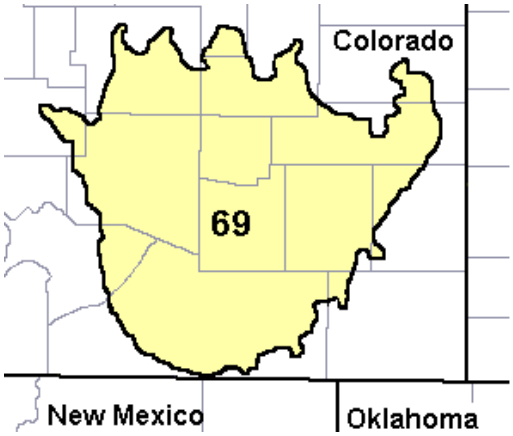
United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description



Site Type: Rangeland

Site Name: Gypsum Breaks

Site ID: R069XY080CO

Major Land Resource Area: 69 – Upper Arkansas Valley Rolling Plains

Physiographic Features

This site occurs on nearly level to moderately steep hills.

Landform: hill, structural benches, pediments

Aspect: N/A

	Minimum	Maximum
Elevation (feet):	4500	5500
Slope (percent):	1	30
Water Table Depth (inches):	60	60
Flooding:		
Frequency:	none	none
Duration:	none	none
Ponding:		
Depth (inches):	0	0
Frequency:	none	none
Duration:	none	none
Runoff Class:	very low	high

Climatic Features

The mean average annual precipitation varies from 10 to 14 inches per year depending on location and ranges from 5 inches to over 24 inches per year. Approximately 75 percent of the annual precipitation occurs during the growing season from mid-April to late-September. Snowfall can vary greatly from year to year and can range from 20 to 40 inches per year. Winds are estimated to average about 6 to 7 miles per hour annually. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 60 miles per hour.

The average length of the growing season is 155 days, but varies from 147 to 162 days. The average date of first frost in the fall is October 10, and the last frost in the spring is about May 5. July is the hottest month and January is the coldest. It is not uncommon for the temperature to exceed 100 degrees F during the summer. Summer humidity is low and evaporation is high. The winters are characterized with frequent northerly winds, producing severe cold with temperatures dropping to as low as -35 degrees F.

Growth of native cool season plants begins about April 15 and continues to about June 1. Native warm season plants begin growth about May 1and continue to about August 15. Regrowth of cool season plants occurs in September and October of most years, depending on moisture.

	Minimum	Maximum
Frost-free period (days):	147	162
Freeze-free period (days):	169	186
Mean Annual Precipitation (inches):	10	14

Average Monthly Precipitation (inches) and Temperature (ºF):

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.28	0.27	12.1	46.4
February	0.14	0.36	15.3	52.9
March	0.25	0.68	20.7	61.5
April	0.73	1.16	28.9	71.8
May	0.90	2.21	38.6	81.1
June	0.83	1.79	47.6	91.4
July	2.34	2.38	53.4	96.2
August	1.62	2.00	51.7	93.7
September	1.04	1.12	43.3	86.0
October	0.90	0.78	32.2	74.2
November	0.49	0.51	21.0	58.1
December	0.43	0.27	14.1	48.6

Climate Stations		Period	
Station ID	**Location or Name**	**From**	**To**
CO6763	Pueblo Army Depot	1971	2000
CO3828	Haswell	1922	2001
CO7287	Rush	1924	2001
CO4834	Las Animas	1930	2001

For detailed information visit the Western Regional Climate Center at http://www.wrcc.dri.edu/ website.

Influencing Water Features

Wetland Description:	**System**	**Subsystem**	**Class**	**Sub-class**
None	None	None	None	None

Stream Type: None

Representative Soil Features

The soils of this site are shallow and moderately deep to gypsum bedrock. Typically, they are well drained and have moderate permeability. These soils formed in alluvium and residuum derived from gypsum bedrock mixed with shale and commonly have accumulations of gypsum in the subsoil and substratum. The percent gypsum ranges from 40 to 60 percent in shallow soils and 15 to 50 percent in the subsoil and substratum of moderately deep soils. These soils occur on hills, structural benches, and pediments. The available water capacity is typically very low in shallow soils and low to moderate for the moderately deep soils. The soil surface layer ranges from 3 to 8 inches thick and is typically loam, fine sandy loam, or silt loam.

These soils often feel sandy due to hard gypsum crystals in the soil. The pH of these soils ranges from slightly to moderately alkaline in the surface and slightly alkaline to strongly alkaline in the subsoil and substratum. The gypsum often buffers the pH. The soil moisture regime is typically ustic aridic, but ranges to aridic in the driest areas of MLRA 69. The soil temperature regime is mesic.

Exposed areas of gypsum and shale are inherent to this site. The amount of bare ground varies with the amount of surface shale. Where slopes are gentle, water flow paths should be broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers and exhibit slight to no evidence of rills, wind scoured areas or pedestaled plants.

As slopes become steep, bare areas may increase. Expect to find evidence of water flow patterns and pedestaled plants. Sub-surface soil layers, where not affected by gypsum, are non-restrictive to water movement and root penetration.

Major soil series correlated to this ecological site include: Rekop, Romound

Other soil series that have been correlated to this site include: Shingle, gypsum variant

Parent Material Kind: alluvium, residuum
Parent Material Origin: gypsum and shale
Surface Texture: loam, silt loam, fine sandy loam
Surface Texture Modifier: none

Subsurface Texture Group: loam, silt loam, fine sandy loam
Surface Fragments ≤ 3" (% Cover): 0 to 15
Surface Fragments > 3" (%Cover): 0
Subsurface Fragments ≤ 3" (% Volume): 0 to 15
Subsurface Fragments > 3" (% Volume): 0
Gypsum crystals are located throughout the soil and can appear as fine gravel.

	Minimum	Maximum
Drainage Class:	well	well
Permeability Class:	moderate	moderate
Depth (inches):	10	40
Electrical Conductivity (mmhos/cm)*:	1	10
Sodium Absorption Ratio*:	0	10
Soil Reaction (1:1 Water)*:	7.4	9.0
Soil Reaction (0.1M CaCl2)*:	7.4	8.4
Available Water Capacity (inches)*:	1.0	6.0
Calcium Carbonate Equivalent (percent)*:	1	15
Gypsum Equivalent (percent)*:	5	50

*These attributes represent 0-40 inches in depth or to the first restrictive layer.

Plant Communities

Ecological Dynamics of the Site:

Continuous grazing that does not allow for adequate recovery opportunities between grazing events causes this site to deteriorate. Grasses such as little bluestem, sideoats grama, alkali sacaton, New Mexico feathergrass, and western wheatgrass decrease in both frequency and production. Black grama, galleta and blue grama will increase if proper recovery periods between grazing events are not allowed during the growing season. Most all mid grasses can eventually be removed from the plant community. Cushion plants such as mat loco, sulphur-flower buckwheat and sessile nailwort in addition to red threeawn, small soapweed, oneseed juniper and cheatgrass will increase or invade the site. In time, continuous use in combination with high stock densities or long-term non-use (rest) and lack of fire will result in large amounts of bare ground.

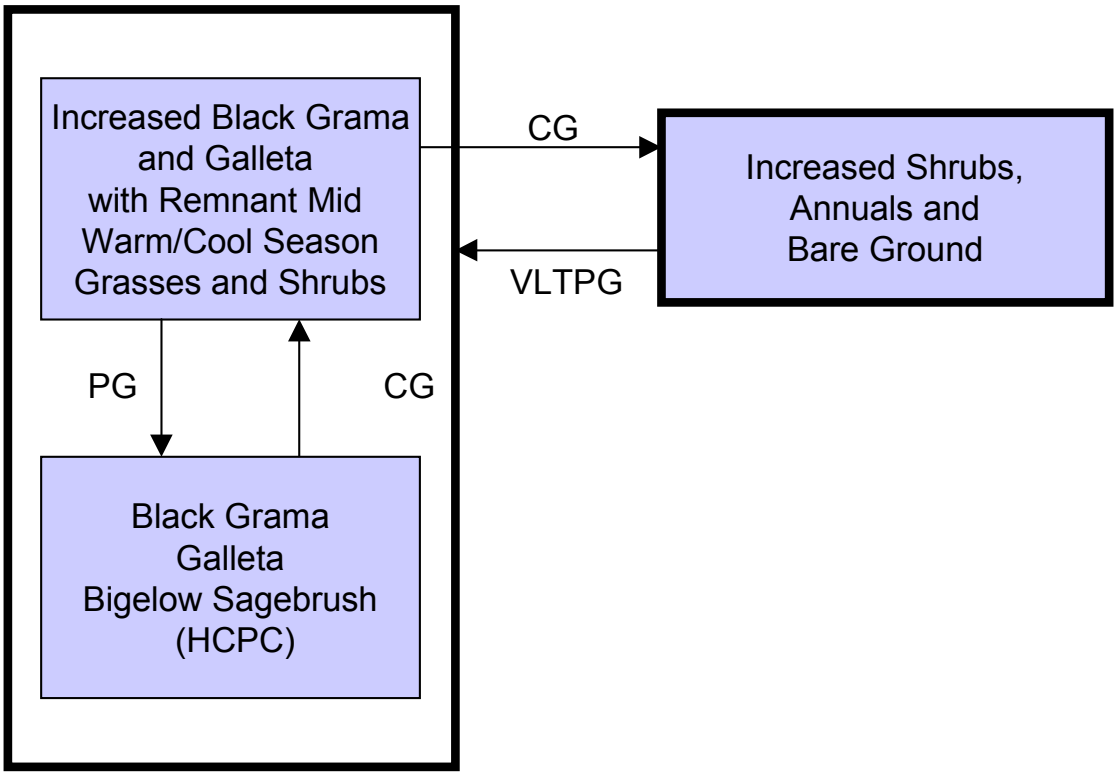
Tillage is not recommended on this site due to steep shallow soils and associated low production potential.

Drier and warmer climatic conditions exist in the central portion of MLRA-69. This area includes the eastern half of Pueblo county, northern Otero, extreme northwestern Bent, western edge of Kiowa, southern edge of Lincoln and all of Crowley County. These conditions are primarily caused by a rain shadow effect from the southern Rocky Mountains. Evapotranspiration rates (atmospheric demand) will be higher in this area of MLRA-69. Total annual production will typically be lower.

The historic climax plant community (description follows the plant community diagram) has been determined by study of rangeland relic areas, areas protected from excessive disturbance, seasonal use pastures, short durationl/time controlled grazing and historical accounts.

The following is a diagram that illustrates the common plant communities that can occur on the site and the transition pathways (arrows) among communities. Bold lines surrounding each plant community or communities represent ecological thresholds. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



CG - continuous grazing without adequate recovery opportunity, **HCPC** - Historic Climax Plant Community, **PG** - prescribed grazing with adequate recovery period, **VLTPG** - very long term prescribed grazing with adequate recovery periods (>80 yrs)

Plant Community Composition and Group Annual Production

			Black Grama, Galleta, Bigelow Sagebrush (HCPC)		
COMMON/GROUP NAME	**SCIENTIFIC NAME**	**SYMBOL**	**Group**	**lbs./acre**	**% Comp**
GRASSES & GRASS-LIKES			*1*	*210 - 255*	*70 - 85*
black grama	Bouteloua eriopoda	BOER4	1	45 - 60	15 - 20
galleta	Pleuraphis jamesii	PLJA	1	30 - 45	10 - 15
blue grama	Bouteloua gracilis	BOGR2	1	15 - 45	5 - 15
New Mexico feathergrass	Hesperostipa neomexicana	HENE5	1	21 - 36	7 - 12
little bluestem	Schizachyrium scoparium	SCSC	1	15 - 30	5 - 10
western wheatgrass	Pascopyrum smithii	PASM	1	15 - 30	5 - 10
sideoats grama	Bouteloua curtipendula	BOCU	1	9 - 24	3 - 8
Nealley dropseed	Sporobolus nealleyi	SPNE	1	9 - 21	3 - 7
sand dropseed	Sporobolus cryptandrus	SPCR	1	3 - 9	1 - 3
alkali sacaton	Sporobolus airoides	SPAI	1	0 - 9	0 - 3
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	3 - 6	1 - 2
Indian ricegrass	Achnatherum hymenoides	ACHY	1	0 - 6	0 - 2
needleandthread	Hesperostipa comata ssp. comata	HECOC8	1	0 - 6	0 - 2
bottlebrush squirreltail	Elymus elymoides ssp. elymoides	ELELE	1	0 - 3	0 - 1
ring muhly	Muhlenbergia torreyi	MUTO2	1	0 - 3	0 - 1
sun sedge	Carex inops ssp. heliophila	CAINH2	1	3 - 6	1 - 2
other perennial grasses		2GP	1	3 - 15	1 - 5
FORBS			*2*	*15 - 30*	*5 - 10*
dotted gayfeather	Liatris punctata	LIPU	2	3 - 9	1 - 3
Fremont goldenweed	Oonopsis foliosa var. foliosa	OOFOF	2	3 - 6	1 - 2
James' cryptantha	Cryptantha cinerea var. jamesii	CRCIJ	2	3 - 6	1 - 2
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	3 - 6	1 - 2
sulphur-flower buckwheat	Eriogonum umbellatum	ERUM	2	0 - 6	0 - 2
American vetch	Vicia americana	VIAM	2	0 - 3	0 - 1
bigtop dalea	Dalea enneandra	DAEN	2	0 - 3	0 - 1
desert princesplume	Stanleya pinnata var. pinnata	STPIP	2	0 - 3	0 - 1
groundplum milkvetch	Astragalus crassicarpus	ASCR2	2	0 - 3	0 - 1
hairy goldaster	Heterotheca villosa	HEVI4	2	0 - 3	0 - 1
heath aster	Symphyotrichum ericoides	SYER	2	0 - 3	0 - 1
Louisiana sagewort	Artemisia ludoviciana	ARLU	2	0 - 3	0 - 1
mat loco	Astragalus kentrophyta	ASKE	2	0 - 3	0 - 1
penstemon	Penstemon spp.	PENST	2	0 - 3	0 - 1
plains blackfoot daisy	Melampodium leucanthum	MELE2	2	0 - 3	0 - 1
purple prairie clover	Dalea purpurea var. purpurea	DAPUP	2	0 - 3	0 - 1
Rocky Mountain zinnia	Zinnia grandiflora	ZIGR	2	0 - 3	0 - 1
scarlet gaura	Gaura coccinea	GACO5	2	0 - 3	0 - 1
sessile nailwort	Paronychia sessiliflora	PASE	2	0 - 3	0 - 1
slimflower scurfpea	Psoralidium tenuiflorum	PSTE5	2	0 - 3	0 - 1
twogrooved milkvetch	Astragalus bisulcatus	ASBI2	2	0 - 3	0 - 1
western ragweed	Ambrosia psilostachya	AMPS	2	0 - 3	0 - 1
other perennial forbs		2FP	2	3 - 15	1 - 5
SHRUBS			*3*	*30 - 60*	*10 - 20*
Bigelow sage	Artemisia bigelovii	ARBI3	3	15 - 30	5 - 10
winterfat	Krascheninnikovia lanata	KRLA2	3	6 - 15	2 - 5
fourwing saltbush	Atriplex canescens	ATCA2	3	3 - 15	1 - 5
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 6	0 - 2
small soapweed	Yucca glauca	YUGL	3	0 - 6	0 - 2
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 3	0 - 1
green plume rabbitbrush	Ericameria nauseosa ssp. nauseosa var. glabrata	ERNAG	3	0 - 3	0 - 1
purple pincushion	Escobaria vivipara var. vivipara	ESVIV	3	0 - 3	0 - 1
skunkbush sumac	Rhus trilobata	RHTR	3	0 - 3	0 - 1
shadscale	Atriplex confertifolia	ATCO	3	0 - 6	0 - 2
other shrubs		2SHRUB	3	3 - 9	1 - 3
TREES			*4*	*0 - 3*	*0 - 1*
oneseed juniper	Juniperus monosperma	JUMO	4	0 - 3	0 - 1

Annual Production lbs./acre	LOW	RV*	HIGH
GRASSES & GRASS-LIKES	115 -	231	- 395
FORBS	10 -	23	- 35
SHRUBS	25 -	45	- 65
TREES	0 -	2	- 5
TOTAL	150 -	300	- 500

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. *RV = Representative value.

Plant Community Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as "Desired Plant Communities". According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

Black Grama, Galleta, Bigelow Sagebrush Plant Community

This plant community is the interpretive plant community for this site and is considered to be the Historic Climax Plant Community (HCPC). This community evolved with grazing by large herbivores and is suited to grazing by domestic livestock. Historically, fires likely occurred infrequently. This plant community can be found on areas that are grazed and where the grazed plants receive adequate recovery periods during the growing season. The potential vegetation is about 70-85% grasses and grass-likes, 5-10% forbs and 10-20% woody plants.

The principal mid grasses are black grama, galleta, little bluestem, sideoats grama, New Mexico feathergrass and western wheatgrass. Secondary grasses include blue grama, needleandthread, and Nealley dropseed. Sun sedge is common. Dominant forbs are American vetch, dotted gayfeather, Fremont goldenweed and scarlet globemallow. Bigelow sagebrush, winterfat, fourwing saltbush, and skunkbush sumac are some of the major shrubs found on this plant community.

This is a sustainable plant community in terms of soil stability, watershed function and biological integrity. Litter is properly distributed where vegetative cover is continuous. Some litter movement may occur on steeper slopes. Decadence and natural plant mortality is very low. Community dynamics, nutrient cycle, water cycle and energy flow are functioning properly. This community is resistant to many disturbances except continuous grazing, tillage and/or development into urban or other uses. Areas having lost all vegetation, such as livestock and vehicle trails are subject to high erosion rates and extreme runoff.

Total annual production, during an average year, ranges from 150 to 500 pounds of air-dry weight and will average 300 pounds.

The following is the growth curve of this plant community expected during a normal year:
Growth curve number: CO6903
Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	15	35	25	15	5	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods between grazing events will shift this plant community toward the *Increased Black Grama and Galleta with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community*.
- Prescribed grazing that allows for adequate recovery opportunity following each grazing event and proper stocking will maintain the *Black Grama, Galleta, Bigelow Sagebrush Plant Community (HCPC).*

Increased Black Grama and Galleta with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community

This plant community developed with continuous grazing without adequate recovery periods during the growing season. The dominant grasses are black grama and galleta. Nealley dropseed, New Mexico feathergrass, little bluestem and sideoats grama are still present as secondary grasses in the community. Alkali sacaton, Indian ricegrass, needleandthread, western wheatgrass, American vetch, winterfat and fourwing saltbush have been significantly reduced. Sand dropseed, red threeawn as well as Hood's phlox, hairy goldaster, western ragweed and slimflower scurfpea have increased. Woody plants that have increased include small soapweed and broom snakeweed.

Plant frequency and vigor have decreased. Reduction of mid and rhizomatous wheatgrass, nitrogen-fixing forbs, shrub component and increased warm season short grass has begun to alter the biotic integrity of this community. Water and nutrient cycles are becoming impaired. Litter levels have been reduced. Flow paths and rills are more apparent. Pedestalled plants are common. Desertification is in an early stage.

Total annual production, during an average year, ranges from 75 to 250 pounds of air-dry weight and will average 150 pounds.

The following is the growth curve of this plant community expected during a normal year:
Growth curve number: CO6904
Growth curve name: Warm season dominant; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	0	15	45	25	15	0	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery opportunities between grazing events will shift this plant community across an ecological threshold toward the *Increased Shrubs, Annuals and Bare Ground Plant Community*. Weedy species are starting to invade and almost all mid grasses are removed.
- Prescribed grazing which allows for adequate recovery periods following each grazing event and proper stocking will move this plant community toward the *Black Grama, Galleta, Bigelow Sagebrush Plant Community (HCPC)*.

Increased Shrubs, Annuals and Bare Ground Plant Community

This plant community develops with further continuous grazing. Remnant amounts of grama grasses, little bluestem, western wheatgrass and shrubs such as winterfat and fourwing saltbush have been replaced by shadscale, broom snakeweed and plains greasebush. Bigelow sagebrush remains the dominant shrub on this plant community. Annual invaders include kochia, Russian thistle and cheatgrass.

Increased bare ground is a major concern. Erosion potential is high. Soil loss can be severe. This community lacks stability, diversity and productivity. Desertification is well advanced.
Total annual production, during an average year, ranges from 25 to 100 pounds per acre air-dry weight.

The following is the growth curve of this plant community expected during a normal year:
Growth curve number: CO6904
Growth curve name: Warm season dominant; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	0	15	45	25	15	0	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Very long-term prescribed grazing with adequate recovery periods between grazing events and proper stocking can eventually move this community back to the *Historic Climax Plant Community* or associated successional plant communities, depending upon the degree of degradation of the plant community and availability of an adequate seed/vegetative source. This transition may take up to 80 years or more to accomplish.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

The loamy soils and grasses, forbs, and shrubs found on this ecological site provide habitat for numerous wildlife species. Historic large grazers that influenced these plant communities were bison, elk, and pronghorn. Changes over time have resulted in the loss of bison, the reduction in elk numbers, and pronghorn population swings. Domestic grazers now share these habitats with wildlife. The grassland communities of eastern Colorado are home to many bird species. Changes in the composition of the plant community when moving from the HCPC to other communities on this ecological site may result in species shifts in the bird community. The occasional wetland or spring found on this ecological site provides essential seasonal water needed for reproductive habitat by some reptiles and amphibians. Because of a lack of permanent water, fish are not commonly expected on this ecological site. Mule and white-tailed deer may use this ecological site. The gray wolf and wild bison used this ecological site in historic times. The wolf is thought to be extirpated from Eastern Colorado. Bison are currently found only as domestic livestock.

Black Grama, Galleta, Bigelow Sagebrush Plant Community
The grasses, forbs, and shrubs in this plant community provide habitat for many reptiles including western rattlesnake, bullsnake, and racer. If water is available for breeding, spadefoot toads and tiger salamanders may be found here. The structural diversity in the plant community on this site provides habitat for Cassin's sparrow and lark bunting. Ferruginous and Swainson's hawks are commonly seen on this site. Small mammals such as white-tailed jackrabbit, badger, swift fox, plains pocket gopher, and several species of mice are common in this plant community. Pronghorn is a typical ungulate found in this community.

Increased Black Grama and Galleta with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community
All HCPC species are expected in this plant community, however, the loss of some of the vegetative structural diversity in this plant community makes it less attractive to many HCPC species.

Increased Shrubs, Annuals and Bare Ground Plant Community
Reptiles using this plant community are similar to the HCPC species. As bare ground increases, conditions improve for Texas horned lizard. Increases in broom snakeweed, shadscale and plains greasebush will cause the bird community to shift from Cassin's sparrow to the grasshopper sparrow. Most mammals will be similar to the HCPC, however black-tailed jackrabbit and desert cottontail use may increase because of the increased bare ground and shrubs.

Animal Preferences (Quarterly – 1,2,3,4†)

Common Name	Cattle				Sheep				Horses				Deer				Antelope				Bison				Elk			
Grasses and Grass-likes																												
alkali sacaton	U	D	D	U	N	U	N	N	U	D	D	U	N	U	N	N	N	U	N	N	U	D	D	U	U	D	D	U
black grama	U	D	P	U	U	D	D	U	U	D	P	U	U	D	D	U	U	D	D	U	U	D	P	U	U	D	P	U
blue grama	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D
bottlebrush squirreltail	U	D	U	U	U	D	U	U	U	D	U	U	U	D	U	U	U	D	U	U	U	D	U	U	U	D	U	U
galleta	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N
Indian ricegrass	D	P	D	D	D	P	D	D	D	P	D	D	D	P	D	D	D	P	D	D	D	P	D	D	D	P	D	D
little bluestem	U	D	P	U	N	D	D	N	U	D	P	U	N	D	D	N	N	D	D	N	U	D	P	U	U	D	P	U
Nealley dropseed	N	U	U	N	N	U	N	N	N	U	U	N	N	U	N	N	N	U	N	N	N	U	U	N	N	U	U	N
needleandthread	U	P	D	D	N	D	N	D	U	P	D	D	N	D	N	D	N	D	N	D	U	P	D	D	U	P	D	D
New Mexico feathergrass	N	P	D	U	N	D	D	U	N	P	D	U	N	D	D	U	N	D	D	U	N	P	D	U	N	P	D	U
red threeawn	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ring muhly	N	N	N	N	U	U	U	U	N	N	N	N	U	U	U	U	U	U	U	U	N	N	N	N	N	N	N	N
sand dropseed	U	D	U	N	N	U	D	N	U	D	U	N	N	U	D	N	N	U	D	N	U	D	U	N	U	D	U	N
sideoats grama	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U
sun sedge	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D
western wheatgrass	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D	U	P	D	D
Forbs																												
American vetch	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D
bigtop dalea	U	D	P	U	U	P	P	U	U	D	P	U	U	P	P	U	U	P	P	U	U	D	P	U	U	P	P	U
desert princesplume	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
dotted gayfeather	U	U	D	U	U	D	P	U	U	U	D	U	U	D	P	U	U	D	P	U	U	U	D	U	U	U	D	U
Fremont goldenweed	U	U	U	U	N	U	U	N	U	U	U	U	N	U	U	N	N	U	U	N	U	U	U	U	N	U	U	N
groundplum milkvetch	U	D	U	U	U	D	D	U	U	D	U	U	U	D	D	U	U	D	D	U	U	D	U	U	U	D	D	U
hairy goldaster	U	U	D	U	N	N	N	N	U	U	D	U	N	N	N	N	N	N	N	N	U	U	D	U	N	N	N	N
heath aster	U	U	D	U	U	U	P	U	U	U	D	U	U	U	P	U	U	U	P	U	U	U	D	U	U	U	P	U
James' cryptantha	N	N	N	N	N	N	U	N	N	N	N	N	N	N	U	N	N	N	U	N	N	N	N	N	N	N	N	N
Louisiana sagewort	U	U	U	U	U	U	D	U	U	U	U	U	U	U	D	U	U	U	D	U	U	U	U	U	U	U	D	U
mat loco	U	U	U	U	U	D	U	U	U	U	U	U	U	D	U	U	U	D	U	U	U	U	U	U	U	D	U	U
penstemon	U	U	U	U	U	P	P	U	U	U	U	U	U	P	P	U	U	P	P	U	U	U	U	U	U	P	P	U
plains blackfoot daisy	N	N	N	N	N	U	U	N	N	N	N	N	N	U	U	N	N	U	U	N	N	N	N	N	N	N	N	N
purple prairie clover	U	P	P	D	U	P	P	U	U	P	P	D	U	P	P	U	U	P	P	U	U	P	P	D	U	P	P	D
Rocky Mountain zinnia	N	N	N	N	N	N	U	N	N	N	N	N	N	N	U	N	N	N	U	N	N	N	N	N	N	N	N	N
scarlet gaura	U	U	D	U	U	D	D	U	U	U	D	U	U	D	D	U	U	D	D	U	U	U	D	U	U	U	D	U
scarlet globemallow	U	D	D	U	U	P	P	U	U	D	D	U	U	P	P	U	U	P	P	U	U	D	D	U	U	D	D	U
sessile nailwort	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
slimflower scurfpea	N	N	N	N	N	U	U	N	N	N	N	N	N	U	U	N	N	U	U	N	N	N	N	N	N	N	N	N
sulphur-flower buckwheat	U	U	D	U	U	U	U	U	U	U	D	U	U	U	U	U	U	U	U	U	U	U	D	U	U	U	U	U
twogrooved milkvetch	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
western ragweed	U	D	U	U	U	D	U	U	U	D	U	U	U	D	U	U	U	D	U	U	U	D	U	U	U	D	U	U
Shrubs																												
Bigelow sage	U	N	U	U	D	U	D	U	U	N	U	U	D	U	D	U	D	U	D	U	U	N	U	U	U	N	U	U
broom snakeweed	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
fourwing saltbush	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P
green plume rabbitbrush	N	N	N	D	D	D	D	D	N	N	N	D	D	D	D	D	D	D	D	D	N	N	N	D	N	N	N	D
plains pricklypear	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
small soapweed	D	P	N	D	D	P	N	D	D	P	N	D	D	P	N	D	D	P	N	D	D	P	N	D	D	P	N	D
winterfat	P	P	D	P	P	P	P	P	P	P	D	P	P	P	P	P	P	P	P	P	P	P	D	P	P	P	D	P
Trees																												
oneseed juniper	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

N = not used; **U** = undesirable; **D** = desirable; **P** = preferred; **T** = toxic
† Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

Animal Community – Grazing Interpretations

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions however, *continuous grazing is not recommended.* These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity.

Plant Community	Production (lbs./acre)	Stocking Rate (AUM/acre)
Black Grama, Galleta, Bigelow Sagebrush (HCPC)	300	0.09
Increased Black Grama/Galleta	150	0.05
Increased Shrubs, Annuals and Bare Ground	*	*

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangelands in this area provide yearlong forage under prescribed grazing for cattle, sheep, horses and other herbivores. During the dormant period, livestock may need supplementation based on reliable forage analysis.

* Highly variable; stocking rate needs to be determined on site.

Hydrology Functions

Water is the principal factor limiting forage production on this site due to the shallowness of the soil. This site is dominated by soils in hydrologic group D. Infiltration is low and runoff potential for this site varies from moderate to high depending on ground cover. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to NRCS Section 4, National Engineering Handbook (NEH-4) for runoff quantities and hydrologic curves).

Recreational Uses

This site provides hunting, hiking, photography, bird watching and other opportunities. The wide varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

No appreciable wood products are present on the site.

Other Products

This site is a source for gravel.

Supporting Information

Associated Sites

(069XY006CO) – Loamy (formerly Loamy Plains)
(069XY053CO) – Sandstone Breaks
(069XY046CO) – Shaly Plains
(069XY048CO) – Shale Breaks

Similar Sites

(069XY053CO) – Sandstone Breaks
[highly production, sandstone outcrop]
(069XY058CO) – Limestone Breaks
[highly calcareous soil, lack of gravel]
(069XY048CO) – Shale Breaks
[more production, more shale parent material]

Inventory Data References

Information presented here has been derived from NRCS clipping data, numerous ocular estimates and other inventory data. Field observations from experienced range trained personnel were used extensively to develop this ecological site description. Specific data information is contained in individual landowner/user case files and other files located in county NRCS field offices.

Those involved in developing this site description include: Ben Berlinger, Rangeland Management Specialist, NRCS; Scott Woodall, Rangeland Management Specialist, NRCS; Lee Neve, Soil Scientist, NRCS; Julie Elliott, Rangeland Management Specialist, NRCS; Terri Skadeland, Biologist, NRCS.

State Correlation

N/A

Field Offices

Las Animas, Pueblo, Rocky Ford, Trinidad, Walsenburg

Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (http://hpcc.unl.edu)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (http://wcc.nrcs.usda.gov)

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Site Description Approval

/s/ 03/25/2004

State Range Management Specialist Date