

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

**ECOLOGICAL SITE DESCRIPTION**

**ECOLOGICAL SITE CHARACTERISTICS**

**Site Type:** Rangeland

**Site ID:** R070XD159NM

**Site Name:** Shallow Loamy

**Precipitation or Climate Zone:** 13 to 18 inches

**Phase:** \_\_\_\_\_

## PHYSIOGRAPHIC FEATURES

### **Narrative:**

This site occurs on gently sloping to moderately sloping plains and terraces. Slopes range from 0 to 9 percent but average less than 5 percent. Direction of slope varies and is not significant. Elevations range from 4,000 to 7,000 feet above sea level.

### **Land Form:**

1. Plain
2. Terrace
- 3.

### **Aspect:**

1. N/A
- 2.
- 3.

	<b>Minimum</b>	<b>Maximum</b>
<b>Elevation (feet)</b>	4,000	7,000
<b>Slope (percent)</b>	0	9
<b>Water Table Depth (inches)</b>	N/A	N/A
	<b>Minimum</b>	<b>Maximum</b>
<b>Flooding:</b>		
<b>Frequency</b>	N/A	N/A
<b>Duration</b>	N/A	N/A
	<b>Minimum</b>	<b>Maximum</b>
<b>Ponding:</b>		
<b>Depth (inches)</b>	N/A	N/A
<b>Frequency</b>	N/A	N/A
<b>Duration</b>	N/A	N/A

### **Runoff Class:**

Negligible to medium.

## CLIMATIC FEATURES

### **Narrative:**

The climate of the area is “semi-arid continental.”

The average annual precipitation ranges from 13 to 18 inches. Variations of 5 inches, more or less, are not uncommon. Approximately 70 percent of this occurs from May through October. Most of the summer rain comes in the form of high-intensity, short-duration thunderstorms. Winter moisture is usually negligible.

Distinct seasonal changes and large annual and diurnal temperature changes characterize temperatures. The average annual temperature ranges from 55 degrees F to 60 degrees F, with extremes of -20 degrees F in the winter to 110 degrees F in the summer.

The average frost-free season is 180 to 200 days, the last killing frost being in early April and first killing frost in mid October.

Both temperature and precipitation favor warm-season, perennial plant growth. However, sufficient late winter and early spring moisture allows cool-season species to occupy a minor component within the plant community. Due to the depth of the soil, vegetation responds well to light rains. However, there is also enough depth to allow for some water storage. Strong winds from the west and southwest blow during February to June. This speeds up soil drying during a critical period for cool-season plant growth.

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.

	<b>Minimum</b>	<b>Maximum</b>
<b>Frost-free period (days):</b>	<u>160</u>	<u>191</u>
<b>Freeze-free period (days):</b>	<u>180</u>	<u>221</u>
<b>Mean annual precipitation (inches):</b>	<u>13</u>	<u>18</u>

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

	Precip. Min.	Precip. Max.	Temp. Min.	Temp. Max.
January	.47	.56	21.4	56.6
February	.50	.54	23.8	62.1
March	.49	.57	28.5	68.5
April	.54	.60	35.0	76.7
May	1.13	1.44	43.2	83.5
June	1.78	1.84	51.6	92.2
July	1.87	2.98	55.7	92.1
August	2.29	3.26	54.2	90.3
September	2.67	2.80	48.2	84.3
October	1.24	1.40	37.6	76.7
November	.53	.55	27.5	65.5
December	.60	.68	21.6	57.8

**Climate Stations:**

Station ID	Location	From:	To:
292865	Elk 2E	6/1/1895	12/31/00
294112	Hope	03/01/19	21/31/00

**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 moderately deep, well drained, loams and cobble loams. Soil depth is from 18 to 30 inches, but averages 20 inches in depth over indurated caliche. Permeability is moderate and water-holding capacity is moderate. Wind and water erosion hazard can be severe.

Parent Material Kind: Alluvium  
 Parent Material Origin: Mixed

**Surface Texture:**

1. Loam
2. Cobble loam
3.

**Surface Texture Modifier:**

1. Cobble
2.
3.

Subsurface Texture Group: Loam

Surface Fragments <=3" (% Cover): N/A

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

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

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

	<b>Minimum</b>	<b>Maximum</b>
Drainage Class:	Well	Well
Permeability Class:	Moderate	Moderate
Depth (inches):	18	30
Electrical Conductivity (mmhos/cm):	Unknown	Unknown
Sodium Absorption Ratio:	Unknown	Unknown
Soil Reaction (1:1 Water):	Unknown	Unknown
Soil Reaction (0.1M CaCl2):	Unknown	Unknown
Available Water Capacity (inches):	6	9
Calcium Carbonate Equivalent (percent):	Unknown	Unknown

## PLANT COMMUNITIES

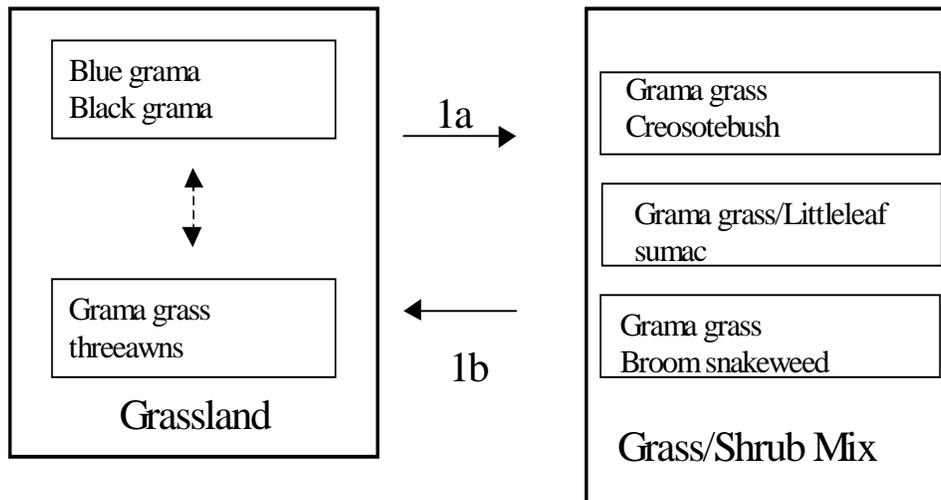
### Ecological Dynamics of the Site:

#### **Overview**

This site occurs in association with Shallow sites. The Shallow sites occur in repeating patterns of low elongated ridges adjacent to the Shallow Loamy site. The loamy textured soils and shallow depth to a petrocalcic horizon help to make this one of the most stable sites in the CP-4 resource unit. The loamy soils provide a favorable environment for grass production, and the petrocalcic horizon helps to store water and keep it perched and available to shallow rooted grasses.<sup>4</sup> The historic plant community of the Shallow Loamy site has a grassland aspect with a fair amount of shrubs scattered across the site. Black grama and blue grama are the dominant grass species. Dispersal of littleleaf sumac fruits by birds and other wildlife may be important in the encroachment of this shrub.<sup>2</sup> Overgrazing can reduce grass cover, effect a change in grass species dominance, and may facilitate the spread of shrubs. If fire was a natural component in the development of the historic plant community, then fire suppression may facilitate shrub increase.

### Plant Communities and Transitional Pathways (diagram)

#### MLRA 70, CP-4 Shallow Loamy



1a. Seed dispersal, overgrazing, resource competition, lack of fire.

1b. Brush control, prescribed fire, prescribed grazing.

## MLRA 70; CP-4; Shallow Loamy

### Grassland



- Blue grama-Black grama with a few widely scattered littleleaf sumac, cholla, and yucca
- Grass cover continuous and uniformly distributed
- Eddy Co. NM

### Grassland



- Black grama-Blue grama with a few scattered creosotebush
- Grass cover moderate and uniformly distributed
- Eddy Co. NM

**Plant Community Name:** Historic Climax Plant Community

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

**Plant Community Narrative:** State Containing Historic Climax Plant Community

**Grassland:** Black grama and blue grama are co-dominants and together can comprise up to 70 percent of the total annual production of grasses. Other high percentage grasses common to this site include sideoats grama and tobosa. Tobosa is more common on areas with relatively deeper soils and in depressions, while higher densities of sideoats grama tend to occur on the shallower soils of the site. Some of the shrubs that occur on this site include algerita, yucca species, fourwing saltbush, ephedra, cholla, pricklypear, creosotebush, broom snakeweed and juniper. If this site is overgrazed, there will be a decrease in black grama, sideoats grama, vine mesquite, fourwing saltbush, and winterfat. Species such as threeawns, burrograss, mat muhly, dropseeds, and broom snakeweed will increase in representation. The continued loss of grass cover and increases in bare patch size may facilitate the encroachment of shrubs.

**Diagnosis:** Grass cover is uniform and evenly distributed, averaging 48 percent canopy cover. Black grama and blue grama are co-dominants. Slopes average less than 5 percent and litter movement is limited to smaller size class litter and short distances (<. 5m).

Canopy Cover:

Trees	5 %
Shrubs and half shrubs	5 %
Ground Cover (Average Percent of Surface Area).	
Grasses & Forbs	48
Bare ground	27
Surface cobble and stone	8
Litter (percent)	17
Litter (average depth in cm.)	3

**Plant Community Annual Production (by plant type):** \_\_\_\_\_

Plant Type	Annual Production (lbs/ac)		
	Low	RV	High
Grass/Grasslike	375	788	1,200
Forb	40	84	128
Tree/Shrub/Vine	65	137	208
Lichen			
Moss			
Microbiotic Crusts			
<b>Total</b>	500	1,050	1,600

**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	BOGR2	Blue Grama	105 – 368	105 – 368
2	BOER4	Black Grama	105 – 368	105 – 368
3	BOCU	Sideoats Grama	53 – 105	53 – 105
4	SCBR2 MURI	Burrograss Mat Muhly	53 – 84	53 – 84
5	PAOB	Vine-mesquite	21 – 53	21 – 53
6	PLMU3	Tabosa	105 – 210	105 – 210
7	SPORO	Dropseed spp.	11 – 53	11 – 53
8	ARIST	Threeawn spp.	32 – 84	32 – 84
9	PAHA	Hall's Panicum	32 – 84	32 – 84
10	LYPH TRIDE	Wolftail Tridens spp.	11 – 32	11 – 32
11	2GRAM	Other Grasses	53 – 84	53 - 84

**Plant Type - Forb**

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
12	THAC	Prickleleaf Dogweed	11 – 32	11 – 32
13	PACAL5	Woolly Groundsel	11 – 21	11 – 21
14	MAPIG2	Cutleaf Haplopappus	11 – 21	11 – 21
15	CROTO	Croton	11 – 21	11 – 21
16	2FORBS	Other Forbs	53 – 84	53 - 84

**Plant Type – Tree/Shrub/Vine**

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
17	MATR3	Algerita	21 – 74	21 – 74
18	YUCCA	Yucca spp.	21 – 53	21 – 53
19	ATCA2	Fourwing Saltbush	21 – 53	21 – 53
20	EPHED OPSP2	Ephedra spp. Cholla	11 – 32	11 – 32
21	RHUS	Sumac spp.	11 – 32	11 – 32
22	KRLA2	Winterfat	11 – 32	11 – 32
23	MIACB	Catclaw Mimosa	11 – 32	11 – 32
24	GUSA2	Broom Snakeweed	11 – 32	11 – 32
25	2SD	Other Shrubs	11 – 53	11 - 53

**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 which would appear on this site include: plains bristlegrass, littleawn needlegrass, plains lovegrass, green sprangletop, curlyleaf muhly, little bluestem, silver bluestem, bottlebrush squirreltail, western wheatgrass, and New Mexico feathergrass.

Other shrubs include: pinyon, juniper, creosotebush, Bigelow sagebrush, yerba-de-pasmo, dalea spp., apacheplume, wolfberry, and oak spp.

Other forbs include: desert holly, threadleaf groundsel, globemallow, sagewort, wooly loco, wooly Indianwheat, cudweed, and mullin.

**Plant Growth Curves**

Growth Curve ID 4608NM

Growth Curve Name: HCPC

Growth Curve Description: Warm-season grassland with shrub component.

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

Additional States:

**Grass/Shrub-mix:** This state is characterized by the notable presence of shrubs, especially creosotebush, littleleaf sumac, and broom snakeweed. However, grasses remain dominant. Black grama and blue grama typically remain as the dominant grass species, with threeawns as sub-dominant. The susceptibility of the Shallow Loamy site to encroachment by creosotebush may be higher when located adjacent to other sites with high densities of creosotebush.

**Diagnosis:** Black grama and blue grama remain as the dominant grass species. Grass cover varies inversely with shrub density, ranging from uniform to patchy. Shrubs are found at increased densities relative to the grassland state, especially creosotebush, littleleaf sumac, or broom snakeweed.

**Transition to Grass/Shrub-mix (1a)** Historically, fire may have kept creosotebush and other shrubs in check by completely killing some species, disrupting seed production cycles, and/or suppressing the establishment of shrub seedlings. Fire suppression combined with seed dispersal by birds and mammals are believed to be the factors responsible for the establishment and increase in shrubs.<sup>1</sup> Loss of grass cover due to overgrazing, combined with prolonged periods of drought, increases the susceptibility of the site to shrub establishment.<sup>3</sup>

Key indicators of approach to transition:

- Decrease or change in composition or distribution of grass cover.
- Increase in size and frequency of bare patches.
- Increase in amount of shrub seedlings.

**Transition back to Grassland (1b)** Brush control is necessary to initiate the transition back to the grassland state. If adequate fuel loads remain, possibly the reintroduction of fire as a management tool will assist in the transition, however, mixed results have been observed concerning the effects of fire on black grama grasslands.<sup>5</sup> Littleleaf sumac is reported to be tolerant of fire due to its ability to root sprout, and fire may increase the germination rate of seeds stored in the soil.<sup>6</sup> Prescribed grazing will help ensure adequate rest following brush control and will assist in the establishment and maintenance of grass cover capable of sustaining fire.

## **ECOLOGICAL SITE INTERPRETATIONS**

### **Animal Community:**

Habitat for Wildlife:

This site provides habitat which supports a resident animal community that is characterized by pronghorn antelope, coyote, black-tailed jackrabbit, roadrunner, cactus wren, horned lark, scaled quail, Texas horned lizard and prairie rattlesnake. Mule deer use this site seasonally as do mourning doves.

### **Hydrology Functions:**

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

#### **Hydrologic Interpretations**

<b>Soil Series</b>	<b>Hydrologic Group</b>
Petrocalcic Calciustolls – Mesic	B
Ustalic Paleorthid – Thermic	C

### **Recreational Uses:**

Recreation potential is limited on this site because of the lack of water and shade. It is fairly suited for hiking, backpacking, horseback riding, and picnicking. Esthetic appeal is enhanced by the wide-open spaces, and many colorful wildflowers that bloom during the years of good moisture. Hunting for varmints, antelope, dove and quail is good. Trapping for fur-bearing animals is good.

### **Wood Products:**

At higher elevations juniper and pinyon provide some firewood and fence posts.

**Other Products:****Grazing:**

This site is suitable for grazing by all kinds and classes of livestock during all seasons of the year. When this site is mismanaged, there will be a decrease in black grama, sideoats grama, vine-mesquite, fourwing saltbush, and winterfat. Species like burrograss, mat muhly, dropseed spp., threeawn spp., and broom snakeweed will increase. Under continued retrogression there will be an increase in woody plants and a decrease in ground cover, thus increasing the erosion potential. The vegetation of this site responds well to a planned system of grazing that rotates the season of use. Goats should be considered as a brush management tool. When grazing sheep or goats, and during the calving season, predator control should be considered.

**Other Information:****Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month**

<b>Similarity Index</b>	<b>Ac/AUM</b>
100 - 76	2.8 – 4.5
75 – 51	3.5 – 6.3
50 – 26	6.0 – 12.0
25 – 0	12.0+

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	Bouteloua gracilis	EP	D	D	D	D	P	P	P	P	P	P	D	D	D
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P	P
Black Grama	Bouteloua eriopoda	EP	P	P	P	D	D	D	D	D	D	D	D	P	P
Vine-mesquite	Panicum obtusum	EP	D	D	D	D	D	D	D	D	D	D	D	D	D
Hall's Panicum	Panicum hallii	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	N/S
Fourwing Saltbush	Atriplex canescens	L/S	P	P	P	P	D	D	D	D	D	D	D	D	P
Winterfat	Krascheninnikovia lanata	L/S	D	D	P	P	P	P	P	P	P	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	
Blue Grama	Bouteloua gracilis	EP	D	D	D	D	P	P	P	P	P	P	D	D	D
Black Grama	Bouteloua eriopoda	EP	P	P	P	D	D	D	D	D	D	D	D	P	P
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P	P
Vine-mesquite	Panicum obtusum	EP	D	D	D	D	D	D	D	D	D	D	D	D	D
Fourwing Saltbush	Atriplex canescens	L/S	D	D	P	P	P	P	P	P	P	D	D	D	D
Winterfat	Krascheninnikovia lanata	L/S	P	P	P	P	P	P	P	P	P	P	P	P	P

**Animal Kind:** Livestock

**Animal Type:** Goats

Common Name	Scientific Name	Plant Part	Forage Preferences												
			J	F	M	A	M	J	J	A	S	O	N	D	
Fourwing Saltbush	Atriplex canescens	L/S	P	P	D	D	D	D	D	D	D	D	D	D	P
Winterfat	Krascheninnikovia lanata	L/S	D	D	D	D	D	D	D	D	D	D	D	D	D
Littleleaf Sumac	Rhus microphylla	L/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Skunkbush Sumac	Rhus trilobata	L/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Sideoats Grama	Bouteloua curtipendula	EP	P	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
Fourwing Saltbush	<i>Atriplex canescens</i>	L/S	D	D	D	D	D	D	D	D	D	D	D	D
Croton	<i>Croton</i> spp.	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

**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: Chavez, Eddy, Lincoln, Otero

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: Otero, Eddy, Chaves, Lincoln

References

1. Brooks, M.L. and D.A. Pyke. 2001. Invasive plants and fire in the deserts of North America. Pages 1–14 in K.E.M. Galley and T.P. Wilson (eds.). Proceedings of the Invasive Species Workshop: the Role of Fire in the Control and Spread of Invasive Species.
2. Brinkman, K. A., 1974. Rhus L. sumac. In: Schopmeyer, C. S., technical coordinator. Seeds of woody plants in the United States. Agric. Handb. 450. Washington, DC: U.S. Department of Agriculture, Forest Service: 715-719.
3. Buffington, L.C., and C.H. Herbel. 1965. Vegetational changes on a semidesert grassland range from 1858 to 1963. Ecol. Monog. 35: 139-164.
4. Hennessy, J.T., R.P. Gibbens, J.M. Tromble, and M. Cardenas. 1983. Water properties of caliche. J. Range Manage. 36: 723-726.
5. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, September). Fire Effects Information System, [Online]. Available: <http://www.fs.fed.us/database/feis/> [accessed 5/12/03]. Report: Black grama; Fire Effects
6. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, September). Fire Effects Information System, [Online]. Available: <http://www.fs.fed.us/database/feis/> [accessed 5/12/03]. Report: Littleleaf sumac; Fire Effects

**Characteristic Soils Are:**

Petrocalcic Calciustolls	Ustallic Paleorthid
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**Other Soils included are:**

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**Site Description Approval:**

<u>Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
Don Sylvester	02/02/82	Donald H. Fulton	03/03/82

**Site Description Revision:**

<u>Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
Elizabeth Wright	07/12/02	George Chavez	10/30/03
David Trujillo	10/30/03		