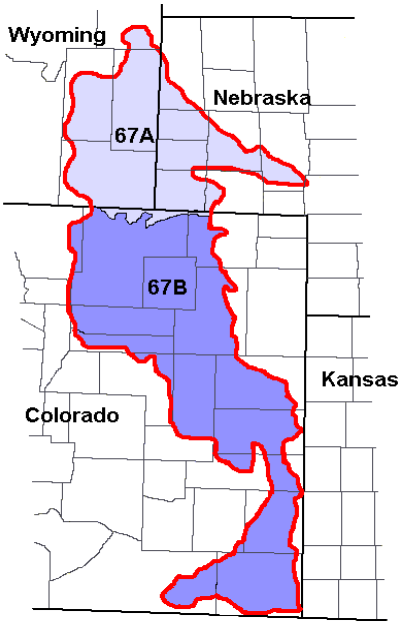
United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description



Site Type: Rangeland

Site Name: Alkaline Plains

Site ID: R067BY047CO

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

Physiographic Features

This site occurs on nearly level to moderately sloping plains and hills. Slope lengths can be exceptionally long in some areas. All areas are structurally influenced by the presence of shale.

Landform: fans, hills, terrace

Aspect: N/A

	Minimum	Maximum
Elevation (feet):	3800	5600
Slope (percent):	0	6
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:	medium	very high

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 typically very deep but may range to moderately deep. They are well drained and slowly permeable. These soils occur on fans, hills, and terraces. These soils typically formed in alluvium, and less typically the moderately deep soils formed in residuum. These soils have weathered shale at depths of 20 to greater than 60 inches. The available water capacity is typically moderate, but ranges to low for moderately deep soils. The soil surface layer is typically 2 to 10 inches thick and is clay loam, clay, or silty clay. The pH ranges from neutral to strongly alkaline. Soil salinity and alkalinity influence plant species composition and growth. The soil moisture regime is ustic aridic. The soil temperature regime is mesic.

The Historic Climax Plant Community (HCPC) should exhibit slight to no evidence of rills, wind scoured areas or pedestaled plants. Water flow paths, if present, are broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers. The soil surface is stable and intact. The clayey subsoil can restrict water movement. Root penetration may or may not be affected.

Major soil series correlated to this ecological site include: Heldt, Manzanst, Razor, and Litle.

Other soil series that have been correlated to this site include: none

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

Subsurface Texture Group: clayey
Surface Fragments ≤ 3" (% Cover): 0
Surface Fragments > 3" (%Cover): 0
Subsurface Fragments ≤ 3" (% Volume): 0-15
Subsurface Fragments > 3" (% Volume): 0

	Minimum	Maximum
Drainage Class:	well	well
Permeability Class:	slow	slow
Depth (inches):	20	80
Electrical Conductivity (mmhos/cm)*:	0	16
Sodium Absorption Ratio*:	0	15
Soil Reaction (1:1 Water)*:	6.6	9.0
Available Water Capacity (inches)*:	3	8
Calcium Carbonate Equivalent (percent)*:	1	15

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

Plant Communities

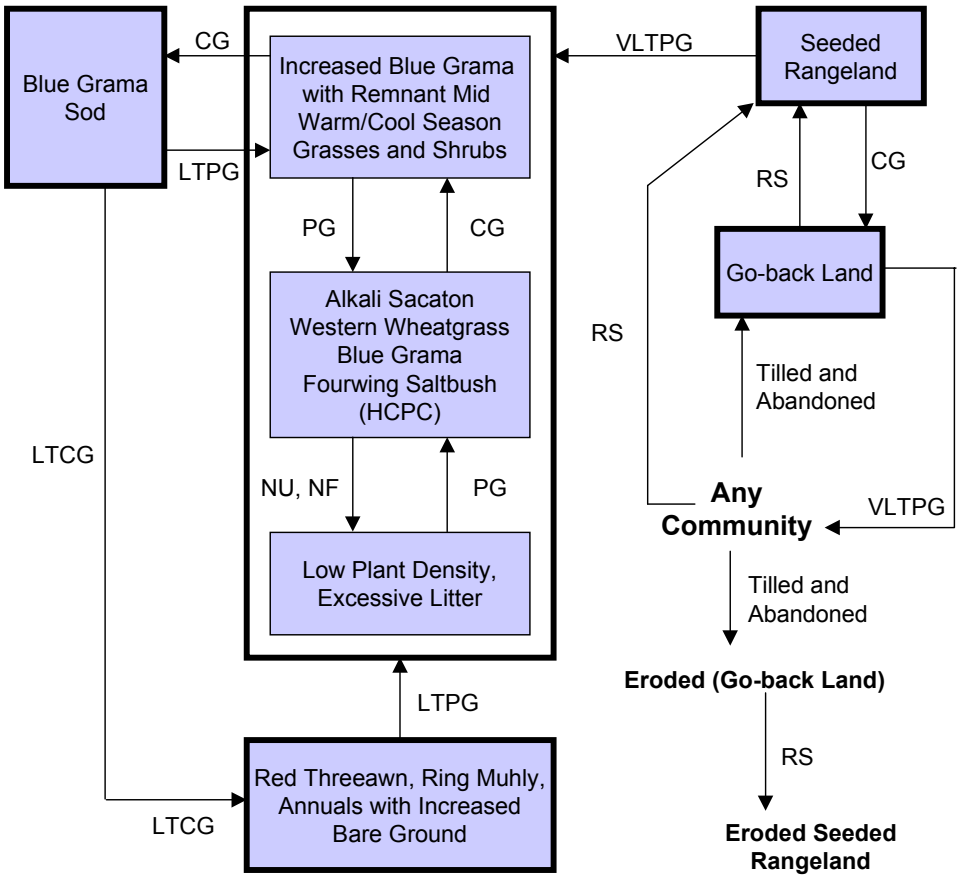
Ecological Dynamics of the Site:

As this site deteriorates from continuous grazing without adequate recovery periods following each grazing occurrence, blue grama increases and will eventually develop into a sodbound condition. Alkali sacaton, green needlegrass and western wheatgrass will decrease in frequency and production as well as key shrubs such as fourwing saltbush and winterfat. American vetch, and other highly palatable forbs will decrease also. Red threeawn, ring muhly, annuals and bare ground will increase when subjected to long term continuous grazing. Non-use or rest in the absence of fire will result in excessive litter and reduced plant density.

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, **HCPC** - Historic Climax Plant Community, **LTCG** - long term continuous grazing (>40 yrs), **LTPG** - long term prescribed grazing (>40 yrs), **NF** - no fire, **NU** - non-use, **PG** - prescribed grazing with adequate recovery period, **RS** - range seeding, **VLTPG** - very long term prescribed grazing (>80 yrs)

Plant Community Composition and Group Annual Production

			Alkali Sacaton, Western Wheatgrass, Blue Grama, Fourwing Saltbush (HCPC)		
COMMON/GROUP NAME	**SCIENTIFIC NAME**	**SYMBOL**	**Group**	**lbs./acre**	**% Comp**
GRASSES & GRASS-LIKES			*1*	*1050 - 1190*	*75 - 85*
alkali sacaton	Sporobolus airoides	SPAI	1	420 - 560	30 - 40
western wheatgrass	Pascopyrum smithii	PASM	1	280 - 420	20 - 30
blue grama	Bouteloua gracilis	BOGR2	1	210 - 280	15 - 20
green needlegrass	Nassella viridula	NAVI4	1	70 - 140	5 - 10
sideoats grama	Bouteloua curtipendula	BOCU	1	14 - 98	1 - 7
alkali bluegrass	Poa juncifolia	POJU	1	14 - 42	1 - 3
buffalograss	Buchloe dactyloides	BUDA	1	0 - 42	0 - 3
sand dropseed	Sporobolus cryptandrus	SPCR	1	0 - 28	0 - 2
bottlebrush squirreltail	Elymus elymoides ssp. elymoides	ELELE	1	0 - 14	0 - 1
Indian ricegrass	Achnatherum hymenoides	ACHY	1	0 - 14	0 - 1
inland saltgrass	Distichlis spicata	DISP	1	0 - 14	0 - 1
little bluestem	Schizachyrium scoparium	SCSC	1	0 - 14	0 - 1
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 14	0 - 1
ring muhly	Muhlenbergia torreyi	MUTO2	1	0 - 14	0 - 1
tumblegrass	Schedonnardus paniculatus	SCPA	1	0 - 14	0 - 1
sun sedge	Carex inops ssp. heliophila	CAINH2	1	14 - 28	1 - 2
other native grasses		2GP	1	14 - 70	1 - 5
FORBS			*2*	*70 - 140*	*5 - 10*
American vetch	Vicia americana	VIAM	2	14 - 28	1 - 2
Fremont goldenweed	Oonopsis foliosa	OOFOF	2	14 - 28	1 - 2
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	14 - 28	1 - 2
twogrooved milkvetch	Astragalus bisulcatus	ASBI2	2	14 - 28	1 - 2
desert princesplume	Stanleya pinnata var. pinnata	STPIP	2	0 - 14	0 - 1
dotted gayfeather	Liatris punctata	LIPU	2	0 - 14	0 - 1
ironplant goldenweed	Machaeranthera pinnatifida ssp. pinnatifida	MAPIP4	2	0 - 14	0 - 1
povertyweed	Iva axillaris	IVAX	2	0 - 14	0 - 1
purple prairie clover	Dalea purpurea var. purpurea	DAPUP	2	0 - 14	0 - 1
silky sophora	Sophora nuttalliana	SONU	2	0 - 14	0 - 1
upright prairie coneflower	Ratibida columnifera	RACO3	2	0 - 14	0 - 1
other native forbs		2FP	2	14 - 70	1 - 5
SHRUBS			*3*	*140 - 210*	*10 - 15*
fourwing saltbush	Atriplex canescens	ATCA2	3	70 - 140	5 - 10
winterfat	Krascheninnikovia lanata	KRLA2	3	28 - 70	2 - 5
green plume rabbitbrush	Ericameria nauseosa ssp. nauseosa var. glabrata	ERNAG	3	14 - 28	1 - 2
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 14	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 14	0 - 1
other native shrubs		2SHRUB	3	14 - 42	1 - 3

Annual Production lbs./acre	LOW	RV*	HIGH
GRASSES & GRASS-LIKES	400 -	1120 -	1440
FORBS	65 -	105 -	145
SHRUBS	135 -	175 -	215
TOTAL	600 -	1400 -	1800

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.

Alkali Sacaton, Western Wheatgrass, Blue Grama, Fourwing Saltbush Plant Community

This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC). This plant community evolved with grazing by large herbivores, is well suited for grazing by domestic livestock and can be found on areas that are properly managed with prescribed grazing that allows for adequate recovery periods following each grazing event.

The historic climax plant community consists mainly of mid warm and cool season grasses. The principal dominant mid grasses is alkali sacaton, western wheatgrass and green needlegrass. Blue grama is the dominant short grass. Grass and grass-likes of secondary importance are sideoats grama, alkali bluegrass and sun sedge. Forbs and shrubs such as American vetch, Fremont goldenweed, fourwing saltbush and winterfat are significant. The HCPC is about 75-85% grasses and grass-likes, 5-10% forbs and 10-15% shrubs by air-dry weight.

This plant community is diverse and productive. Litter is properly distributed with very little movement off-site and natural plant mortality is very low. It is well suited to carbon sequestration, water yield, wildlife use by many species, livestock use and is esthetically pleasing. 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 biological integrity.

Total annual production, during an average year, ranges from 600 to 1800 pounds per acre air-dry weight and will average 1400 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: CO6708
Growth curve name: Warm season/cool 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	35	18	10	5	2	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 following grazing events will convert this plant community to *Increased Blue Grama with Remnant Mid Warm/Cool Season Grasses and Shrubs Pant Community.*
- Non-use (rest) and absence of fire will move this plant community to the *Excessive Litter, Low Plant Density Plant Community.*

- Prescribed grazing that allows for adequate recovery opportunity following each grazing event and proper stocking will maintain the *Alkali Sacaton, Western Wheatgrass, Blue Grama, Fourwing Saltbush Plant Community (HCPC).*

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

This community developed with longer term continuous grazing and lack of adequate recovery periods. Blue grama has increased but has not yet developed into a sod bound condition. Key species such as alkali sacaton, western wheatgrass, green needlegrass, American vetch, fourwing saltbush and winterfat have been reduced to remnant amounts. Forbs and shrubs such as scarlet globemallow, green plume rabbitbrush and broom snakeweed has increased.

Total aboveground carbon has been reduced due to decreases in forage and litter production. Reduction of 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.

Total annual production, during an average year, ranges from 400 to 1100 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:

- Continuous grazing without adequate recovery opportunities between grazing events will move this plant community across an ecological threshold toward a *Blue Grama Sod Dominated Plant Community.*
- Prescribed grazing with adequate recovery periods following each grazing event during the growing season with a proper stocking rate will return the plant community to the *Alkali Sacaton, Western Wheatgrass, Blue Grama, Fourwing Saltbush Plant Community (HCPC).*

Excessive Litter, Low Plant Density Plant Community

This plant community occurs when grazing is removed for long periods of time (rest) in the absence of fire. Plant composition is similar to the HCPC, however individual specie production and frequency will be lower.

Much of the nutrients are tied up in excessive litter. The semiarid environment and the absence of animal traffic to break down litter slow nutrient recycling. Aboveground litter also limits sunlight from reaching plant crowns. Many plants, especially bunchgrasses (alkali sacaton, green needlegrass, sideoats grama) die off. Thick litter and absence of grazing animals (animal impact) reduce seed germination and establishment.

In advanced stages, plant mortality can increase and erosion may eventually occur if bare ground increases. Once this happens it will require increased energy input in terms of practice cost and management to bring back.

Total annual production, during an average year, ranges from 400 to 1300 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: CO6705
Growth curve name: Warm season/cool 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	2	7	18	35	18	13	5	2	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 each grazing event and/or prescribed burning followed with prescribed grazing can restore this plant community back to the *Alkali Sacaton, Western Wheatgrass, Blue Grama, Fourwing Saltbush Plant Community (HCPC).*

Blue Grama Sod Plant Community

This plant community has developed with further continuous grazing. Alkali sacaton, fourwing saltbush and winterfat have been removed. Western wheatgrass may persist in minor trace amounts, greatly reduced in vigor and not readily seen. Blue grama dominates the community and has developed into a sod bound condition. Red threeawn, ring muhly, bottlebrush squirreltail, desert princesplume, silky sophora, twogrooved milkvetch, mouse-ear povertyweed and broom snakeweed have also increased.

This plant community is resistant to change due to grazing tolerance of 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. Soil loss may be obvious where flow paths are connected.

It will take a long time to bring this plant community back to the HCPC with improved management. Renovation of this community would be very costly. Desertification is advanced.

Total annual production, during an average year, ranges from 200 to 800 pounds per acre air-dry weight and will average 450 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:

- Long term continuous grazing without adequate recovery opportunity between grazing events during the growing season will shift this plant community toward the *Red Threeawn, Ring Muhly, Annuals with Increased Bare Ground Plant Community.*
- Long term prescribed grazing with adequate recovery periods between grazing occurrences and proper stocking will move this plant community toward the *Increased Blue Grama with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community* and eventually to the *HCPC* or associated successional plant communities provided adequate seed/vegetative sources exist. This change will require a long period of time (greater than 40 years), and may be difficult to attain depending on the degree of degradation.

Red Threeawn, Ring Muhly, Annuals with Increased Bare Ground Plant Community

This plant community develops under long term continuous grazing. It is in an extremely degraded condition. Blue grama can occur in remnant amounts or be totally absent. Lower successional perennial species that dominate the community are red threeawn, ring muhly and prickleypear. Russian thistle, kochia and cheatgrass are common annual invaders.

Bare ground is a major concern. Erosion potential is high especially where flow paths are continuous. Soil loss is expected and can be severe especially on long unbroken slopes. Plant pedestalling and rills can be evident. This community lacks stability, diversity and productivity. Desertification is well advanced.

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 can eventually move this community back to the *HCPC* or associated successional plant communities depending upon the degree of degradation of the plant community and available seed/vegetative sources. This transition may take up to 40 years or more.
- Range seeding followed by prescribed grazing may be used as an alternative to convert this plant community to a *Seeded Rangeland* community, which can closely resemble the *HCPC* however, at a substantial cost.

Go-back Land

Go-back land is created when the soil is tilled or farmed (sodbusted) and abandoned. All of the native plants are destroyed, soil organic mater is reduced, soil structure is changed and a plowpan or compacted layer is formed. Residual synthetic chemicals often remain from past farming operations and erosion processes may be active.

Over time, early successional perennials and annuals begin to cover the soil surface. Kochia, Russian thistle, cheatgrass are an example of some early annuals which begin to establish. The plant community in time will become dominated by red threeawn. Eventually, sand dropseed, ring muhly, bottlebrush squirrletail will begin to establish.

Soil structure has been altered. Organic matter has left the system through erosion and/or decomposition. Erosion can be accelerated if ground cover is lacking especially on longer slopes. Water cycle, nutrient cycle, energy flow and community dynamics are severely degraded.

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

- Very long term prescribed grazing that allows adequate recovery periods following each grazing event and proper stocking can lead to A*ny Plant Community*, but will most likely revert to a blue grama dominated plant community and eventually back to the *HCPC* or associated successional plant community. This process can take 80 years or more if an adequate seed/vegetative source is present. Intensive prescribed grazing with adequate recovery periods between grazing events will accelerate the recovery process.
- Rangeland seeding followed with prescribed grazing can be used to convert *Go-back Land* to a *Seeded Rangeland Plant Community.* This can be a short transition time frame however, at a high energy and financial expense.

Go-back Land (eroded)

Eroded go-back land is created where tillage or farming and severe erosion has occurred. If the parent material that the original soil developed from is lost, then another ecosite will evolve. If the same parent material is present, then re-seeding or the slow process of developing soil and vegetation will start by similar processes as shown in the non-eroded *Go-back Land* above. This is a very slow process (100 years or more).

Seeded Rangeland

This community results from *Any Plant Community* that was tilled and seeded to adapted native plant species. A seed mixture of adapted native grasses, forbs and shrubs should be used to accomplish various management objectives however, revegetation is extremely difficult and costly due to soil limitations.

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

- Continuous grazing without adequate recovery periods between grazing events can shift this plant community to vegetation characteristic of *Go-back Land.*
- Very long term prescribed grazing with adequate recovery periods between grazing events and proper stocking will eventually move this plant community toward the various seccessional stages associated with the *HCPC* assuming an adequate seed/vegetative source is available. This transition can take up to 80 years or longer.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

Alkali Sacaton, Western Wheatgrass, Blue Grama, Fourwing Saltbush Plant Community (HCPC)
Common bird species expected on this community 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.

Increased Blue Grama with Remnant Mid Warm/Cool Season Grasses 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.

Excessive Litter, Low Plant Density Plant Community; Blue Grama Sod Dominated Plant Community; Red Threeawn, Ring Muhly, Annuals with Increased Bare Ground Plant Community; and Go-back Land
The habitat conditions associated with these communities favor the long-billed curlew, McCown's longspur, burrowing owl, mountain plover, killdeer, and horned lark. Ferruginous and Swainson's hawks are frequent users of these communities. The loss of shrubs and taller grasses in these plant communities result in a shift of bird species away from the HCPC birds. Lark bunting, chestnut-collared longspur, and western meadowlark use declines and Cassin's sparrow stop using the communities altogether.

Most mammals will be the same as in the HCPC, however jackrabbit, black-tailed prairie dog, desert cottontail, and thirteen-lined ground squirrel use will increase because of the changing plant community. Reptiles using these communities are the same as in the HCPC.

Seeded Rangeland
The wildlife species expected on seeded rangeland would be those listed for the plant community the seeding most resembles.

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 for feeding, 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 bluegrass	U	D	U	D	D	P	U	D	U	D	U	D	D	P	U	D	D	P	U	D	U	D	U	D	U	D	U	D
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
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
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
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
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
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
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
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	U	U	U	U
ironplant goldenweed	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
povertyweed	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
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
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
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
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
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
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. 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 (as 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 this 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)
Alkali Sacaton, Western Wheatgrass, Blue Grama, Fourwing (HCPC)	1400	0.45
Increased Blue Grama w/Remnant Warm/Cool Season Grasses/Shrub	800	0.26
Blue Grama Sod	450	0.14
Low Plant Density, Excessive Litter	*	*
Red Threeawn, Ring Muhly, 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 low 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 short grasses 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

(067BY042CO) – Clayey (formerly Clayey Plains)
(067BY002CO) – Loamy (formerly Loamy Plains)
(067BY036CO) – Overflow

Similar Sites

(067BY045CO) – Shaly Plains
[shallow soils, lower production]

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 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 specific to Colorado.

Field Offices

Byers, Cheyenne Wells, Eads, Holly, Hugo

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)

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Site Description Approval

/s/ 03/25/2004

State Range Management Specialist Date