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: Upland Stony Loam (Pinyon-Juniper)
SITE NUMBER: 035XY321UT
MLRA: D-35

Original Site Description: Author: PC, DJS	Date: 01/15/1988
Revised Site Description: Author: PC, DJS	Date: 06/04/1992
Revised Site Description: Author: SM	Date: 06/08/2004
Approved by: Title: State Range Cons. 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: very gravelly sandy loam, very stony sandy loam, cobbly very fine sandy loam, very cobbly fine sandy loam, extremely bouldery fine sandy loam, very gravelly loam, cobbly loam, and very cobbly loam
Surface Fragments (<=3" % cover, >3" % cover): 30 to 65%
Subsurface Textures: gravelly sandy loam, very gravelly sandy loam, extremely gravelly sandy loam, very cobbly sandy loam, very cobbly coarse sandy loam, gravelly loam, very gravelly loam, extremely gravelly loam, cobbly loam, very cobbly loam, stony loam, very stony loam, very gravelly loamy sand, extremely gravelly loamy sand, extremely cobbly loamy coarse sand, very gravelly sand, and very cobbly sand
Subsurface Fragments (<=3" % vol. >3" % vol.): 35 to 75%
Geologic Parent Materials: colluvium, alluvium, and residuum derived mainly from mixed parent materials (sandstone, limestone, shale, and igneous) (Geologic Formations: John Henry and Lower members of Straight Cliffs Formation; Claron Formation alluvium over Tropic Shale and Lower member of Straight Cliffs Formation; Dakota Formation; Paria River Member of Carmel Formation)
Moisture Regime: Aridic Ustic
Temperature Regime: Mesic
Runoff: low to medium
Permeability (min-max): moderate to moderately rapid (0.6 to 6.0 in/hr)
Drainage Class (min-max): well drained
Water Erosion Hazard: slight to moderate
Wind Erosion Hazard: slight
Electrical Conductivity (EC in mmhos/cm): 0 to 2 mmhos/cm (nonsaline)
Sodium Adsorption Ration (SAR): 0 (nonsodic)
Calcium Carbonate Equivalent (%): 15 to 40%
pH Range (1:1 water): 8.0 to 9.0
Available Water Capacity (inches): 3 to 7 inches

Horizons of carbonate accumulation occur at about 12 inches deep and extend to 60 inches or more. Some soils will have noncalcareous subsoils of clay accumulations. Usually the soil profile is calcareous throughout.

Soils higher in clay (i.e. Quagmeier) have a slower permeability rate of moderately slow (0.2 to 0.6 in/hr). Suzmayne and Lanver Family are moderately deep soils; the rest of the soils correlated with this site are very deep. Available water capacity for moderately deep soils is 3 to 5 inches. In general, soils with loam textures have higher available water capacity (5 to 7 inches) than sandy loam textured soils. Also, in general, soils with greater than 50-60% rock fragments will have a lower available water capacity (3 to 5 inches) than soils with less than 50-60% rock fragments (5 to 7 inches).

Major Soils Associated With This Site:

Washington County (641): **Tacan** in mapunit TAG.
Henry Mountains (631): **Montosa Family** in mapunits 63 & 91.
Canyonlands Area (633): **Strych** in mapunit 85; in **Ustollic Haplargids** mapunit 101.
Grand Staircase Escalante NM (686): **Suzmayne** in mapunit 5136; **Upler** in mapunits 5185 & 5206; **Quagmeier** in mapunit 5199.
Panguitch Area (636): **Clapper** in mapunits 35, 36 & 68; **Ustic Torrifluvents** in mapunit 150.
Glen Canyon NRA: **Lanver Family** in mapunits 149 & 156.
Capitol Reef NP: **Chilton – North** in mapunit 217; **Bruman** in mapunits 300 & 320.

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

2. PHYSIOGRAPHIC FEATURES

Landform and Position: hillslopes, escarpments, and ridges on structural benches; structural benches, remnant stream terraces, fan remnant, and landslide areas on escarpments.
Aspect: All

	Minimum	Maximum
Slope:	1%	30%
Elevation:	5,800 ft.	7,600 ft.
Flooding:	None	
Frequency:		
Duration:		
Ponding:	None	
Depth (inches):		
Frequency:		
Duration:		
Water Table Depth:		

B. CLIMATIC FEATURES

Mean Annual Precipitation (inches): 12 to16 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): 90 to120 days

Temperature and Moisture Distribution:

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 60-70% of the precipitation comes from rain from March through October. On the average April, May, and June are the driest months. August, September, and October are the wettest months in Southeastern Utah coming from rain. January, February, and March are the wettest months in Southwestern Utah coming from snow. 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

The dominant aspect of the plant community is pinyon, Utah juniper, and mixed shrubs. The composition by air-dry weight is approximately 15% perennial grasses, 5% forbs, 50% shrubs, and 30% trees.

2. Plant Community Composition by Weight and Percentage

Grasses and Grasslike, 10-20%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Muttongrass	POFE	0	23	55	5	10
Indian Ricegrass	ACHY	0	14	28	3	5
Blue Grama	BOGR2	1	5	17	1	3
Geyer's Sedge	CAGE2	1	5	17	1	3
Galleta	PLJA	1	5	17	1	3
Prairie Junegrass	KOMA	1	5	17	1	3
Bottlebrush Squirreltail	ELEL5	1	5	17	1	3
Needleandthread	HECOC8	1	5	17	1	3
Sandberg Bluegrass	POSE	1	5	17	1	3
Saline Wildrye	ELSA	1	5	17	1	3
Bottlebrush Squirreltail	ELEL5	1	5	17	1	3
Other Perennial Grasses	PPGG	1	14	28	3	5
Other Annual Grasses	AAGG	1	14	28	3	5

Forbs, 5-10%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Perennial Rockcress	ARPE2	2	5	17	1	3
Woolly Locoweed	ASMO7	2	5	17	1	3
Wyoming Indian Paintbrush	CALI4	2	5	17	1	3
Wright's Bird's beak	COWR2	2	5	17	1	3
Brenda's Yellow Cryptantha	CRFL5	2	5	17	1	3
Utah Fleabane	ERUT	2	5	17	1	3
Cushion Buckwheat	EROV	2	5	17	1	3
Sanddune Wallflower	ERCAC	2	5	17	1	3
Manybranched Ipomopsis	IPPO2	2	5	17	1	3
Fineleaf Hymenopappus	HYFI	2	5	17	1	3
Stemless Four-nerve Daisy	TEACA2	2	5	17	1	3
Rusty Lupine	LUPU	2	5	17	1	3
Dwarf Lousewort	PECE	2	5	17	1	3
Utah Penstemon	PEUT	2	5	17	1	3
Grassy Rockgoldenrod	PEPU7	2	5	17	1	3
Longleaf Phlox	PHLO2	2	5	17	1	3
Sharpleaf Twinpod	PHAC4	2	5	17	1	3
Lobeleaf Groundsel	SEMU3	2	5	17	1	3
Other perennial forbs	PPFF	2	23	55	5	10
Other annual forbs	AAFF	2	23	55	5	10

Shrubs, 45-55%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Utah Serviceberry	AMUT	0	23	83	5	15
Gambel Oak	QUGA	0	23	83	5	15
Alderleaf Mountain Mahogany	CEMO2	0	23	55	5	10
Antelope Bitterbrush	PUTR2	0	23	55	5	10
Mountain Big Sagebrush	ARTRV	0	14	28	3	5
Green Mormontea	EPVI	0	14	28	3	5
Mexican Cliffrose	PUME	3	5	17	1	3
Greenleaf Manzanita	ARPA6	3	5	17	1	3
Desert Holly	MAFR3	3	5	17	1	3
Rubber Rabbitbrush	ERNAN5	3	5	17	1	3
Kingcup Cactus	ECTR	3	5	17	1	3
Slender Buckwheat	ERMI4	3	5	17	1	3
Broom Snakeweed	GUSA2	3	5	17	1	3
Plains Pricklypear	OPPO	3	5	17	1	3
Squaw Apple	PERA4	3	5	17	1	3
Blue Elderberry	SACE3	3	5	17	1	3
Roundleaf Buffaloberry	SHRO	3	5	17	1	3
Mountain Snowberry	SYOR2	3	5	17	1	3
Spanish Bayonet	YUHA	3	5	17	1	3
Black Sagebrush	ARNO4	3	5	17	1	3
Narrowleaf Yucca	YUAN2	3	5	17	1	3
Other Shrubs	SSSS	3	14	28	3	5

Trees, 25-35%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Two-needle Pinyon	PIED	0	54	110	12	20
Utah Juniper	JUOS	0	23	83	5	15

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	700	800
Average Year	450	550
Unfavorable Year	300	400

4. Ground Cover and Structure

a. Vegetative

Vegetation Type	Percent Canopy Cover	Height Range (ft.)	Percent Basal Area Cover
Grasses & Grass-like (perennial)	10	0.5-1.5 ft.	5
Forbs (perennial)	5	0.5-1 ft.	1
Shrubs	40	2-4 ft.	30
Trees	25	8-12 ft.	20
Cryptogams	0-1	0.5-1 cm	0-1

b. Other

Litter	0-10%
Coarse Fragments	40-50%
Bare Ground	20-30%

5. Ecological Dynamics of the Site

As ecological condition deteriorates due to overgrazing, grasses and bitterbrush decrease while pinyon, juniper, and less palatable shrubs increase. When the potential natural plant community is burned pinyon, juniper, and non-sprouting shrubs decrease while grasses, forbs, Gambel oak and other sprouting shrubs, and manzanita increase. Cheatgrass is likely to invade this site.

Suitability for rangeland seeding is very poor to fair. The major limiting factors are low available water capacity and the stony surface.

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	10	30	45	5	5	5	0	0	0
Name	PNC											
ID Number	UT3211											
Description	Excellent Condition											

7. Similar Sites

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

Semidesert Stony Loam (Utah Juniper – Pinyon)	035XY246UT
Upland Shallow Loam (Pinyon – Utah Juniper)	035XY315UT
Upland Steep Stony Loam (Pinyon – Utah Juniper)	035XY317UT
Upland Stony Loam (Pinyon – Utah Juniper)	047BY333UT

8. Associated Sites Within MLRA

(Give site name and number)

Talus Slope (Blackbrush – Shadscale)	035XY018UT
Semidesert Shallow Clay (Shadscale – Utah Juniper)	035XY239UT
Semidesert Stony Loam (Utah Juniper – Pinyon)	035XY246UT
Upland Loam (Mountain Big Sagebrush)	035XY308UT
Upland Shallow Loam (Pinyon – Utah Juniper)	035XY315UT
Upland Steep Stony Loam (Pinyon – Utah Juniper)	035XY317UT

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 poor to fair. This site is suited for cattle and sheep grazing during spring, summer, and fall.

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

Species – Cattle	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep
Muttongrass	VG	F,G	VG	VG
Indian Ricegrass	F, G	VG	VG	VG
Utah Serviceberry	F, G	F, G	P	F, G
Alderleaf Mountain Mahogany	F, G	F, G	F, G	F, G
Gambel Oak	F, G	F, G	F, G	P
Mountain Big Sagebrush	F, G	F, G	P	P
Mexican Cliffrose	F, G	VG	F, G	P
Two-needle Pinyon	P	P	P	P
Utah Juniper	P	P	P	P

Species – Sheep	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep
Muttongrass	F,G	F,G	VG	VG
Indian Ricegrass	F, G	VG	VG	VG
Utah Serviceberry	VG	VG	F, G	VG
Alderleaf Mountain Mahogany	VG	F, G	F, G	VG
Gambel Oak	F, G	F, G	P	F, G
Mountain Big Sagebrush	F, G	F, G	P	P
Mexican Cliffrose	VG	VG	F, G	F, G
Two-needle Pinyon	P	P	P	P
Utah Juniper	P	P	P	P

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

2. Wildlife

a. Site Factors Influencing Management

This site provides cover and some food for a few species of wildlife.

b. List of Potential Species Present

The most common vertebrate species are pocket mouse, mule deer, coyote, pocket gopher, vole, ground squirrel, cottontail, antelope, chipmunk, woodrat, raven, pinon jay, sparrow, mountain lion, raptors, eagles, and elk.

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	
Plant Species ↓	Use	Season	Use	Season
Muttongrass	B	F, W, Sp, Su	A	F, W, Sp, Su
Indian Ricegrass	A	F, W, Sp, Su	A	F, W, Sp, Su
Utah Serviceberry	A	F, W, Sp, Su	A	F, W, Sp, Su
Alderleaf Mountain Mahogany	A	F, W, Sp, Su	A	F, W, Sp, Su
Gambel Oak	A	F, W, Sp, Su	A	F, W, Sp, Su
Mountain Big Sagebrush	B	F, W, Sp, Su	B	F, W, Sp, Su
Mexican Cliffrose	A	F, W, Sp, Su	A	F, W, Sp, Su
Two-needle Pinyon	C	F, W, Sp, Su	C	F, W, Sp, Su
Utah Juniper	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

Some recreation uses of this site are hiking and hunting.

4. Wood Products

Pinyon production of firewood is 1.7 to 5.4 cords per acre. Utah juniper production of firewood is 1.3 to 4.1 cords per acre. Utah juniper production of posts is 4 per acre. The site index for this site is 50 to 75.

5. Other Uses

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

E. THREATENED AND ENDANGERED SPECIES

1. Plants – This section will be added as information is available.

2. Animals – This section will be added as information is available.

F. MODAL LOCATION AND DOCUMENTATION

State: Utah County: Kane
Latitude: Longitude:
Section: Township: Range:

General Legal Description:

Capitol Reef: **Bruman** – SW of Cathedral Valley. NE ¼ of the NE ¼ of Sec. 17, T. 27S. R. 5E. **Chilton, north** – Dry Benches: 1,500 ft. W & 2,000 ft. S of the NE corner of Sec. 30, T. 31S. R. 7E.

Grand Staircase: **Suzmayne** – SW of Escalante, in the upper Canaan Creek area; (Modal – Latitude: 37° 39' 1" N Longitude: 111° 42' 57" W) **Quagmeier** – SW of Cannonville, N of the Skutumpah Road near Indian Hollow, Horse Mountain, Squaw Bench and Meadow Canyon; and E of Henrieville near Wiggler Wash. (Modal – Latitude: 37° 23' 55.71" N Longitude: 112° 13' 54.47" W) **Upler** – SE of Cannonville along the Cottonwood Road in the Slick Rock Bench area; around Henrieville; E of Henrieville along Headquarters Valley, NE of Henrieville near Death Ridge; W of Cannonville on Bulldog Bench, Sheep Creek Flat, and benches above Indian Hollow; and SW of Cannonville along the Skutumpah Road from Adams Wash to Bullrush Hollow. Modal – Latitude: 37° 31' 11.47" N Longitude: 112° 5' 41.40" W)

Washington County: **Tacan** – Kolob Canyon section of Zion National Park. 1,320 ft. E and 2,125 ft. N of the SW corner of sec. 34, T. 38S. R. 12W.

Henry Mountains: **Montosa Family** – 20 miles S of Hanksville, in the SE ¼ of sec. 19, T. 31 S., R. 11 E.

Canyonlands Area: **Strych** – 18 miles SE of Moab; 1,800 ft. S and 2, 580 ft. E of the NW corner of sec. 14, T. 28S, R. 23E. **Ustollic Haplargids** – Deerneck Mesa, Iron Canyon Point, Bucks Flat, and Peters Point; in Lisbon Valley and Big Indian Valley; and in the Dolores Triangle.

Panguitch Area: **Clapper** – 4.5 miles N of Henrieville, on Coal Bench; 1,600 ft. S and 200 ft. W of the NE corner of sec. 34, T. 36S, R. 2W. **Ustic Torrifluvents** – 0.75 miles N of Widtsoe Junction, in Johns Valley; 400 ft. W and 600 ft. N of the SE corner of sec. 16, T. 34S, R. 2W.

Glen Canyon NRA: **Lanver Family** – 3 mile N of Navajo Point; in the SE ¼ of the NW ¼ of sec. 22, T. 41S, R. 8E.

Type Location: See Kane County, Utah, Soil Survey.

Field Office Site Location

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

Legal Description:

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: 6/23/04 **MLRA:** 035X_ **Ecological Site:** Upland Stony loam (035XY321UT) Pinyon-juniper, Muttongrass, Utah serviceberry) **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 12 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. An increase in rill formation may be seen after disturbance events such as recent fire or thunderstorms. 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): 30 – 50%. (Surface coarse fragments cover 15% of site).

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: Little 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): 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): 60 to 70% of this site should have an erosion rating of 4 or 5. 30 to 40% may have a rating of 2 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 1 to 3 inches. Structure is thin platy. Color varies from yellowish brown (10YR5/4) to brown (7.5YR6/6). Little difference in color under vegetation.

10. Effect of plant community composition (relative proportion of different functional groups) & spatial distribution on infiltration & runoff: When perennial shrubs & grasses decrease, reducing ground cover and increasing bare ground, runoff will increase and infiltration will be reduced. Significant increases in Pinyon-juniper canopy reduces understory vegetation and increases runoff.

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): None.

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. Overstory trees, perennial shrubs, perennial grasses> sprouting shrubs, annual forbs > invaders such as Cheatgrass & Annual forbs. Dominants: Pinyon/juniper, Utah serviceberry, Gambel oak & Mountain big sagebrush; Sub-dominants: Muttongrass, Bitterbrush, Birchleaf mountainmahogany. The perennial grass/non-sprouting shrub functioning group is expected as understory 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 and overstory trees could occur near the end of the fire cycle.

14. Average percent litter cover (5-10%) and depth (.25-.50 inch).

15. Expected annual production (this is TOTAL above-ground production, not just forage production): 300 - 350 #/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, Gambel oak, Manzanita & Annual forbs.

17. Perennial plant reproductive capability: All perennial plants should have the ability to reproduce in all years, except in extreme drought years. Understory reproduction is reduced as overstory canopy closes. Gambel oak and other sprouting shrubs may increase rapidly after fire.