

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

ECOLOGICAL SITE DESCRIPTION

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R070XA007NM

Site Name: Malpais Upland

Precipitation or Climate Zone: 14 to 16 inches

Phase: _____

PHYSIOGRAPHIC FEATURES

Narrative:

This site is on nearly level to strongly sloping basalt flows and adjacent fans. Elevation ranges from 5,500 to 7,500 feet above sea level. The landscape is characteristically a complex of cobbly or stony soil and basalt rock outcrop. Slopes range from 0 to 15 percent with inclusions of short slopes of as much as 25 percent. The included slopes are not a barrier to the movement of livestock.

Land Form:

1. Lava flow

2.

3.

Aspect:

1. N/A

2.

3.

	Minimum	Maximum
Elevation (feet)	5,500	7,500
Slope (percent)	0	25
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:

These are well-drained shallow to deep soils formed in debris from basalt. The surface texture is cobbly loam, cobbly silt loam, cobbly clay loam, stony fine sandy loam, stony loam, stony silt loam, stony sandy clay loam and stony clay loam. The texture of the subsurface layers is stony or cobbly loam, clay loam or clay. Permeability is moderate to slow. Available water-holding capacity is low to high. Effective rooting depth is 8 to 60 inches. Air-water relation is favorable for plant growth. Basalt fragments make up 5 to 35 percent of the soil and occupy 5 to 35 percent of the surface.

Parent Material Kind: Volcanic ash

Parent Material Origin: Basalt

Surface Texture:

- | |
|--------------------------|
| 1. Cobbly loam |
| 2. Cobbly silt loam |
| 3. Cobbly clay loam |
| 4. Stony fine sandy loam |
| 5. Stony loam |
| 6. Stony silt loam |
| 7. Stony sandy clay loam |
| 8. Stony clay loam |

Surface Texture Modifier:

- | |
|-----------|
| 1. Cobble |
| 2. Stone |
| 3. |

Subsurface Texture Group: Loamy

Surface Fragments ≤ 3 " (% Cover): 15 to 35

Surface Fragments > 3 " (% Cover): 15 to 35

Subsurface Fragments ≤ 3 " (%Volume): 15 to 35

Subsurface Fragments ≥ 3 " (%Volume): 15 to 35

	Minimum	Maximum
	Well	Well
Drainage Class:	Impermeable	Moderately slow
Permeability Class:	4	>72
Depth (inches):	0.00	2.00
Electrical Conductivity (mmhos/cm):	N/A	N/A
Sodium Absorption Ratio:	6.1	9.0
Soil Reaction (1:1 Water):	N/A	N/A
Soil Reaction (0.1M CaCl₂):	3	12
Available Water Capacity (inches):	N/A	N/A
Calcium Carbonate Equivalent (percent):		

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

This site is a grass dominated plant community with shrubs and forbs evenly distributed. Mid-grasses dominate with a variety of tall and short-grasses.

Canopy Cover:

Trees	0 – 2 %
Shrubs and half shrubs	5 – 8 %
Ground Cover (Average Percent of Surface Area).	
Grasses & Forbs	25 – 35
Bare ground	20 – 25
Surface gravel	0
Surface cobble and stone	30 – 35
Litter (percent)	5 – 10
Litter (average depth in cm.)	2

Plant Community Annual Production (by plant type): _____

Plant Type	Annual Production (lbs/ac)		
	Low	RV	High
Grass/Grasslike	520	860	1,200
Forb	65	108	150
Tree/Shrub/Vine	65	108	150
Lichen			
Moss			
Microbiotic Crusts			
Total	650	1,075	1,500

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	215 – 269	215 – 269
2	BOGR2	Blue Grama	215 – 269	215 – 269
3	PASM	Western Wheatgrass	108 – 161	108 – 161
4	ANGE	Big Bluestem	108 – 161	108 – 161
5	BOCU	Sideoats Grama	108 – 161	108 – 161
6	BOHI2	Hairy Grama	32 – 54	32 – 54
7	ARIST	Threawn spp.	32 – 54	32 – 54
8	SONU2	Indiangrass	32 – 54	32 – 54
9	HECO26 HENE5	Needleandthread New Mexico Feathergrass	32 – 54	32 – 54
10	2GRAM	Other Grasses	32 – 54	32 – 54

Plant Type - Forb

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
11	DALEA	Prairie Clover	22 – 54	22 – 54
12	SPHAE	Globemallow spp.	22 – 54	22 – 54
13	2FA	Other Annual Forbs	22 – 54	22 – 54
14	2FP	Other Perennial Forbs	22 – 54	22 – 54

Plant Type – Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
15	CEMOP	Hairy Mountainmahogany	32 – 54	32 – 54
16	ARFR4	Fringed Sagewort	32 – 54	32 – 54
17	RHTR YUCCA	Skunkbush Sumac Yucca spp.	32 – 54	32 – 54
18	2SD	Other Shrubs	32 – 54	32 – 54

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: switchgrass, galleta, silver bluestem, spike muhly, ring muhly, wolftail, bottlebrush squirreltail and plains bristlegrass.

Other shrubs that could appear include: currant, juniper, winterfat, oak and Apacheplume.

Other forbs that could appear include: wildbuckwheat, Wright eriogonum, wild onion, sunflower and pepperweed.

Plant Growth Curves

Growth Curve ID 3707NM

Growth Curve Name: HCPC

Growth Curve Description: Grassland with evenly distributed forbs and shrubs.

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, coyote, bobcat, bridled weasel, eastern cottontail, rock mouse, southern plains woodrat, marsh hawk, great horned owl, scaled quail, horned lark, roadrunner, six-lined racerunner and prairie rattlesnake.

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
Apache	D
Ayon	B
Fallsam	D
Pidineen	D
Thunderbird	D

Recreational Uses:

This site has good aesthetic appeal and natural beauty. It has a large variety of plants, many which bloom from early spring to late fall. Camping, hiking and picnicking is fair. Hunting for deer and rabbits is poor to fair.

Wood Products:

This site produces no significant wood products except limited firewood for campfires.

Other Products:

Grazing:

This site can be grazed any season of the year by all classes of livestock but may be best suited for spring, summer and fall use due to the occasional winter storms. It is best suited for a younger age of livestock due to the rocky surface. The large variety of grasses, forbs and shrubs provide a well-balanced feed and excellent nutrition for all grazing animals. During normal or above normal years, this site greens up earlier than the other upland sites. Approximately 90 percent of the total annual yield are from species that furnish forage for grazing animals. Continuous grazing during the growing season will cause the more desirable forage plants such as little bluestem, western wheatgrass, big bluestem, sideoats grama, Indiangrass, switchgrass, needleandthread, New Mexico feathergrass and hairy mountainmahogany to decrease. Species most likely to invade are sleepygrass, buffalograss, broom snakeweed, plains pricklypear cactus and senecio. Species most likely to increase are blue grama, threeawn, galleta and sagebrush. As the ecological condition deteriorates, it is accompanied by a sharp increase in blue grama. Continuous heavy grazing causes blue grama to form a low, dense turf which is low in productivity. A system of deferred grazing, which varies the time of grazing and rest in a pasture during consecutive years, is needed to maintain the plant community. Late spring and early summer rest is especially beneficial to big bluestem, Indiangrass switchgrass. Rest from April, May and June allows western wheatgrass, New Mexico feathergrass and needleandthread to grow and reproduce.

Other Information:

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index	Ac/AUM
100 - 76	2.8 – 3.5
75 – 51	3.4 – 5.4
50 – 26	5.3 – 10.1
25 – 0	10.1+

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	
Blue Grama	<i>Bouteloua gracilis</i>	EP	D	D	D	D	P	P	P	P	P	D	D	D	
Sideoats Grama	<i>Bouteloua curtipendula</i>	EP	P	P	P	P	P	P	P	P	P	P	P	P	
Western Wheatgrass	<i>Pascopyrum smithii</i>	EP	D	D	P	P	P	D	D	D	D	D	D	D	
New Mexico Feathergrass	<i>Hesperostipa neomexicana</i>	EP	D	D	P	P	P	D	D	D	D	D	D	D	
Needleandthread	<i>Hesperostipa comata</i>	EP	D	D	P	P	P	D	D	D	D	D	D	D	
Big Bluestem	<i>Andropogon gerardii</i>	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 Grama	<i>Bouteloua hirsuta</i>	EP	D	D	D	D	P	P	P	P	P	D	D	D	
Indiangrass	<i>Sorghastrum nutans</i>	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	<i>Cercocarpus montanus</i>	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	
Blue Grama	<i>Bouteloua gracilis</i>	EP	D	D	D	D	P	P	P	P	P	D	D	D	
Sideoats Grama	<i>Bouteloua curtipendula</i>	EP	P	P	P	P	P	P	P	P	P	P	P	P	
Western Wheatgrass	<i>Pascopyrum smithii</i>	EP	D	D	P	P	P	D	D	D	D	D	D	D	
Hairy Grama	<i>Bouteloua hirsuta</i>	EP	D	D	D	D	P	P	P	P	P	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	
Sideoats Grama	<i>Bouteloua curtipendula</i>	EP	D	D	D	D	P	P	P	P	P	D	D	D	
Fringed Sagewort	<i>Artemisia frigida</i>	L/S	D	D	U	U	U	U	U	U	D	D	D	D	
Prairie Clover	<i>Dalea spp.</i>	EP	P	P	P	P	P	P	P	P	P	P	P	P	

Animal Kind: Wildlife

Animal Type: Antelope

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Fringed Sagewort	Artemisia frigida	L/S	D	D	D	D	D	D	D	D	D	D	D	D
Globemallow	Sphaeralcea spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U
Prairie Clover	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	D	D	D	D	D	D	D	D	D	D	D	D

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, Union

Latitude: _____

Longitude: _____

Township: _____

Range: _____

Section: _____

Is the type locality sensitive? Yes No

General Legal Description: _____

Relationship to Other Established Classifications:

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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.

Characteristic Soils Are:

Apache	Ayon
Fallsam	Pidineen
Thunderbird	

Other Soils included are:

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Site Description Approval:

<u>Author</u> Don Sylvester	<u>Date</u> 04/25/80	<u>Approval</u> Durwood E. Ball	<u>Date</u> 04/29/80
<u>Author</u> Elizabeth Wright	<u>Date</u> 08/22/02	<u>Approval</u> George Chavez	<u>Date</u> 12/17/02