UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

This draft ecological site description is approved for field use and testing for a one year period beginning MM, YYYY.
Additional information and comments on this site should be sent to the Utah State Range Management Specialist.

STATE: Utah
SITE TYPE: Rangeland
ECOLOGICAL SITE NAME: Mountain Shallow Loam (Mountain big sagebrush)
SITE NUMBER: 047AY446UT
MLRA: E47
Original Site Description: Author: DLT DJS Date: 12/10/1992
Revised Site Description: Author: Date:
Approved by: Title: State Range Cons. Signed: Pat Shaver Date:

Ecological Site Definition - A distinctive kind of land, with specific physical characteristics, which differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation, and in its response to management.

A. PHYSICAL CHARACTERISTICS

(description narrative of this particular site)

1. SOILS

Depth: 10-20 inches
Surface Textures:
Surface Fragments(<=3" % cover, >3" % cover):
Subsurface Textures: Stony or Cobbly and Moderately Coarse to Fine Textured
Subsurface Fragments(<=3" % vol, >3" % vol):
Geologic Parent Materials: Sandstone, Shale, Limestone, Quartzite, and Igneous Rock
Moisture Regime:
Temperature Regime:
Runoff:
Permeability(min-max): Slow to Moderate
Drainage Class(min-max): Well Drained
Water Erosion Hazard:
Wind Erosion Hazard:
Electrical Conductivity (EC in mmhos/cm):
Sodium Adsorption Ration (SAR):
Soil Reaction (1:1 water):
Soil Reaction (0.1 M CaCl2):
pH Range:
Available Water Capacity (inches):

Major Soils Associated With This Site:

Soil Survey Area: 613

Agassiz CBV-L, 8-25%	Brad STV-LS, 15-60%
Gabica STE-L, 10-50%	Redcan Family L, 4-15%
Agassiz CBV-L, 25-60%	Little Pole CBV-SCL, 6-60%
Wallsburg CBV-SCL, 20-60%	Agassiz ST-SiL, 40-70%
Foxol CBV-L, 30-70%	Redcan CB-L, 40-60%
Wallsburg GR-L, 40-60%	Curtis Creek L, 30-60%
Foxol STE-SL, STV-L, 10-60%	

Additional information may be found in Section II of the Field Office Technical Guide.

2. PHYSIOGRAPHIC FEATURES

Landform and Position: Rolling to Steep Mountain Slopes
Aspect: All

	Minimum	Maximum
Slope:	15	60
Elevation:	5200	8500

Flooding:
- Frequency:
- Duration:

Ponding:
- Depth (inches):
- Frequency:
- Duration:
- Water Table Depth:

B. CLIMATIC FEATURES

Mean Annual Precipitation (inches): 16-22
Mean Annual Air Temperature: 36-45
Mean Annual Soil Temperature: 38-47
Frost Free Period (days): 50-100
Freeze Free Period (days): 0-0

Temperature and Moisture Distribution:

Temp	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
High	34	39	46	56	67	77	86	84	75	63	46	37
Mean												
Low	10	14	20	28	36	42	49	47	39	30	17	13

ppt	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
High												
Mean	2.71	2.35	2.22	1.80	1.68	1.27	0.79	1.04	1.11	1.69	1.70	1.87
Low												

Climate Stations: St. ID.: Location: Period:

From: To:

(Includes factors such as storm intensity, precipitation dependability, origin and pattern of storms, driest and wettest months, orographic effects, etc.)

Influencing Water Features (if any):

Wetland Description(Cowardin System) System Subsystem Class

Stream Types(Rosgen System) System

C. PLANT COMMUNITY CHARACTERISTICS

1. Potential Plant Community Description and Ecological Factors

The dominant aspect of this site is that of shrubs. The composition by annual air-dry weight is approximately 50 percent grasses, 5 percent forbs, and 45 percent shrubs.

2. Plant Community Composition by Weight and Percentage

Grasses and Grasslike, %

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Bluebunch wheatgrass	PSSP6		165	220	15	20
Muttongrass	POFE		55	110	5	10
Western wheatgrass	PASM		33	55	3	5
Bottlebrush squirreltail	ELEL5		33	55	3	5
Columbia needlegrass	ACNE9		33	55	3	5
Great basin wildrye	LECI4	1	11	33	1	3
Letterman needlegrass	ACLE9	1	11	33	1	3
Indian ricegrass	ACHY	1	11	33	1	3
Prairie junegrass	KOMA	1	11	33	1	3
Nevada bluegrass	PONE3	1	11	33	1	3
King fescue	HEKI2	1	11	33	1	3
Bulbous oniongrass	MEBU	1	11	33	1	3
Geyer sedge	CAGE2	1	11	33	1	3
Sandberg bluegrass	POSE	1	11	33	1	3
Other perennial grasses	PPGG	1	55	110	5	10
Other annual grasses	AAGG	1	55	110	5	10

Forbs, %

Common Name	National	Group	Pounds per Acre	% by Weight of

	Symbol				Total Composition	
			Low	High	Low	High
Longleaf hawksbeard	CRAC2	2	11	11	1	1
Arrowleaf balsamroot	BASA3	2	11	11	1	1
Shortstem wild buckwheat	ERBR5	2	11	11	1	1
Wyoming Indian paintbrush	CALI4	2	11	11	1	1
Western mountain aster	ASOC	2	11	11	1	1
Blue flax	LIPE2	2	11	11	1	1
Common yarrow	ACMI2	2	11	11	1	1
Carpet phlox	PHHO	2	11	11	1	1
Silverleaf milkvetch	ASAR4	2	11	11	1	1
Sticky purple cranesbill	GEVI2	2	11	11	1	1
Spurred lupine	LUCAC3	2	11	11	1	1
Tolmie owlclover	ORTO	2	11	11	1	1
Meadow thistle	CISC2	2	11	11	1	1
Common stickseed	HAPA	2	11	11	1	1
Other perennial forbs	PPFF	2	33	55	3	5
Other annual forbs	AAFF	2	33	55	3	5

Shrubs/Vines, %

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Mountain big sagebrush	ARTRV		165	220	15	20
Bitterbrush	PUTR2		110	165	10	15
Mountain snowberry	SYOR2		33	55	3	5
Stickyleaf low rabbitbrush	CHVIV4	3	11	22	1	2
Saskatoon serviceberry	AMAL2	3	11	22	1	2
Slender wild buckwheat	ERMI4	3	11	22	1	2
Spineless horsebrush	TECA2	3	11	22	1	2
Broom snakeweed	GUSA2	3	11	22	1	2
Other shrubs	SSSS	3	33	55	3	5

Trees, %

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High

3. Plant Community Annual Production

At the highest potential similarity index, this site will produce approximately the following amount of air-dry herbage, expressed as pounds/acre:

	Low	High
Favorable Year	1600	1700
Average Year	1000	1100
Unfavorable Year	500	600

4. Ground Cover and Structure

a. Vegetative

Vegetation Type	Percent Canopy Cover	Height Range (ft)	Percent Basal Area Cover
Grasses & Grass-like (perennial)	30	2	5
Forbs (perennial)	5	1	2
Shrubs	20	3	8
Trees			
Cryptogams			

b. Other

Litter	
Coarse Fragments	
Bare Ground	

5. Ecological Dynamics of the Site

As this site deteriorates due to overgrazing perennial grasses decrease and big sagebrush and low rabbitbrush increase. Fire will reduce big sagebrush density but low rabbitbrush will increase.

Plant Communities & Transitional Pathways

(Show a steady state diagram with influences to move from one steady state to another)

6. Plant Growth Curves

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Percent Growth	0	0	0	5	20	50	5	10	5	5	0	0

Name	PNC
ID Number	UT4461
Description	Excellent Condition

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Percent Growth	0	0	0	0	30	50	0	10	10	0	0	0

Name	Good Condition No. 1
ID Number	UT4462
Description	needlegrass, bluegrass, and sagebrush

7. Aspect Differences Near MLRA Boundaries
(Give related range sites in MLRA's above and below)

8. Associated Sites Within MLRA

047AY430UT
Mountain Loam (Mountain big sagebrush)

047AY476UT
Mountain Windswept Ridge (Low sagebrush)

9. Correlated Sites in Other States
(Give site name and number)

D. MAJOR USES OF THIS SITE

1. Livestock

a. Site Factors Influencing Management

This site has a large amount of grasses and shrubs (about equal amounts by total air-dry production). There is only a small amount of the total yield that is forbs but a large number of species. With this composition good forage and balanced animal nutrition is provided during spring, summer, and fall. Cattle, sheep, goats, and horses graze this site to good advantage.

b. Guide to Forage Quality(Plant preference by season)

Species	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep

VG = Very Good G = Good F = Fair P = Poor

2. Wildlife

a. Site Factors Influencing Management

This site produces excellent forage for deer and elk.

b. List of Potential Species Present

This site is fair habitat for many kinds of wildlife.

This is a short list of the more common species found. Many other species are present as well and migratory birds are present at times.

c. Guide to Forage Preference of Managed Wildlife Species

Wildlife Species →				
Plant Species ↓	Use	Season	Use	Season

Use - A = preferred or desirable
B = some use, but less important
C = little use or used occasionally

Season - F = Fall (Oct-Nov)
W = Winter (Dec-Feb)
Sp. = Spring (Mar-May)
Su. = Summer (Jun-Sep)

3. Recreational Uses

This site has good values for aesthetics and natural beauty. It has a large number of forbs and shrubs which have flowers in bloom from early spring throughout the summer and into the fall. It has a combination of grasses, forbs, small shrubs, and large shrubs which offer some possibilities for screening and value as camping and picnicking areas. Hunting for upland game, elk and mule deer is good to excellent on this site. Fishing is opportune on streams through and adjacent to this site.

4. Wood Products

No values exist for lumber. Some of the shrub species produce enough wood for campfires. Production of wood products for other uses are not of a quantity or quality to be of value.

5. Other Uses

E. THREATENED AND ENDANGERED SPECIES

1. Plants

2. Animals

Both the American peregrine falcon and prairie falcon may occasionally seek their prey on this site.

F. MODAL LOCATION AND DOCUMENTATION

State: Utah County:
Latitude: Longitude:

Modal Soil: Agassiz VCB-L, 8-25% — loamy-skeletal, mixed, frigid Lithic Haploxerolls

Site Type: Rangeland
Ecological Site Name: Mountain Shallow Loam (Mountain big sagebrush)
Site Number: 047AY446UT

Type Location: SW ¼, SE ¼, SE ¼, Section 9; Township 2S; Range 4E

General Legal Description:

Field Office Site Location

Logan
Murray
Provo
Price
Richfield
Cedar City

Data Collected and References

Sampling Source	Number of Records	Range Similarity Index			
		> 76%	51-75%	26-50%	0-25%
NRCS - ECS - 417	21				
UTAH - RANGE - 2					
Permanent Transect Location					

Other References

Attachment 1

Ecological Reference Worksheet

Author(s)/participant(s): V. Keith Wadman
Contact for lead author: _____ **Reference site used?** Yes/No
Date: 6/24/04 **MLRA:** 047A_ **Ecological Site:** Mountain Shallow Loam (047AY446UT)
Mountain big sagebrush, Bitterbrush, Bluebunch wheatgrass, Muttongrass) **This must be verified based on soils and climate (see Ecological Site Description). Current plant community *cannot* be used to identify the ecological site.**

Indicators **For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for each community within the reference state, when appropriate & (3) cite data. Continue descriptions on separate sheet.**

1. Number and extent of rills: Minor rill development in exposed areas. Rills present should be short on flatter slopes but may become longer (4 to 8 feet) as slope steepens. They should be somewhat widely spaced (3 to 6 feet), and follow the surface micro-features. Old rills should be weathered and muted in appearance. The presence of surface coarse fragments may reduce rill formation.

2. Presence of water flow patterns: Flow patterns wind around surface rock & perennial plant bases and show minor evidence of erosion. They are somewhat short and stable and there is only minor evidence of deposition. Evidence of flow will increase somewhat with slope.

3. Number and height of erosional pedestals or terracettes: Plants may show minor pedestialing on their down slope side. Terracettes should be few and stable.

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bareground): 20 – 30%. (Soil surface is typically covered by 35% to 60% rock).

5. Number of gullies and erosion associated with gullies: Few. Gullies should show only minor signs of active erosion and should be mostly stabilized with vegetation. Gullies may show slightly more indication of erosion as slope steepens. The presence of surface rock may mask erosion indicators.

6. Extent of wind scoured, blowouts and/or depositional areas: None. Wind caused blowouts and deposition are not present.

7. Amount of litter movement (describe size and distance expected to travel): Some down slope redistribution caused by water. Some litter removal may occur in flow channels with deposition occurring at points of obstruction. Litter movement will increase with slope.

8. Soil surface (top few mm) resistance to erosion (stability values are averages – most sites will show a range of values for both plant canopy and interspaces, if different): 70 to 80% of this site should have an erosion rating of 4 or 5. 20 to 30% may have a rating of 3 to 4. The average should be a 4. Litter accumulation and cryptogamic crusts reduce erosion. The presence of surface rock also reduces site erosion.

9. Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness for both plant canopy and interspaces, if different): Soil surface varies from 5 to 7 inches. Structure typically ranges from subangular blocky to medium granular. Color ranges from brown (7.5YR5/7) to Grayish brown (10YR5/2). A mollic epipedon typically goes to a depth of 9 to 19 inches. Organic matter is 1 to 2%.

10. Effect of plant community composition (relative proportion of different functional

groups) & spatial distribution on infiltration & runoff: When perennial grasses decrease, reducing ground cover and increasing bare ground, runoff will increase and infiltration will be reduced.

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): None. Bedrock occurs at approximately 15 to 18 inches.

12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: », >, = to indicate much greater than, greater than, and equal to): Assumed fire cycle of 40-60 years. Perennial bunchgrasses, non-sprouting shrubs > sprouting shrubs, perennial & annual forbs > invaders such as Cheatgrass, Peppergrass & Annual mustards. Dominants: Bluebunch wheatgrass & Mountain big sagebrush; Sub-dominants: Bitterbrush & Muttongrass. The perennial bunchgrass/non-sprouting shrub functioning group is expected on this site.

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): All age classes of perennial bunchgrasses should be present. Slight decadence in the principle shrubs could occur near the end of the fire cycle.

14. Average percent litter cover (20-25%) and depth (.50-.75 inch).

15. Expected annual production (this is TOTAL above-ground production, not just forage production): 1000 - 1100 #/acre on an average year.

16. Potential invasive (including noxious) species (native and non-native). List species which characterize degraded states and which, after a threshold is crossed, "can, and often do, continue to increase regardless of the management of the site and may eventually dominate the site": Cheatgrass, Green rabbitbrush, Snakeweed, Sandberg bluegrass & Annual forbs.

17. Perennial plant reproductive capability: All perennial plants should have the ability to reproduce in all years, except in extreme drought years.