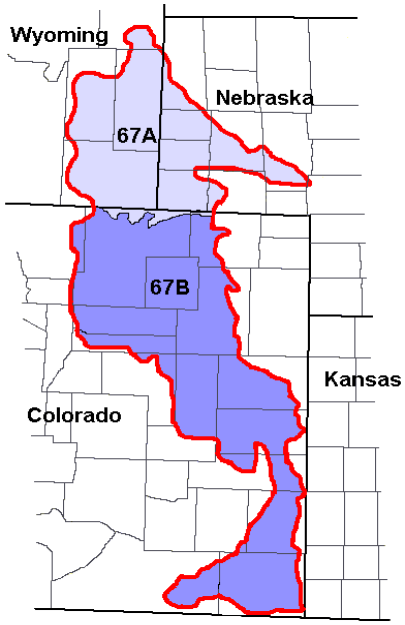
United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description



Site Type: Rangeland

Site Name: Plains Swale

Site ID: R067BY010CO

Major Land Resource Area: 67B – Central High Plains, Southern Part

Physiographic Features

This site occurs on level to nearly level slopes.

Landform: depression

Aspect: N/A

	Minimum	Maximum
Elevation (feet):	3800	5600
Slope (percent):	0	1
Water Table Depth (inches):	60	60
Flooding:		
Frequency:	none	none
Duration:	none	none
Ponding:		
Depth (inches):	0	+36
Frequency:	rare	frequent
Duration:	negligible	medium
Runoff Class:	none	none

Climatic Features

The mean average annual precipitation varies from 12 to 16 inches per year depending on location and ranges from less than 8 inches to over 20 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 but averages 35 to 45 inches per year. Winds are estimated to average about 9 miles per hour annually, ranging from 10 miles per hour during the spring to 9 miles per hour during late summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring periods of high winds with gusts to more than 90 miles per hour.

The average length of the growing season is 142 days, but varies from 129 to 154 days. The average date of first frost in the fall is September 28, and the last frost in the spring is about May 9. July is the hottest month and December and January are 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 -35 degrees F or lower.

Growth of native cool season plants begins about March 15 and continues to about June15. Native warm season plants begin growth about May 15 and 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):	129	154
Freeze-free period (days):	151	178
Mean Annual Precipitation (inches):	12	16

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

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.32	0.36	12.0	45.1
February	0.26	0.38	15.9	50.9
March	0.83	0.87	22.3	58.9
April	1.28	1.38	30.1	69.1
May	2.32	2.49	39.9	78.0
June	1.93	2.57	49.0	88.7
July	1.42	2.31	55.0	93.9
August	1.07	2.38	53.5	91.9
September	1.02	1.40	43.8	83.8
October	0.89	1.00	32.5	72.9
November	0.52	0.53	20.9	57.4
December	0.34	0.37	11.9	46.9

Climate Stations		Period	
Station ID	**Location or Name**	**From**	**To**
CO0945	Briggsdale	1948	2000
CO4076	Holly	1918	2000
CO9147	Windsor	1948	1990

For local climate stations that may be more representative, refer to http://www.wcc.nrcs.usda.gov.

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 very deep, moderately well to somewhat poorly drained, and slowly permeable. These soils occur on depressions. Most soils may pond water. The available water capacity is typically moderate to high. The soil surface layer is typically 3 to 10 inches thick.

The Historic Climax Plant Community (HCPC) should show slight to no evidence of rills, wind scoured areas or pedestalled plants. Water flow paths are broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers. The soil surface is stable and intact. Sub-surface soil layers may compact under high impact situations (concentrated animals, vehicle traffic, etc.).

Major soil series correlated to this ecological site include: Apishapa and Pleasant

Other soil series that have been correlated to this site include: Playas

Parent Material Kind: alluvium
Parent Material Origin: mixed
Surface Texture: silty clay, clay, clay loam
Surface Texture Modifier: none

Subsurface Texture Group: clayey
Surface Fragments ≤ 3" (% Cover): 0
Surface Fragments > 3" (%Cover): 0
Subsurface Fragments ≤ 3" (% Volume): 0 - 5
Subsurface Fragments > 3" (% Volume): 0

	Minimum	Maximum
Drainage Class:	somewhat poorly	moderately well
Permeability Class:	slow	slow
Depth (inches):	60	80
Electrical Conductivity (mmhos/cm)*:	0	4
Sodium Absorption Ratio*:	0	0
Soil Reaction (1:1 Water)*:	6.6	9.0
Available Water Capacity (inches)*:	7	12
Calcium Carbonate Equivalent (percent)*:	0	5

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

Plant Communities

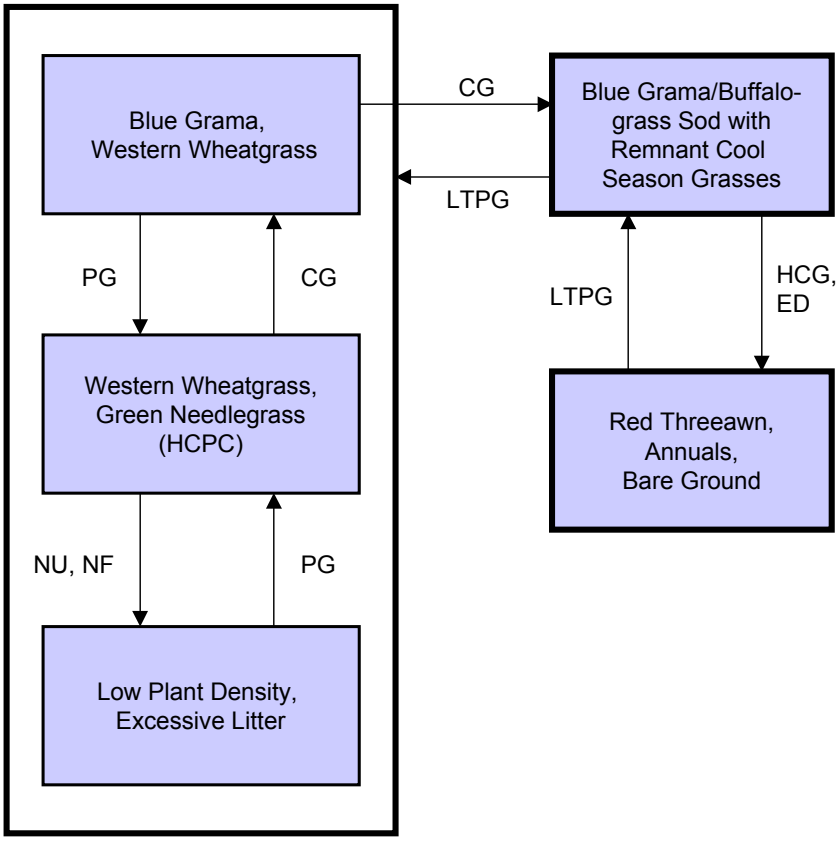
Ecological Dynamics of the Site:

Deterioration of this site, due to continuous grazing without adequate recovery periods following each grazing occurrence, will cause green needlegrass and eventually western wheatgrass to decrease in frequency and production. Grasses such as blue grama and buffalograss will increase. Continuous grazing without adequate recovery periods between grazing events will eventually shift the blue grams/buffalograss plant community to a sod-bound condition. Heavy continuous grazing or excessive defoliation will ultimately result in a plant community dominated with red threeawn, annual invaders and increased areas of bare ground.

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 diagram 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 are discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



CG - continuous grazing without adequate recovery opportunity, **ED -** excessive defoliation, **HCG -** heavy continuous grazing, **HCPC -** Historic Climax Plant Community, **LTPG -** long-term prescribed grazing (>40 years), **NF, NU -** no fire, non-use, **PG -** prescribed grazing with adequate recovery periods during the growing season

Plant Community Composition and Group Annual Production

			Western Wheatgrass, Green Needlegrass (HCPC)		
COMMON/GROUP NAME	**SCIENTIFIC NAME**	**SYMBOL**	**Group**	**lbs./acre**	**% Comp**
GRASSES & GRASS-LIKES			*1*	*1040 - 1170*	*80 - 90*
western wheatgrass	Pascopyrum smithii	PASM	1	845 - 910	65 - 70
blue grama	Bouteloua gracilis	BOGR2	1	39 - 130	3 - 10
buffalograss	Buchloe dactyloides	BUDA	1	26 - 91	2 - 7
green needlegrass	Nassella viridula	NAVI4	1	13 - 65	1 - 5
alkali sacaton	Sporobolus airoides	SPAI	1	0 - 39	0 - 3
bottlebrush squirreltail	Elymus elymoides ssp. elymoides	ELELE	1	13 - 26	1 - 2
inland saltgrass	Distichlis spicata	DISP	1	0 - 26	0 - 2
sand dropseed	Sporobolus cryptandrus	SPCR	1	0 - 26	0 - 2
Canada wildrye	Elymus canadensis	ELCA4	1	0 - 13	0 - 1
prairie junegrass	Koeleria macrantha	KOMA	1	0 - 13	0 - 1
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 13	0 - 1
ring muhly	Muhlenbergia torreyi	MUTO2	1	0 - 13	0 - 1
tumblegrass	Schedonnardus paniculatus	SCPA	1	0 - 13	0 - 1
sun sedge	Carex inops ssp. heliophila	CAINH2	1	26 - 91	2 - 7
other perennial grasses		2GP	1	13 - 65	1 - 5
FORBS			*2*	*104 - 169*	*8 - 13*
American vetch	Vicia americana	VIAM	2	13 - 39	1 - 3
hairy goldaster	Heterotheca villosa	HEVI4	2	0 - 13	0 - 1
lance coreopsis	Coreopsis lanceolata	COLA5	2	0 - 13	0 - 1
Pennsylvania smartweed	Polygonum pensylvanicum	POPE2	2	0 - 13	0 - 1
plains bahia	Picradeniopsis oppositifolia	PIOP	2	0 - 13	0 - 1
poison suckleya	Suckleya suckleyana	SUSU2	2	0 - 13	0 - 1
prostrate evening-primrose	Oenothera canescens	OECA3	2	0 - 13	0 - 1
rush skeletonplant	Lygodesmia juncea	LYJU	2	0 - 13	0 - 1
scarlet gaura	Gaura coccinea	GACO5	2	0 - 13	0 - 1
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	0 - 13	0 - 1
silky sophora	Sophora nuttalliana	SONU	2	0 - 13	0 - 1
upright prairie coneflower	Ratibida columnifera	RACO3	2	0 - 13	0 - 1
wedgeleaf fogfruit	Phyla cuneifolia	PHCU3	2	0 - 13	0 - 1
woolly Indianwheat	Plantago patagonica	PLPA2	2	0 - 13	0 - 1
woolly locoweed	Astragalus mollissimus	ASMO7	2	0 - 13	0 - 1
wormwood	Artemisia dracunculus	ARDR4	2	0 - 13	0 - 1
other perennial forbs		2FP	2	13 - 65	1 - 5
SHRUBS			*3*	*26 - 91*	*2 - 7*
fourwing saltbush	Atriplex canescens	ATCA2	3	13 - 65	1 - 5
winterfat	Krascheninnikovia lanata	KRLA2	3	13 - 39	1 - 3
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 13	0 - 1
fringed sagebrush	Artemisia frigida	ARFR4	3	0 - 13	0 - 1
green plume rabbitbrush	Ericameria nauseosa ssp. nauseosa var. glabrata	ERNAG	3	0 - 13	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 13	0 - 1
other shrubs		2SHRUB	3	13 - 39	1 - 3

Annual Production lbs./acre	LOW	RV*	HIGH
GRASSES & GRASS-LIKES	675 -	1105	- 1635
FORBS	100 -	135	- 170
SHRUBS	25 -	60	- 95
TOTAL	800 -	1300	- 1900

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 table shown above has 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.

Western Wheatgrass, Green Needlegrass 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 well suited for grazing by domestic livestock. Historically, fires occurred infrequently. This plant community can be found on areas that are grazed and where the grazed plants receive adequate periods of recovery during the growing season. The potential vegetation is about 80-90% grasses and grass-likes, 8-13% forbs and 2-7% woody plants.

The community is primarily dominated by western wheatgrass and to a lesser extent, green needlegrass. Secondary grasses include blue grama and buffalograss. Sun sedge is the major occurring grass-like specie. A variety of forbs and shrubs such as American vetch, scarlet globemallow, fourwing saltbush and winterfat occur, but not in great amounts.

This plant community is stable, productive and well adapted to the Northern Great Plains climatic conditions. Litter is properly distributed with very little movement and natural plant mortality is very low. Community dynamics, nutrient cycle, water cycle and energy flow are functioning properly. This is a sustainable plant community in terms of soil stability, watershed function, and biologic integrity.

Total annual production ranges from 800 to 1900 pounds of air-dry vegetation per acre and will average 1300 pounds during an average year.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6701
Growth curve name: Cool season/warm season co-dominant; MLRA-67B; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	8	20	28	15	12	10	5	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 initially toward the *Blue Grama, Western Wheatgrass Plant Community.*
- Non-use (rest) and lack of fire will move this plant community toward the *Low Plant Density, Excessive Litter Plant Community*. Initially, excess litter begins to build-up. Eventually native plant density begins to decrease and weeds and introduced species may begin to invade.
- Prescribed grazing that allows for adequate recovery opportunity following each grazing event and proper stocking will maintain the *Western Wheatgrass, Green Needlegrass Plant Community (HCPC).*

Blue Grama, Western Wheatgrass Plant Community

This plant community developed with continuous grazing without adequate recovery opportunities between grazing events. The dominant grasses are blue grama and western wheatgrass. Western wheatgrass is reduced and green needlegrass is nearly absent. Blue grama has increased significantly. Grasses and grass-likes include buffalograss, bottlebrush squirreltail, prairie junegrass and sun sedge. Forbs present may include scarlet globemallow and hairy goldaster.

Compared to the Historic Climax Plant Community blue grama has increased. Green needlegrass and western wheatgrass have decreased. Palatable forbs and shrubs such as American vetch, fourwing saltbush and winterfat have decreased.

Plant frequency, production and litter have been reduced. Reduction of rhizomatous wheatgrass, nitrogen fixing forbs, shrub component and increased warm season short grasses has begun to alter the biotic integrity of this community. Water and nutrient cycles may be impaired.

Total annual production, during an average year, ranges from 400 to 1300 pounds per acre air-dry weight and will average 800 pounds.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6702
Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-67B, upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	2	15	45	20	15	3	0	0	0

(monthly percentages of total annual growth)

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

- Continued grazing without adequate recovery periods between grazing events will shift this plant community across and ecological threshold toward the *Blue Grama/Buffalograss Sod with Remnant Cool Season Grasses Plant Community.*
- Prescribed grazing with adequate recovery periods between grazing events and proper stocking will move this plant community back toward the *Western Wheatgrass, Green Needlegrass Plant Community (HCPC).*

Low Plant Density, Excessive Litter Plant Community

This plant community developed under the absence of grazing (rest) and fire. The dominant plants tend to be somewhat similar to those found in the Historic Climax Plant Community. Russian thistle and cheatgrass or other weedy species may invade if a seed source is present.

Much of the nutrients are tied up in excessive litter. Organic matter oxidizes in the air rather than being incorporated into the soil due to the absence of animal impact. Excessive aboveground litter levels prevent sunlight from reaching plant crowns and in time can stagnate the plant community. Bunchgrasses have a tendency to exhibit dead centers. The introduction of grazing or fire can quickly change the plant community.

Total annual production can vary from 600 to 1500 pounds of air-dry vegetation per acre and will average 1050 pounds during an average year.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6703
Growth curve name: Cool season/warm season co-dominant, excess litter; MLRA-67B; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	10	20	25	15	15	10	5	0	0

(monthly percentages of total annual growth)

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

- Prescribed grazing with adequate recovery opportunities between grazing events or prescribed burning followed by prescribed grazing will move this plant community toward the *Western Wheatgrass, Green Needlegrass Plant Community (HCPC).* This can occur relatively fast.

Blue Grama/Buffalograss Sod with Remnant Cool Season Grasses Plant Community

This plant community develops under continued grazing without adequate recovery opportunities between grazing events. Blue grama and buffalograss have formed a dense sod. Remnant amounts of western wheatgrass remain in localized areas. The dominant grasses are blue grama and buffalograss. Other grasses include red threeawn, ring muhly and sand dropseed.

Compared to the Historic Climax Plant Community, blue grama and buffalograss have increased. Western wheatgrass and significant perennial forbs and shrubs have virtually been eliminated.

This plant community is resistant to change due to grazing tolerance of buffalograss and blue grama. A significant amount of production and diversity has been lost when compared to the HCPC. Loss of cool season grasses, shrub component and nitrogen fixing forbs have negatively impacted energy flow and nutrient cycling. Water infiltration is reduced significantly due to the massive shallow root system “root pan”, characteristic of sodbound blue grama and buffalograss.

Total annual production, during an average year, ranges from 200 to 700 pounds per acre air-dry weight and will average 500 pounds.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6707
Growth curve name: Warm season dominant; MLRA-67B; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	3	20	45	20	10	2	0	0	0

(monthly percentages of total annual growth)

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

- Heavy continuous grazing or excessive defoliation without allowing for adequate recovery periods between grazing events will shift this plant community across an ecological threshold to a *Red Threeawn, Annuals, Bare Ground Plant Community*.

- Long term prescribed grazing with adequate recovery periods following grazing events and proper stocking will move this plant community toward the *Blue Grama, Western Wheatgrass Plant Community* and will eventually return to the *HCPC* or associated successional stages assuming an adequate seed/vegetative source is available. This is a long-term transition requiring 40 years or more to accomplish.

Red Threeawn, Annuals, Bare Ground Plant Community

This plant community develops with heavy continuous grazing or excessive defoliation. Plant composition is typically comprised of red threeawn, annuals and scattered areas of blue grama and buffalograss. Annuals such as Russian thistle, kochia and cheatgrass have invaded. Increased bare ground is common.

Compared to the Historic Climax Plant Community, all perennial plants have been greatly reduced with only remnants of the most grazing tolerant species remaining.

Litter levels are extremely low. Wind erosion is a concern due to increased bare ground. Mineral crusting caused by raindrop impact magnifies the situation by disrupting surface soil aggregates decreasing infiltration.

Total annual production, during an average year, ranges from 50 to 200 pounds per acre air-dry weight.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6707
Growth curve name: Warm season dominant; MLRA-67B; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	3	20	45	20	10	2	0	0	0

(monthly percentages of total annual growth)

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

- Long term prescribed grazing with adequate recovery periods between grazing events and proper stocking, will shift this plant community back toward the *Blue Grama/Buffalograss Sod with Remnant Cool Season Grasses Plant Community*. The rate of this transition can be extremely variable depending on the species remaining and the availability of an adequate seed/vegetative source. This transition can take up to 40 years or more to accomplish. Range seeding may be the only option to return this plant community to a productive condition in a realistic time frame.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

Western Wheatgrass, Green Needlegrass Plant Community
Common bird species expected on the HCPC include Cassin's sparrow, chestnut collared longspur, lark bunting, western meadowlark, and ferruginous and Swainson's hawks. White-tailed and black-tailed jackrabbit, badger, pronghorn, coyote, swift fox, plains pocket gopher, long-tailed weasel, and several species of mice are mammals that commonly use this plant community. Reptiles using this community include western rattlesnake, bullsnake, plains garter snake (if water is in home range), western hognose snake, racer, western box turtle, and six-lined racerunner.

Blue Grama, Western Wheatgrass 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 make it less attractive to the HCPC species.

Low Plant Density, Excessive Litter Plant Community
Both the HCPC species and shortgrass prairie species such as burrowing owl, mountain plover, horned lark, McCown's longspur, killdeer, and long-billed curlew use this plant community, however, conditions are shifting away from HCPC species preferences and toward shortgrass prairie species. Jackrabbit, black-tailed prairie dog, thirteen-lined ground squirrel, and desert cottontail rabbit are frequent users of this community. All other mammal species from the HCPC may use the community. Reptiles using this community include the species listed for the HCPC.

Blue Grama/Buffalograss Sod Plant Community; Red Threeawn, Annuals, Bare Ground Plant Community
All wildlife species in the Low Plant Density, Excessive Litter Plant Community would be expected in these communities. Most HCPC bird species other than the hawks would not be expected here. All other mammal species from the HCPC may use these communities. Reptiles using these communities exclusively are short-horned lizard and lesser earless lizard. Other reptiles using these communities include the species listed for the HCPC.

Other Potential Species
The plains spadefoot is the only common species of frog or toad inhabiting grasslands in Eastern Colorado. This species requires water for breeding. Tiger salamanders may be found on grassland sites, but require a water body for breeding. Either of these species may be found in any plant community if seasonal water requirements are met. Mule and white-tailed deer may use this ecological site, however the shrub cover is too low to provide escape or hiding cover. On ecological site locations near riparian areas, deer will use the vegetation for feeding. Big brown bats will use any plant community on this ecological site if a building site is in the area. The gray wolf, black-footed ferret, and wild bison used this ecological site in historic times. The wolf and ferret are thought to be extirpated from Eastern Colorado. Bison are currently found only as domestic livestock.

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
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
buffalograss	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	D	P	D
Canada wildrye	U	D	U	U	N	U	N	N	U	D	U	U	N	U	N	N	N	U	N	N	U	D	U	U	U	D	U	U
green needlegrass	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
inland saltgrass	N	U	U	N	N	N	N	N	N	U	U	N	N	N	N	N	N	N	N	N	N	U	U	N	N	U	U	N
prairie junegrass	U	D	U	D	N	D	N	U	U	D	U	D	N	D	N	U	N	D	N	U	U	D	U	D	U	D	U	D
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
tumblegrass	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
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
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
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
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	U	U	D	U
Pennsylvania smartweed	U	U	D	U	N	N	N	N	U	U	D	U	N	N	N	N	N	N	N	N	U	U	D	U	U	U	D	U
plains bahia	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
poison suckleya	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
rush skeletonplant	U	U	U	U	N	N	N	N	U	U	U	U	N	N	N	N	N	N	N	N	U	U	U	U	U	U	U	U
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
silky sophora	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
upright prairie coneflower	U	U	D	U	U	P	P	U	U	U	D	U	U	P	P	U	U	P	P	U	U	U	D	U	U	U	D	U
woolly Indianwheat	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
woolly locoweed	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
Shrubs																												
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
fringed sagebrush	U	N	N	U	U	D	D	U	U	N	N	U	U	D	D	U	U	D	D	U	U	N	N	U	U	N	N	U
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
winterfat	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

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)
Western Wheatgrass, Green Needlegrass (HCPC)	1300	0.42
Blue Grama, Western Wheatgrass	800	0.26
Blue Grama/Buffalograss Sod w/Remnant Cool	500	0.16
Excessive Litter, Low Plant Density	1050	*
Red Threeawn, Annuals, 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. This site is dominated by soils in hydrologic group D. Infiltration is moderate to slow and runoff potential for this site varies from moderate to high depending on ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where shortgrasses form a strong sod and dominate the site. 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

None noted.

Supporting Information

Associated Sites

(R067BY002CO) – Loamy (formerly Loamy Plains)
(R067BY042CO) – Clayey (formerly Clayey Plains)

Similar Sites

(R067BY042CO) – Clayey (formerly Clayey Plains)
[less western wheatgrass, higher woody composition, non-depression landscape position]

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; Harvey Sprock, Rangeland Management Specialist, NRCS; James Borchert, Soil Scientist, NRCS; Terri Skadeland, Biologist, NRCS.

State Correlation

This site is unique to Colorado.

Field Offices

Akron, Brighton, Burlington, Byers, Cheyenne Wells, Eads, Flagler, Fort Collins, Fort Morgan, Greeley, Holly, Hugo, Kiowa, Lakewood, Lamar, Longmont, Simla, Springfield, Sterling

Other References

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

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

USDA, NRCS. National Range and Pasture Handbook, September 1997

USDA, NRCS. National Soil Information System, Information Technology Center, 2150 Centre Avenue, Building A, Fort Collins, CO 80526. (http://nasis.nrcs.usda.gov)

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Rennicke, J. 1990. Colorado Wildlife. Falcon Press, Helena and Billings, MT and CO Div. Wildlife, Denver CO. 138 pp.

Site Description Approval

/s/ 03/25/2004

State Range Management Specialist Date