: 5 to 40 percent

Vegetative community type:

Reference soil profile characteristics:

0 to 9 inches: DARK BROWN LOAM9 to 28 inches: DARK BROWN CLAY LOAM28 to 60 inches: VERY PALE BROWN VERY COBBLY LOAM to inches: to inches: to inches:

Depth class: DEEP

Drainage class: WELL-DRAINED

Saturated hydraulic conductivity (permeability): MODERATE

Available water capacity: 8 TO 10 INCHES

Hydrologic group: B

Potential rooting depth: 60 inches

Surface rock fragments:

Runoff: MEDIUM

Soil erodibility:

Erosion hazard (exposed soil):

AASHTO classification: A-6

Potential for mass movement:

FAIM FAMILY SOIL

Taxonomic classification: ARGIC PACHIC CRYOBOROLLS, FINE, MONT.

Parent materials:

Landscape position: CONCAVE

Slope range: 5 to 20 percent

Vegetative community type:

Reference soil profile characteristics:

0 to 8 inches: DARK GRAYISH BROWN CLAY LOAM
8 to 30 inches: BROWN CLAY
30 to 42 inches: BROWN CLAY LOAM
42 to 60 inches: PALE BROWN LOAM
 to inches:
 to inches:

Depth class: DEEP (40 TO 60 INCHES)

Drainage class: MODERATELY WELL DRAINED

Saturated hydraulic conductivity (permeability): MODERATELY LOW

Available water capacity: 7 TO 9 INCHES

Hydrologic group: C

Potential rooting depth: 60 inches

Surface rock fragments:

Runoff: MEDIUM

Soil erodibility:

Erosion hazard (exposed soil):

AASHTO classification: A-7

Potential for mass movement:

BEHANIN FAMILY SOIL

Taxonomic classification: PACHIC CRYOBOROLLS, LO-SK, MIXED

Parent materials:

Landscape position: CONVEX

Slope range: 10 to 30 percent

Vegetative community type:

Reference soil profile characteristics:

0 to 13 inches: DARK BROWN LOAM
13 to 25 inches: DARK BROWN VERY STONY LOAM
25 to 31 inches: LIGHT GRAY EXTREMELY STONY LOAM
31 to 45 inches: VERY PALE BROWN EXTREMELY STONY CLAY LOAM
45 to + inches: FRACTURED AND WEATHERED SANDSTONE AND SHALE
 to inches:

Depth class: DEEP (40 TO 60 INCHES)

Drainage class: WELL DRAINED

Saturated hydraulic conductivity (permeability): MODERATE

Available water capacity: 4 TO 6 INCHES (LOW)

Hydrologic group: B

Potential rooting depth: 60 inches

Surface rock fragments:

Runoff: SLOW

Soil erodibility:

Erosion hazard (exposed soil):

AASHTO classification: A-4

Potential for mass movement:

I. INCLUDED AREAS

CONTRASTING INCLUSIONS: --soils that are less than 20 inches
deep

II. MAJOR USES OF THE MAP UNIT

MAJOR CURRENT USES: Rangeland, recreation and wildlife habitat
RNG symbol

II. MANAGEMENT CONSIDERATIONS

SOIL RELATED FACTORS: High shrink-swell potential (Faim family),
high rock fragment content and low available water
capacity (Behanin family)

561- Clayburn - Faim - Behanin FAMILIES COMPLEX, 5 TO 40 PERCENT SLOPES

MAP UNIT SETTING

Position on landscape: ridges and mountainsides
Elevation: 8,400 to 10,300 feet

COMPOSITION

Clayburn family and similar inclusions --- 55 percent
Faim family and similar inclusions --- 20 percent
Behanin family and similar inclusions --- 15 percent
Contrasting inclusions --- 10 percent

CLAYBURN FAMILY

⁰
Taxonomic classification: fine-loamy, mixed Argic Pachic Cryoborolls
Slope shape: convex
Slope range: 5 to 40 percent
Vegetative cover type:

Reference profile:

- 0 to 9 inches- dark brown loam
- 9 to 28 inches- dark brown clay loam
- 28 to 60 inches- very pale brown very cobbly loam

Depth class: deep (40 to 60 inches or more)
Drainage class: well-drained
Saturated hydraulic conductivity (permeability): moderate
Available water capacity: 8 to 10 inches
Hydrologic group: B
Potential rooting depth: ~~60 inches or more~~ 40-60 inches
Runoff: medium
Current erosion rate:
Potential erosion rate (bare soil):
Soil loss tolerance:
Wind erosion hazard: low
Percent ground cover:
AASHTO symbol: A-6
Landslide hazard:

FAIM FAMILY

⁰
Taxonomic classification: fine, montmorillonitic, Argic Pachic Cryoborolls
Slope shape: concave
Slope range: 5 to 20 percent
Vegetative cover type:

Reference profile:

- 0 to 8 inches- dark grayish brown clay loam
- 8 to 30 inches- brown clay
- 30 to 42 inches- brown clay loam
- 42 to 60 inches- pale brown loam

Depth class: deep (40 to 60 inches or more)
Drainage class: moderately well-drained
Saturated hydraulic conductivity (permeability): moderately low
Available water capacity: 7 to 9 inches
Hydrologic group: C
Potential rooting depth: 60 inches or more
Runoff: medium
Current erosion rate:
Potential erosion rate (bare soil):
Soil loss tolerance:
Wind erosion hazard: low
Percent ground cover:
AASHTO symbol: A-7
Landslide hazard:

BEHANIN FAMILY

Taxonomic classification: loamy-skeletal, mixed Pachic Cryoborolls
Slope shape: convex
Slope range: 10 to 30 percent
Vegetative cover type:

Reference profile:

- 0 to 13 inches- dark brown loam
- 13 to 25 inches- dark brown very stony loam
- 25 to 31 inches- light gray extremely stony loam
- 31 to 45 inches- very pale brown extremely stony clay loam
- 45 inches- fractured and weathered sandstone and shale

Depth class: deep (40 to 60 inches)
Drainage class: well-drained
Saturated hydraulic conductivity (permeability): moderate
Available water capacity: 4 to 6 inches (low)
Hydrologic group: B
Potential rooting depth: 60 inches
Runoff: slow
Current erosion rate:
Potential erosion rate (bare soil):
Soil loss tolerance:
Wind erosion hazard: low
Percent ground cover:
AASHTO symbol: A-4
Landslide hazard:

INCLUDED AREAS

Contrasting inclusions:

- soils that are less than 20 inches deep

MAJOR USES

Major current uses: rangeland, recreation and wildlife habitat
Management symbol and name: RNG - Range Forage Production

MAJOR MANAGEMENT FACTORS

Soil related factors: high shrink-swell potential (Faim family), high rock fragment content and low available water capacity (Behanin family)

Climatic factors (mean annual):

- precipitation - 25 to 30 inches
- air temperature - 34 to 38 degrees F
- freeze-free period - 40 to 80 days

RANGELAND

Biomass production (potential):	lbs. dry weight per acre
Forage production (potential):	lbs. dry weight per acre

GENERAL MANAGEMENT CONSIDERATIONS

- Suitability for revegetation is poor for Faim and Behanin family soils and fair for Clayburn family soils
- The main limitations for revegetation are high shrink-swell potential and droughtiness
- Suitability for unsurfaced roads is poor for Faim family soils and fair for the others
- Suitability for topsoil is poor due to large stones and steep slopes in some areas

SUITABLE MANAGEMENT PRACTICES

- Seed late in fall for best results.
- Roads for year round use require heavy base rock and adequate drainage
- Reduce the risk of water erosion by avoiding excess disturbances and stabilizing disturbed areas with a straw mulch.

SUPPLEMENT C

PRIME FARM LAND DETERMINATION