

**UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE**

ECOLOGICAL SITE DESCRIPTION

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R070XA010NM

Site Name: Malpais Breaks

Precipitation or Climate Zone: 14 to 16 inches

Phase: _____

PHYSIOGRAPHIC FEATURES

Narrative:

This site is on steep to very steep sides of basalt capped mesas. Elevation ranges from 4,900 to 8,200 feet above sea level. It consists of a series of ridges, benches and escarpments. Elevation differences range from 100 to 800 feet. The site is 20 to 35 percent basalt, sandstone and limestone outcrop and 65 to 80 percent soil. The soil is on fans and benches. This site is on all aspects. Areas with north and east aspects have greater density of vegetation.

Land Form:

1. Ridge
2. Escarpment
- 3.

Aspect:

1. North and east
2. South and west
- 3.

	Minimum	Maximum
Elevation (feet)	4,900	8,200
Slope (percent)	20	75
Water Table Depth (inches)	N/A	N/A
	Minimum	Maximum
Flooding:		
Frequency	N/A	N/A
Duration	N/A	N/A
	Minimum	Maximum
Ponding:		
Depth (inches)	N/A	N/A
Frequency	N/A	N/A
Duration	N/A	N/A

Runoff Class:

Negligible to medium.

CLIMATIC FEATURES

Narrative:

The climate of this area can be classified as “semi-arid continental”.

Precipitation averages 14 to 16 inches. Seventy seven percent of the year’s moisture normally falls during the period of May through October. Practically all of it is brought by brief afternoon and evening thunderstorms. In July and August, normally the wettest months of the year, one can expect about one day in five when rainfall exceeds one-tenth inch. Early spring precipitation in May benefits the cool-season plants. Winter precipitation, supplying 24 percent of the year’s moisture, normally has no more than two days a month with as much as one-tenth inch of moisture. Much of the winter precipitation falls as snow.

Air temperatures vary from a monthly mean of 20 degrees F in January to 69 degrees F in July. Daily high temperatures average in the 80’s and low 90’s during the summer. Winter low temperatures fall below the freezing mark much of the time from November through March with minimum temperatures approaching 25 degrees F below zero. Dates of the last killing frost may vary from May 9th through May 17th, and the first killing frost from September 27th to October 8th. The frost-free season ranges from 141 days to 153 days from early May to early October.

Wind velocities for the area average 10 to 12 miles per hour and prevail from the south and southwest. Generally, March is the windiest month. Strong winds during the spring cause rapid drying of the soil surface.

Nearby mountains to the west intercept much of the precipitation from the Pacific storms coming through this area during the winter. About 70 percent of the 14 to 16 inches of annual precipitation falls in the form of rainfall during the frost-free season. About 40 percent of the annual precipitation benefits cool-season plants, 50 percent benefits warm-season plants and 10 percent falls during the season of plant dormancy. Relative humidity is moderately low. The sun shines approximately 75 percent of the time.

Climate data was obtained from <http://www.wrcc.sage.dri.edu/summary/climsmnm.html> web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

	Minimum	Maximum
Frost-free period (days):	<u>132</u>	<u>149</u>
Freeze-free period (days):	<u>153</u>	<u>171</u>
Mean annual precipitation (inches):	<u>14</u>	<u>16</u>

Monthly moisture (inches) and temperature (°F) distribution:

	Precip. Min.	Precip. Max.	Temp. Min.	Temp. Max.
January	.27	.40	10.4	48.2
February	.26	.43	14.1	52.7
March	.56	.78	20.4	59.6
April	.85	1.20	28.7	67.9
May	1.68	2.49	38.3	76.4
June	1.77	2.21	46.3	85.7
July	2.53	3.43	50.9	88.8
August	2.95	3.57	50.6	86.6
September	1.56	2.02	42.9	80.7
October	1.02	1.20	31.4	71.4
November	.44	.59	19.9	57.6
December	.25	.51	12.3	50.5

Climate Stations:

Station ID	Location	From:	To:	Period
293706	Grenville, NM	01/01/41	12/31/01	
294856	Las Vegas FAA Airport, NM	01/01/41	12/31/01	
295490	Maxwell, NM	01/01/14	12/31/01	
297280	Raton KRTN Radio, NM	12/01/78	12/31/01	
298501	Springer, NM	01/01/14	12/31/01	
299330	Valmora, NM	03/01/17	12/31/01	

INFLUENCING WATER FEATURES

Narrative:

This site is not influenced by water from a wetland or stream.

Wetland description:

System	Subsystem	Class
N/A		

If Riverine Wetland System enter Rosgen Stream Type:

N/A

REPRESENTATIVE SOIL FEATURES

Narrative:

The soils on this site are well drained, shallow to deep. The surface layers are medium to fine textured and are often stony. The subsoil is clay loam or clay. Permeability is moderate to very slow. Available water-holding capacity is low to high. Effective rooting depth is 10 to more than 60 inches. These soils generally have air-water relationships beneficial to plant growth; however, some of the shallow stony soils are droughty. These soils are not usually classified to the series or family level because of variability.

Parent Material Kind: Volcanic ash

Parent Material Origin: Basalt

Surface Texture:

1. Very stony loam
2.
3.

Surface Texture Modifier:

1. Stone
2.
3.

Subsurface Texture Group: Clayey

Surface Fragments $\leq 3''$ (% Cover): N/A

Surface Fragments $> 3''$ (% Cover): 35 to 60

Subsurface Fragments $\leq 3''$ (% Volume): N/A

Subsurface Fragments $> 3''$ (% Volume): 35 to 60

	Minimum	Maximum
Drainage Class:	Well	Well
Permeability Class:	Very slow	Moderate
Depth (inches):	10	>72
Electrical Conductivity (mmhos/cm):	0.00	2.00
Sodium Absorption Ratio:	N/A	N/A
Soil Reaction (1:1 Water):	7.4	9.0
Soil Reaction (0.1M CaCl₂):	N/A	N/A
Available Water Capacity (inches):	3	12

Calcium Carbonate Equivalent (percent):

N/A

N/A

PLANT COMMUNITIES

Ecological Dynamics of the Site:

Plant Communities and Transitional Pathways (diagram)

Plant Community Name: Historic Climax Plant Community

Plant Community Sequence Number: 1 **Narrative Label:** HCPC

Plant Community Narrative: Historic Climax Plant Community

The vegetative production on this site is predominantly made up of grasses; however, the appearance is that of being dominated by woody species. This is especially apparent on the north and east facing slopes having mottles or large patches of oak, mountainmahogany, skunkbush, juniper and other shrubs, which make up approximately 20 to 25 percent of the composition. Annual and perennial forbs are evenly distributed and make up approximately 15 percent of the plant community.

Canopy Cover:

Trees	3 – 5 %
Shrubs and half shrubs	15 – 20 %
Ground Cover (Average Percent of Surface Area).	
Grasses & Forbs	<u>25 – 30</u>
Bare ground	<u>15 – 20</u>
Surface gravel	<u>0</u>
Surface cobble and stone	<u>30 – 35</u>
Litter (percent)	<u>10 – 15</u>
Litter (average depth in cm.)	<u>2</u>

Plant Community Annual Production (by plant type): _____

Plant Type	Annual Production (lbs/ac)		
	Low	RV	High
Grass/Grasslike	377	595	812
Forb	85	133	182
Tree/Shrub/Vine	150	236	322
Lichen			
Moss			
Microbiotic Crusts			
Total	650	1,025	1,400

Plant Community Composition and Group Annual Production:

Plant Type - Grass/Grasslike

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
1	SCSC	Little Bluestem	154 – 205	154 – 205
2	BOGR2	Blue Grama	154 – 205	154 – 205
3	PASM	Western Wheatgrass	51 – 103	51 – 103
4	BOCU	Sideoats Grama	51 – 103	51 – 103
5	ANGE	Big Bluestem	51 – 103	51 – 103
6	BOHI2	Hairy Grama	31 – 51	31 – 51
7	HECO26 HENE5	Needleandthread New Mexico Feathergrass	31 – 51	31 – 51
8	ACHY PAVI2	Indian Ricegrass Switchgrass	31 – 51	31 – 51
9	2GRAM	Other Grasses	31 – 51	31 – 51

Plant Type - Forb

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
10	DALEA	Prairie Clover	31 – 51	31 – 51
11	SPHAE	Globemallow spp.	31 – 51	31 – 51
12	ERIOG ERIOG RACO3	Wildbuckwheat Wavyleaf Buckwheat Prairie Coneflower	31 – 51	31 – 51
13	2FA	Other Annual Forbs	31 – 51	31 – 51
14	2FP	Other Perennial Forbs	31 – 51	31 – 51

Plant Type – Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
15	QUERC	Oak spp.	103 – 154	103 – 154
16	CEMOP	Hairy Mountainmahogany	82 – 103	82 – 103
17	RHTR	Skunkbush Sumac	31 – 51	31 – 51
18	JUNIP	Juniper spp.	31 – 51	31 – 51
19	2SD	Other Shrubs	31 – 51	31 – 51

Plant Type - Lichen

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Moss

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Microbiotic Crusts

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Other grasses that could appear include: galleta, wolftail, spike muhly, ring muhly, bottlebrush squirreltail and threeawn spp.

Other shrubs that could appear include: sagebrush, currant, yucca spp., senecio, broom snakeweed, winterfat and ponderosa pine.

Other forbs that could appear include: fetid marigold, aster, and silverleaf nightshade.

Plant Growth Curves

Growth Curve ID 3710NM

Growth Curve Name: HCPC

Growth Curve Description: Grassland with major components of shrubs and forbs.

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	3	5	10	10	25	30	12	5	0	0

ECOLOGICAL SITE INTERPRETATIONS

Animal Community:

Habitat for Wildlife:

This site provides habitats which support a resident animal community that is characterized by mule deer, bobcat, desert cottontail, brush mouse, rock mouse, rock squirrel, great horned owl, sparrow hawk, scrub jay, rufous-sided towhee, garter snake and fence lizard.

There is seasonal use by the blue grouse, turkey and mountain lion. The Lewis woodpecker breeds in these habitats. Band-tailed pigeons will flock to these habitats during years of heavy mast production.

Hydrology Functions:

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

Hydrologic Interpretations

Soil Series	Hydrologic Group
Ayon	B

Recreational Uses:

Due to the break in the physiographic features, this site has good aesthetic appeal and natural beauty. It is fair for screening, fair to good for hiking and picnicking and fair to poor for camping. Hunting is fair to good for deer and rabbits. This is excellent winter range for deer.

Wood Products:

This site produces no significant wood productions except for fuel for campfires.

Other Products:

Grazing:

This site is best suited for grazing during spring, summer and fall. Distribution of livestock is a problem on this site due to the slope. All ages and classes of livestock tend to graze the flatter slopes leaving the steeper slopes ungrazed. It is better suited to grazing by a younger age of livestock due to the slopes and rocks on the surface. Approximately 80 percent of the total annual yield are from species that furnish forage for grazing animals. These species are a large variety of grasses, forbs and shrubs that provide good nutrition for grazing animals. Continuous grazing during the growing season will cause the more desirable forage plants such as little bluestem, big bluestem, sideoats grama, western wheatgrass and mountainmahogany to decrease. Species most likely to increase are blue grama, threeawn, oneseed juniper, broom snakeweed, oak brush and cholla cactus. A system of deferred grazing, which varies the season of grazing and rest in a pasture during successive years, is needed to maintain or improve the plant community. Rest during different seasons of the year will benefit different species. Deferment during the late winter and early spring reduces competition between cattle and deer for the palatable shrubs and early forbs. Rest during April, May and June benefits needleandthread, New Mexico feathergrass and Indian ricegrass. Rest during late spring and early summer is beneficial to species such as big bluestem and switchgrass.

Other Information:

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index	Ac/AUM
100 - 76	2.9 – 3.6
75 – 51	3.7 – 5.8
50 – 26	5.7 – 10.6
25 – 0	10.6+

Plant Part	Code	Species Preference	Code
Stems	S	None Selected	NS
Leaves	L	Preferred	P
Flowers	F	Desirable	D
Fruits/Seeds	F/S	Undesirable	U
Entire Plant	EP	Not Consumed	NC
Underground Parts	UP	Emergency	E
		Toxic	T

Plant Preference by Animal Kind:

Animal Kind: Livestock

Animal Type: Cattle

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
Western Wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	D	D	D	D	D	D	D
New Mexico Feathergrass	Hesperostipa neomexicana	EP	D	D	P	P	P	D	D	D	D	D	D	D
Needleandthread	Hesperostipa comata	EP	D	D	P	P	P	D	D	D	D	D	D	D
Big Bluestem	Andropogon gerardii	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Indian Ricegrass	Achnatherum hymenoides	EP	P	P	P	P	P	P	P	P	P	P	P	P
Switchgrass	Panicum virgatum	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Hairy Mountainmahogany	Cercocarpus montanus	L/S	U	U	U	D	D	D	U	U	U	U	U	U

Animal Kind: Livestock

Animal Type: Horse

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
Western Wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	D	D	D	D	D	D	D

Animal Kind: Livestock

Animal Type: Sheep

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Prairieclover	Dalea spp.	EP	P	P	P	P	P	P	P	P	P	P	P	P

Animal Kind: Wildlife

Animal Type: Deer

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Hairy Mountainmahogany	Cercocarpus montanus	L/S	P	P	P	P	P	P	P	P	P	P	P	P

SUPPORTING INFORMATION

Associated sites:

Site Name	Site ID	Site Narrative

Similar sites:

Site Name	Site ID	Site Narrative

State Correlation:

This site has been correlated with the following sites: _____

Inventory Data References:

Data Source	# of Records	Sample Period	State	County

Type Locality:

State: New Mexico

County: Colfax, Mora, Union

Latitude: _____

Longitude: _____

Township: _____

Range: _____

Section: _____

Is the type locality sensitive? Yes No

General Legal Description: _____

<u>Relationship to Other Established Classifications:</u>

Other References:

Data collection for this site was done in conjunction with the progressive soil surveys within the Pecos-Canadian Plains and Valleys 70 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: Colfax, Mora, San Miguel, Union.

<u>Characteristic Soils Are:</u>

Ayon	
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<u>Other Soils included are:</u>

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Site Description Approval:

Author

Don Sylvester

Date

04/25/80

Approval

Durwood E. Ball

Date

04/29/80

Site Description Revision:

Author

Elizabeth Wright

Date

08/26/02

Approval

George Chavez

Date

12/17/02