

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: Loamy Bottom (Basin Big Sagebrush)

SITE NUMBER: 035XY011UT

MLRA: D-35

Original Site Description: Author: GSC

Date: 03/25/1984

Revised Site Description: Author: GSC

Date: 09/08/1993

Revised Site Description: Author: SM

Date: 06/17/2004

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: very deep (more than 60 inches)

Surface Textures: fine sandy loam; loam; and fine sand

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

Subsurface Textures: fine sandy loam, very fine sandy loam; sandy loam, loam, silt loam, silty clay loam, loamy sand, loamy fine sand; sand, fine sand, and extremely cobbly coarse sand

Subsurface Fragments (<=3" % vol. >3" % vol.): 0 to 5%

Geologic Parent Materials: alluvium derived mainly from sandstone

(Geologic Formations: Moenkopi Formation; Entrada Sandstone; Navajo Sandstone; main body of Kayenta Formation; Moenave Formation; Kaiparowits Formation; Lower member of Wahweap Formation; Paria River Member of Carmel Formation; John Henry and Lower Members of Straight Cliffs Formation; Church Rock, Owl Rock, Petrified Forest, and Monitor Butte Members of Chinle Formation)

Moisture Regime: Ustic Aridic and Aridic Ustic

Temperature Regime: mesic

Runoff: low

Permeability (min-max): moderate (0.6 to 2.0 in/hr)

Drainage Class (min-max): well drained

Water Erosion Hazard: slight

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 30%

pH Range (1:1 water): 7.6 to 8.6

Available Water Capacity (inches): 7.4 to 9.1 inches

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These soils maybe flooded 4 out of 10 years. Average annual soil loss in potential is approximately 0.5 ton/acre. Escavada has a horizon of between 45 to 60 inches in depth that has 60 to 90% rock fragments. Ustic Torrifuvents (Capitol Reef) has a horizon of between 22 to 60 inches in depth that has 20 to 90% rock fragments. Escavada and Ustic Torrifuvents (Capitol Reef) has an available water capacity of 4 to 6 inches and a rapid permeability (6.0 to 20 in/hr) due to the rock fragments and sandier textures. The permeability varies with soil textures with sandier textures (i.e. fine sand – Radnik in mapunit 5141) being moderately rapid (2.0 to 6.0 in/hr) and with loamier textures (i.e. silt loam and sandy clay loam – Flatnose in mapunits 5120 and 5210) being moderately slow (0.2 to 0.6 in/hr) to slow (0.06 to 0.2 in/hr)

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

Grand Staircase Escalante NM (686): **Escavada** in mapunit 5141; **Flatnose** in mapunit 5120 & 5210; **Radnik, moist** in mapunit 5112, 5140 & 5141.
San Juan County – Central Part (638): **Gilco** in mapunit 12, 13 & 14; **Redbank Family** in mapunit 42 & 43; **Suwanee** in mapunit 66.
Canyonlands Area (633): **Barnum** in mapunit 3; **Jocity** in mapunit 43; **Ustic Torrifuvents** in mapunit 97.
Washington County (641): **Fluvaquents** in mapunit FA; **Torrifuvents** in mapunit FA.
San Juan County, Navajo Indian Reservation (643): **Redbank** in mapunit RED.
Capitol Reef NP: **Ustic Torrifuvents** in mapunit 100.

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

2. PHYSIOGRAPHIC FEATURES

Landform and Position: Stream terraces, alluvial flats, drainageways, and flood plains
Aspect: all

	<u>Minimum</u>	<u>Maximum</u>
Slope:	0%	8%
Elevation:	4,300 ft	6,600 ft
Flooding:	Very rare	
Frequency:	maybe 4 out of 10 years	
Duration:	occasionally	
Ponding:		
Depth (inches):		
Frequency:		
Duration:		
Water Table Depth:		

B. CLIMATIC FEATURES

Mean Annual Precipitation (inches): 8 to 16 inches
Mean Annual Air Temperature: 45°F to 52°F
Mean Annual Soil Temperature: 47°F to 54°F
Frost Free Period (days): 100 to 160 days
Freeze Free Period (days): 100 to 160 days

Temperature and Moisture Distribution:

Ustic Aridic Moisture Regime (8-12 inches):

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.7	0.00	0.00	0.00	0.00	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

Aridic Ustic Moisture Regime (12 to 16 inches):

Climate Stations: St. ID. : 424508 Location: Kanab, Utah Period: From: 12/1899 To: 7/2003

Temperature	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
High Mean	47.3	52.1	59.0	67.7	77.3	87.3	92.6	89.7	83.8	72.2	58.7	48.6	69.7
Average Mean	34.5	38.9	44.4	51.7	60.2	68.9	75.3	73.1	67.0	55.9	44.3	35.9	54.2
Low Mean	21.9	25.6	29.7	35.6	42.9	50.4	58.1	56.5	50.1	39.5	30.0	23.2	38.6

Precipitation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Highest	7.45	5.77	8.50	4.51	2.81	1.96	4.23	4.07	9.12	4.04	4.68	7.15	26.61
Average Mean	1.53	1.49	1.54	0.96	0.64	0.36	1.07	1.42	1.20	1.02	1.02	1.22	13.49
Lowest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.43

Climate Stations: St. ID. : 426053 Location: Natural Bridges NM, Utah Period: From: 12/1899 To: 7/2003

Temperature	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
High Mean	40.0	44.9	51.9	61.3	72.5	83.8	89.4	86.4	77.5	64.6	49.9	40.7	63.6
Average Mean	29.3	33.9	40.0	47.7	57.9	68.2	74.3	71.8	63.7	51.7	38.9	30.1	50.6
Low Mean	18.6	22.9	28.3	34.0	43.3	52.6	59.1	57.3	49.8	38.7	28.0	19.5	37.7

Precipitation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Highest	2.76	3.63	3.23	2.25	3.02	1.59	4.33	4.81	4.40	8.02	2.66	4.31	19.83
Average Mean	0.98	0.82	1.13	0.80	0.75	0.47	1.33	1.57	1.20	1.38	0.97	0.95	12.34
Lowest	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	6.50

Approximately 70-75% occurs as rain from March through October. On the average, April, May, and June are the driest months and August 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. This is a run-in site that receives additional moisture from adjacent sites and occasional flooding.

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

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

The dominant aspect of the plant community is Basin Big Sagebrush. The composition by air-dry weight is approximately 55% perennial grasses, 5% forbs, and 40% shrubs. In average years, plants begin growth around March 1 and end growth around October 15.

2. Plant Community Composition by Weight and Percentage

Grasses and Grasslike, 50-60%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Basin Wildrye	LECI4	0	90	165	10	15
Indian Ricegrass	ACHY	0	45	110	5	10
Nevada Bluegrass	PONE3	0	45	110	5	10
Muttongrass	POFE	0	45	110	5	10
Western Wheatgrass	PASM	0	45	110	5	10
Needleandthread	HECOC8	1	27	55	3	5
Bottlebrush Squirreltail	ELEL5	1	27	55	3	5
Sand Dropseed	SPCR	1	27	55	3	5
Blue Grama	BOGR2	1	27	55	3	5
Galleta	PLJA	1	27	55	3	5
Alkali Sacaton	SPAI	1	27	55	3	5
Other Perennial Grasses	PPGG	1	45	110	5	10
Other Annual Grasses	AAGG	1	45	110	5	10

Forbs, 3-5%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Gooseberryleaf Globemallow	SPGR2	2	9	33	1	3
Pacific Aster	SYCHC	2	9	33	1	3
Tufted Evening Primrose	OECA10	2	9	33	1	3
Other Perennial Forbs	PPFF	2	27	55	3	5

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Other Annual Forbs	AAFF	2	27	55	3	5
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Shrubs, 35-45%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Basin Big Sagebrush	ARTRT	0	225	330	25	30
Rubber Rabbitbrush	ERNAN5	0	45	110	5	10
Fourwing Saltbush	ATCA2	0	45	110	5	10
Greasewood	SAVE4	3	9	33	1	3
Winterfat	KRLA2	3	9	33	1	3
Skunkbush Sumac	RHTRT	3	9	33	1	3
Yellow Rabbitbrush	CHVI8	3	9	33	1	3
Other Shrubs	SSSS	3	27	55	3	5

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	1900	2100
Average Year	1500	1700
Unfavorable Year	900	1100

4. Ground Cover and Structure

a. Vegetative

Vegetation Type	Percent Canopy Cover	Height Range	Percent Basal Area Cover
Grasses & Grass-like (perennial)	50	1-5 ft.	30
Forbs (perennial)	5	0.5-1 ft.	2
Shrubs	15	1-4 ft.	5
Trees	-	-	-
Cryptogams	0-1	0.5-1 cm	0-1

b. Other

Litter	0-17%
Coarse Fragments	0-10%
Bare Ground	20-30%

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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, perennial grasses decrease while rubber rabbitbrush and basin big sagebrush increase. When the potential natural plant community is burned, basin big sagebrush, and four-wing saltbush decrease while rubber rabbitbrush and greasewood increase. Cheatgrass and Utah Juniper are mostly likely to invade this site.

Suitability for rangeland seeding is fair. The major limiting factor can be lack of precipitation at critical times for plant establishment.

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	25	65	5	0	0	0	0	0	0
Name	PNC											
ID Number	UT0111											
Description	Excellent Condition											

7. Similar Sites

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

Semidesert Loam (Wyoming Big Sagebrush)	035XY209UT
Upland Loam (Basin Big Sagebrush)	035XY306UT
Upland Sand (Mountain Big Sagebrush)	035XY307UT
Upland Loam (Mountain Big Sagebrush)	035XY308UT

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8. Associated Sites Within MLRA

(Give site name and number)

Alkali Bottom (Greasewood)	035XY003UT
Upland Loam (Basin Big Sagebrush)	035XY306UT
Semidesert Loam (Wyoming Big Sagebrush)	035XY209UT
Upland Loam (Mountain Big Sagebrush)	035XY308UT
Upland Sand (Mountain Big Sagebrush)	035XY307UT

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 is suited to proper grazing by cattle and sheep during spring, summer, and fall.

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

Species – Cattle	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep
Basin Wildrye	F,G	VG	VG	F,G
Indian Ricegrass	F, G	VG	VG	VG
Nevada Bluegrass	F, G	F, G	VG	F, G
Muttongrass	VG	F,G	VG	VG
Western Wheatgrass	F,G	F,G	VG	F,G
Basin Big Sagebrush	P	P	P	P
Rubber Rabbitbrush	P	P	P	P
Fourwing Saltbush	F, G	VG	F, G	F, G

Species – Sheep	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep
Basin Wildrye	P	P	F,G	F,G
Indian Ricegrass	F, G	VG	VG	VG
Nevada Bluegrass	F, G	F, G	F, G	F, G
Muttongrass	F,G	F,G	VG	VG
Western Wheatgrass	P	F,G	F,G	P
Basin Big Sagebrush	P	P	P	P
Rubber Rabbitbrush	P	P	P	P
Fourwing Saltbush	VG	VG	VG	VG

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

2. Wildlife

a. Site Factors Influencing Management

The suitability for livestock grazing is good. This site provides food and cover for wildlife.

b. List of Potential Species Present

Wildlife using this site includes jackrabbit, coyote, bobcat, ferruginous hawk, kangaroo rat, mice, and snake.

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 →	Mule deer		Elk	
	Use	Season	Use	Season
Basin Wildrye	B	F, W, Sp, Su	A	F, W, Sp, Su
Indian Ricegrass	A	F, W, Sp, Su	A	F, W, Sp, Su
Nevada Bluegrass	B	F, W, Sp, Su	A	F, W, Sp, Su
Muttongrass	B	F, W, Sp, Su	A	F, W, Sp, Su
Western Wheatgrass	C	F, W, Sp, Su	B	F, W, Sp, Su
Basin Big Sagebrush	C	F, W, Sp, Su	C	F, W, Sp, Su
Rubber Rabbitbrush	C	F, W, Sp, Su	C	F, W, Sp, Su
Fourwing Saltbush	A	F, W, Sp, Su	B	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

Recreation activities are hiking and hunting. Botanical diversity of the vegetation is a natural beauty resource.

4. Wood Products

None

5. Other Uses

The soil is in hydrologic group B. The hydrologic curve number is 61 when the hydrologic condition is good.

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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