

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: Semidesert Loam (Wyoming Big Sagebrush)

SITE NUMBER: 035XY209UT

MLRA: D-35

Original Site Description: Author: GSC

Date: 04/15/1984

Revised Site Description: Author: GSC

Date: 09/23/1993

Revised Site Description: Author: SM, TS

Date: 06/16/2004

Approved by: Title:

Signed:

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

1. SOILS

Depth: moderately deep to very deep (20 inches to more than 60 inches)

Surface Textures: sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, and loamy fine sand

Surface Fragments (≤ 3 " % cover, > 3 " % cover): 0 to 5%

Subsurface Textures: sandy loam, fine sandy loam, very fine sandy loam, loam, gravelly loam, sandy clay loam, clay loam, silt loam, and loamy fine sand

Subsurface Fragments (≤ 3 " % vol. > 3 " % vol.): 0 to 10%

Geologic Parent Materials: residuum, alluvium, eolian materials derived mainly from sandstone and shale (Geologic Formations: Entrada Sandstone; Moenkopi Formation; Kaibab Formation; Kaiparowits Formation; Morrison Formation; Moenave Formation; Winsor Member of Carmel Formation; Kayenta Formation; Wahweap Formation; and Chinle Formation)

Moisture Regime: Ustic Aridic

Temperature Regime: Mesic

Runoff: very low to low

Permeability (min-max): moderately slow to moderate (0.2 to 2.0 in/hr)

Drainage Class (min-max): well drained

Water Erosion Hazard: moderate

Wind Erosion Hazard: moderate

Electrical Conductivity (EC in mmhos/cm): 0 to 2 mmhos/cm (nonsaline)

Sodium Adsorption Ration (SAR): 0 (nonsodic)

Calcium Carbonate Equivalent (%): 0 to 40%

pH Range (1:1 water): 7.8 to 8.8

Available Water Capacity (inches): 7.7 to 10.6 inches

Soils commonly have a loam surface texture and are in the fine-loamy textural family. Gravelly/stony soils included are Clapper, and Strych - moist with 35 to 75% control section rock fragments and have an available water capacity of 4.9 to 5.6 inches. Moderately deep soils included are Progresso – cool, Bowdish and Sazi – moist and have an available water capacity of 2.4 to 4.9 inches. Horsemountain – moist had a petrocalcic (cemented horizon) at the depth of 8 to 20 inches with 35 to 80% fragments and an available water capacity of 2.8 inches. Humbug – moist is a deep soil (40 to 60 inches) and has at least one horizon with 40 to 70% gypsum content; salinity 4 mmhos/cm (slightly saline); available water capacity of 5.2 inches; and SAR of 2 (slightly sodic). Slopes greater than 15% have a runoff of low to medium.

Major Soils Associated With This Site (*Soil Survey Area + Series Name*):

San Juan County – Central Part (638): **Cahona** in mapunit 58; **Ruinpoint** in mapunits 19, 50 & 58.

San Juan Area (639): **Blanding** in mapunit BnD.

Washington County (641): **Schmutz** in mapunit SH; **Tobish** in mapunit TBF.

Grand Staircase Escalante NM (686): **Alvey** in mapunit 5142; **Atrac** in mapunit 5142; **Bowdish** in mapunit 5159; **Barx** in mapunits 5037, 5103, 5112, 5132 & 5172; **Clapper** in mapunit 5125; **Horsemountain – moist** in mapunit 5163; **Humbug, moist** in mapunit 5170; **Mikim** in mapunits 5127 & 5143; **Progresso – cool** in mapunits 5167 & 5171; **Ruinpoint** in mapunit 5172; **Sazi – moist** in mapunit 5166, 5174 & 5211; **Strych – moist** in mapunit 5173.

Canyonlands Area (633): **Barum** in mapunit 4.

Capitol Reef: **El Rancho** in mapunit 220.

Panguitch (636): **Barx** in mapunit 12; **Mikim** in mapunit 89, 91 & 92.

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

2. PHYSIOGRAPHIC FEATURES

Landform and Position: Fan terraces, alluvial flats, structural benches, remnant alluvial flats on stream terraces, stream terraces, dipslopes and alluvial flats on structural benches, fan remnants, dissected structural benches, and alluvial fans.

Aspect: All

	<u>Minimum</u>	<u>Maximum</u>
Slope:	1%	30%
Elevation:	4,700 ft.	6,800 ft.
Flooding:	None	
Frequency:		
Duration:		
Ponding:	None	
Depth (inches):		
Frequency:		
Duration:		
Water Table Depth:		

B. CLIMATIC FEATURES

Mean Annual Precipitation (inches): 8 to 12 inches

Mean Annual Air Temperature: 45° to 52° F

Mean Annual Soil Temperature: 47° to 54° F

Frost Free Period (days): 120 to 160 days

Freeze Free Period (days): 120 to 160 days

Temperature and Moisture Distribution:

Climate Stations: St. ID. : 422592 Location: Escalante, Utah Period: From: 5/1901 To: 7/2003

Temperature	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
High Mean	40.4	45.6	54.4	63.2	72.8	83.6	88.7	85.6	78.4	66.8	52.6	41.9	64.5
Average Mean	27.2	32.9	40.3	47.9	56.3	65.4	71.4	69.0	61.3	50.8	38.4	29.0	49.2
Low Mean	13.9	20.2	26.2	32.5	39.9	47.2	54.2	52.4	44.2	34.8	24.2	16.1	33.8

Precipitation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Highest	4.44	3.06	3.46	3.30	2.50	2.50	5.41	4.50	5.70	5.57	4.65	3.76	21.70
Average Mean	0.95	0.79	0.84	0.57	0.60	0.47	1.20	1.83	1.16	1.06	0.65	0.80	10.91
Lowest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	4.79

Climate Stations: St. ID. : 421168 Location: Canyonlands The Needle, Utah Period: From: 6/1965 To: 7/2003

Temperature	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
High Mean	40.9	49.0	58.8	67.4	78.2	89.2	95.2	92.5	83.4	69.7	54.0	42.4	68.4
Average Mean	28.6	35.8	44.4	51.9	62.0	72.1	78.5	76.5	66.8	53.7	40.4	30.1	53.4
Low Mean	16.3	22.7	30.1	36.6	45.8	55.1	61.9	60.3	50.3	37.8	26.9	17.8	38.5

Precipitation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Highest	1.56	1.34	2.59	1.99	2.61	2.03	2.27	3.03	2.42	4.43	1.58	1.59	11.19
Average Mean	0.53	0.42	0.74	0.69	0.62	0.38	0.87	1.04	0.86	1.09	0.68	0.54	8.45
Lowest	0.0	0.0	0.01	0.0	0.0	0.0	0.05	0.0	0.0	0.01	0.0	0.0	4.25

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

Approximately 70-75% occurs as rain from March through October. On the average, February, May, and June are the driest months and July through October are the wettest months. Precipitation is extremely variable from month to month and from year to year. Much of the summer precipitation occurs as convection thunderstorms.

Influencing Water Features (if any):

Wetland Description (Cowardin System) System Subsystem Class
 None

Stream Types (Rosgen System) System
 None

C. PLANT COMMUNITY CHARACTERISTICS

1. Potential Plant Community Description and Ecological Factors

(Includes dominant vegetative aspect, cool-season and warm-season components, typical plant spacing, etc.)

The dominant aspect of the plant community is Wyoming big sagebrush and Indian ricegrass. The composition by air-dry weight is approximately 45% perennial grasses, 10% forbs, and 45% shrubs. Plants begin growth around March 1 and ends growth around October 15.

2. Plant Community Composition by Weight and Percentage

Grasses and Grasslike, 40-50%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Indian Ricegrass	ACHY	0	65	105	10	15
Galleta	PLJA	0	65	105	10	15
Bottlebrush Squirreltail	ELEL5	0	33	70	5	10
NeedleandThread	HECOC8	1	20	35	3	5
Blue Grama	BOGR2	1	20	35	3	5
Purple Threeawn	ARPU9	1	20	35	3	5
Sand Dropseed	SPCR	1	20	35	3	5
Western Wheatgrass	PASM	1	20	35	3	5
Other Annual Grasses	AAGG	1	33	70	5	10
Other Perennial Grasses	PPGG	1	33	70	5	10

Forbs, 5-10%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Gooseberryleaf Globemallow	SPGR2	2	7	21	1	3
Freckled Milkvetch	ASLE8	2	7	21	1	3
Field Pussytoes	ANNE	2	7	21	1	3
Sego Lily	CANU3	2	7	21	1	3
Twolobe Larkspur	DENU2	2	7	21	1	3
Shaggy Fleabane	ERPU2	2	7	21	1	3
Manybranched Ipomopsis	IPPO2	2	7	21	1	3
Mountain Pepperweed	LEMO2	2	7	21	1	3
Utah Desertparsley	LOPA	2	7	21	1	3
Whitestem Blazingstar	MEAL6	2	7	21	1	3
Longleaf Phlox	PHLO2	2	7	21	1	3
Tailcup Lupine	LUCAC3	2	7	21	1	3
Other Annual Forbs	AAFF	2	33	70	5	10
Other Perennial Forbs	PPFF	2	33	70	5	10

Shrubs, 40-50%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Wyoming Big Sagebrush	ARTRW8	0	98	140	15	20
Winterfat	KRLA2	0	33	70	5	10
Fourwing Saltbush	ATCA2	0	7	21	1	3
Yellow Rabbitbrush	CHVI8	0	7	21	1	3
Shadscale	ATCO	3	7	14	1	2
Nevada Mormontea	EPNE	3	7	14	1	2
Green Mormontea	EPVI	3	7	14	1	2
Spiny Hopsage	GRSP	3	7	14	1	2
Broom Snakeweed	GUSA2	3	7	14	1	2
Plains Pricklypear	OPPO	3	7	14	1	2
Spineless Horsebrush	TECA2	3	7	14	1	2
Narrowleaf Yucca	YUAN2	3	7	14	1	2
Other Shrubs	SSSS	3	33	70	5	10

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	850	900
Average Year	650	700
Unfavorable Year	450	500

4. Ground Cover and Structure

a. Vegetative

Vegetation Type	Percent Canopy Cover	Height Range	Percent Basal Area Cover
Grasses & Grass-like (perennial)	30	1-2 ft.	15
Forbs (perennial)	5	0.5-1 ft.	2
Shrubs	30	2-3 ft.	15
Trees	-	-	-
Cryptogams	0-3	0.5-1 cm	0-3

b. Other

Litter	0-10%
Coarse Fragments	0-10%
Bare Ground	30-40%

5. Ecological Dynamics of the Site

(includes a discussion of seral stages; fire influence and effects; effects of prolonged wet or dry periods; resistance to change; the influence of such things as grazing, rodent concentrations, insects, diseases, introduced species, and soil erosion or deposition; other stable vegetative states associated with this site as a result of extreme disturbance)

As ecological condition deteriorates due to overgrazing, Indian ricegrass, needleandthread and winterfat decrease while Wyoming big sagebrush, low rabbitbrush, and broom snakeweed increase. When the potential natural plant community is burned, Wyoming big sagebrush and fourwing saltbush decreases while yellow rabbitbrush, rubber rabbitbrush, Indian ricegrass and galleta increase. Cheatgrass, Utah juniper and pinyon are most likely to invade this site.

Silt loam textured soils (i.e. Ruinpoint) will have a higher amount of winterfat present in the plant community.

Suitability for rangeland seeding is good to fair. The major limiting factor is precipitation that can be variable with low years.

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	5	15	45	35	0	0	0	0	0	0
Name	PNC											
ID Number	UT2091											
Description	Excellent Condition											

7. Similar Sites

(Give related range sites in MLRA's above and below)

Semidesert Sandy Loam (Wyoming Big Sagebrush)

035XY216UT

8. Associated Sites Within MLRA

(Give site name and number)

Alkali Flat (Greasewood)	035XY009UT
Loamy Bottom (Basin Big Sagebrush)	035XY011UT
Desert Loam (Shadscale)	035XY109UT
Semidesert Sandy Loam (Fourwing Saltbush)	035XY215UT
Semidesert Sandy Loam (Wyoming Big Sagebrush)	035XY216UT
Semidesert Shallow Loam (Utah Juniper – Pinyon)	035XY221UT
Semidesert Shallow Loam (Black Sagebrush)	035XY226UT
Semidesert Shallow Shale (Utah Juniper – Pinyon)	035XY234UT
Semidesert Shallow Gypsum (Mormontea)	035XY237UT
Semidesert Shallow Hardpan (Utah Juniper – Pinyon)	035XY238UT
Semidesert Steep Shallow Loam (Utah Juniper – Pinyon)	035XY240UT
Semidesert Stony Loam (Utah Juniper – Pinyon)	035XY246UT

9. Correlated Sites in Other States

(Give site name and number)

D. MAJOR USES OF THIS SITE

1. Livestock

a. Site Factors Influencing Management

The suitability for livestock grazing is good. This site provides proper grazing for cattle and sheep during fall, winter and spring.

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

Species – Cattle	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep
Indian Ricegrass	F, G	VG	VG	VG
Galleta	VG	F, G	VG	VG
Bottlebrush Squirreltail	P	F,G	VG	P
Wyoming Big Sagebrush	P	P	P	P
Winterfat	VG	VG	F, G	F, G
Fourwing Saltbush	F, G	VG	F, G	F, G
Yellow Rabbitbrush	F	P	P	P

Species – Sheep	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep
Indian Ricegrass	F, G	VG	VG	VG
Galleta	F, G	F, G	VG	F, G
Bottlebrush Squirreltail	P	P	VG	P
Wyoming Big Sagebrush	P	F, G	P	P
Winterfat	VG	VG	VG	VG
Fourwing Saltbush	VG	VG	VG	VG
Yellow Rabbitbrush	F	P	P	P

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

2. Wildlife

a. Site Factors Influencing Management

This site provides food and limited cover for wildlife.

b. List of Potential Species Present

Wildlife using this ecological site includes coyote, bobcat, jackrabbit, snake, hawk, and mule deer.

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

c. Guide to Forage Preference of Managed Wildlife Species

Wildlife Species →	Mule deer		Elk	
	Use	Season	Use	Season
Indian Ricegrass	A	F, W, Sp, Su	A	F, W, Sp, Su
Galleta	B	F, W, Sp, Su	B	F, W, Sp, Su
Bottlebrush Squirreltail	B	F, W, Sp, Su	A	F, W, Sp, Su
Wyoming Big Sagebrush	C	F, W, Sp, Su	C	F, W, Sp, Su
Winterfat	A	F, W, Sp, Su	A	F, W, Sp, Su
Fourwing Saltbush	A	F, W, Sp, Su	B	F, W, Sp, Su
Yellow Rabbitbrush	C	F, W, Sp, Su	C	F, W, Sp, Su

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

Hiking, hunting, and horseback riding.

4. Wood Products

None.

5. Other Uses

The soils are in hydrological groups B and C. The runoff curve numbers are 61 through 86 depending on the condition of the watershed.

E. THREATENED AND ENDANGERED SPECIES

1. Plants – This section will be completed as information becomes available.
2. Animals – This section will be completed as information becomes available.

Site Type: Rangeland
Ecological Site Name: Semidesert Loam (Wyoming Big Sagebrush)
Site Number: 035XY209UT

Field Office Site Location

Monticello Field Office – Panguitch Field Office – Cedar City Field Office –
Richfield Field Office

Legal Description: Consult Grand and Canyonlands Soil Survey Reports.

Data Collected and References

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

4. Other References

Attachment 1

Ecological Reference Worksheet

Author(s)/participant(s): V. Keith Wadman
 Contact for lead author: _____ Reference site used? Yes/No
 Date: 6/22/04 MLRA: 035X Ecological Site: Semidesert Loam (035XY209UT) Wyoming big sagebrush, Indian ricegrass, Galleta. 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: None to few. Any rills present should be somewhat short in length (less than 6 feet long) and follow the surface micro-features. Old rills should be weathered and muted in appearance. An increase in rill formation may be seen after disturbance events such as recent fire or thunderstorms.
2. Presence of water flow patterns: Flow patterns wind around perennial plant bases and show little to slight evidence of erosion. They are short and stable and there is minor evidence of deposition.
3. Number and height of erosional pedestals or terracettes: Plants should show little or no pedestaling. Terracettes should be absent or few.
4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bareground): 40 - 50%.
5. Number of gullies and erosion associated with gullies: None to few. Any gullies present should show little sign of erosion and should be stabilized with vegetation.
6. Extent of wind scoured, blowouts and/or depositional areas: Minor evidence of wind generated soil movement. Wind caused blowouts and deposition are not present.
7. Amount of litter movement (describe size and distance expected to travel): Most litter resides in place with some redistribution caused by water movement. Minor litter removal may occur in flow channels with deposition occurring at points of obstruction.
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 5 to 6. 20 to 30% may have a rating of 3 to 4. The average should be a 5. Litter accumulation and cryptogamic crust reduces 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 2 to 3 inches. Structure varies from fine granular to thin platy. Color is light brown (10YR6/2 to yellowish red 5YR5/6). Organic matter is > 2%. An ochric horizon typically extends to a depth of 2 to 10 inches.
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 be reduced. A reduction in vegetative structure can reduce snow capture.

Site Type: Rangeland

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Ecological Site Name: Semidesert Loam (Wyoming Big Sagebrush)

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11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): **None. A few soils have bedrock at about 30+ 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 50-70+ years. Perennial grasses, non-sprouting shrubs > sprouting shrubs, annual forbs > invaders such as Cheatgrass & annual forbs. Dominants: Wyoming big sagebrush, Indian ricegrass; Sub-dominants: Galleta, Winterfat, Fourwing saltbush. The perennial grass/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 grasses should be present. Slight decadence in the principle shrubs could occur near the end of the fire cycle.**

14. Average percent litter cover (**10-20%**) and depth (**.50-.75 inch**).

15. Expected annual production (this is TOTAL above-ground production, not just forage production): **650 - 700 #/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": **Green rabbitbrush, Cheatgrass, Purple Threawn, & Annual forbs.**

17. Perennial plant reproductive capability: **All perennial plants should have the ability to reproduce in all years, except in extreme drought years. Low green rabbitbrush sprouts vigorously following fire.**