

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Clayey

Site ID: R069XY042CO

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

Physiographic Features

This site typically occurs on nearly level to strongly sloping terraces, and broad plains.



Landform: terrace, fans, plain

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	4600	6000
Slope (percent):	0	15
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.

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

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

Average Monthly Precipitation (inches) and Temperature (°F):

	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:	<u>System</u>	<u>Subsystem</u>	<u>Class</u>	<u>Sub-class</u>
None	None	None	None	None

Stream Type: None

Representative Soil Features

The soils of this site are moderately deep, deep and very deep soils. Typically, they are well drained and have slow to very slow permeability. These soils formed in alluvium and residuum derived from calcareous siltstone, shale and limestone. Soils occur on plains, fans, and terraces and are often eroded, rilled or gullied. These soils do not appear to be alkaline in the surface or subsoil due to low concentrations of salts from the parent material. The available water capacity is typically high for the deep and very deep soils and moderate for the moderately deep soils. The soil surface layer ranges from 3 to 16 inches thick and is typically silty clay loam or silty clay. The pH of these soils ranges from slightly alkaline to moderately alkaline in the surface and subsoil, and moderately alkaline to strongly alkaline in the substratum. 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.

The Historical Climax Plant Community (HCPC) should exhibit slight to no evidence of rills, wind scoured areas or pedestaled plants. Water flow paths, if any, are broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers. The soil surface is stable and intact.

Major soil series correlated to this ecological site include: Manzanola, Ravine, Razor

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

Soils that may be correlated to this range site when outdated soil surveys are updated are the Cadoma soils where the geologic formation is not saline.

Parent Material Kind: alluvium, residuum.

Parent Material Origin: calcareous sedimentary deposits.

Surface Texture: silty clay loam, silty clay

Surface Texture Modifier: none

Subsurface Texture Group: clayey

Surface Fragments $\leq 3''$ (% Cover): 0 to 15 percent

Surface Fragments $> 3''$ (%Cover): 0 to 5 percent

Subsurface Fragments $\leq 3''$ (% Volume): 0 to 15 percent

Subsurface Fragments $> 3''$ (% Volume): 0 to 15 percent

Typically, these soils average less than 15 percent rock fragments, but some horizons range to gravelly below 40 inches.

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	well	well
Permeability Class:	slow	very slow
Depth (inches):	20	60
Electrical Conductivity (mmhos/cm)*:	0	3
Sodium Absorption Ratio*:	0	15
Soil Reaction (1:1 Water)*:	7.4	9.0
Soil Reaction (0.1M CaCl₂)*:	7.2	8.6
Available Water Capacity (inches)*:	3.5	7.5
Calcium Carbonate Equivalent (percent)*:	1	30

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

Plant Communities

Ecological Dynamics of the Site:

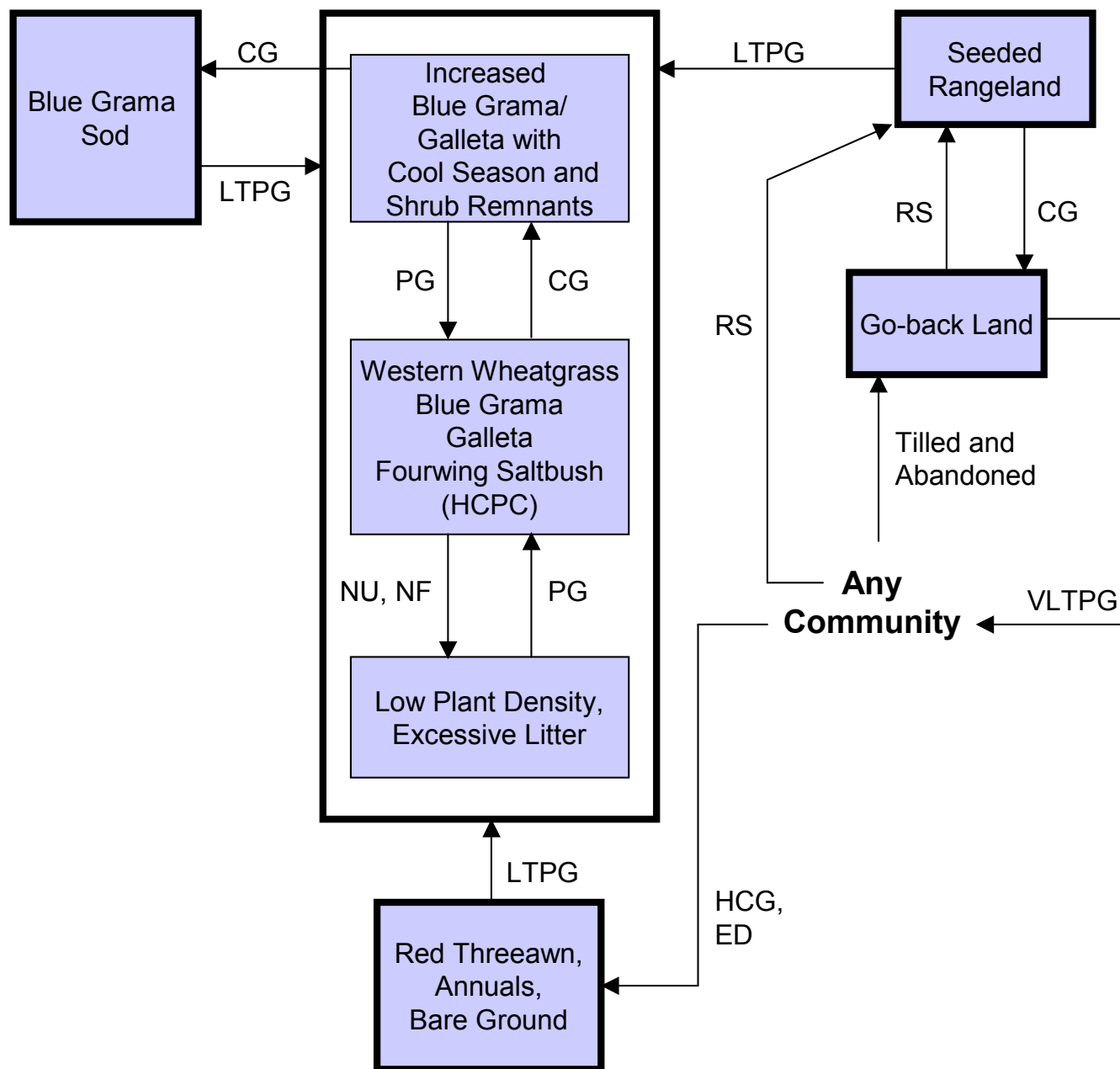
Deterioration of this site, due to continuous grazing without adequate recovery periods following each grazing occurrence, will cause blue grama and galleta to increase. Blue grama will eventually become sod bound. Cool season grasses such as western wheatgrass and green needlegrass will decrease in 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, annuals and bare ground will increase under heavy continuous grazing. Much of this ecological site has been tilled and used for crop production.

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 duration/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 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

			Western Wheatgrass, Blue Grama, Galleta, Fourwing Saltbrush (HCPC)		
COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES			1	525 - 675	70 - 90
western wheatgrass	Pascopyrum smithii	PASM	1	225 - 263	30 - 35
blue grama	Bouteloua gracilis	BOGR2	1	150 - 225	20 - 30
galleta	Pleuraphis jamesii	PLJA	1	75 - 113	10 - 15
green needlegrass	Nassella viridula	NAVI4	1	38 - 75	5 - 10
alkali sacaton	Sporobolus airoides	SPAI	1	23 - 53	3 - 7
buffalograss	Buchloe dactyloides	BUDA	1	15 - 38	2 - 5
bottlebrush squirreltail	Elymus elymoides ssp. elymoides	ELELE	1	0 - 23	0 - 3
sideoats grama	Bouteloua curtipendula	BOCU	1	0 - 23	0 - 3
inland saltgrass	Distichlis spicata	DISP	1	0 - 15	0 - 2
Indian ricegrass	Achnatherum hymenoides	ACHY	1	0 - 8	0 - 1
prairie junegrass	Koeleria macrantha	KOMA	1	0 - 8	0 - 1
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 8	0 - 1
sand dropseed	Sporobolus cryptandrus	SPCR	1	0 - 8	0 - 1
tall dropseed	Sporobolus compositus var. compositus	SPCOC2	1	0 - 8	0 - 1
tumblegrass	Schedonnardus paniculatus	SCPA	1	0 - 8	0 - 1
sun sedge	Carex inops ssp. heliophila	CAINH2	1	8 - 23	1 - 3
other native grasses		2GP	1	0 - 23	0 - 3
FORBS			2	38 - 113	5 - 15
American vetch	Vicia americana	VIAM	2	15 - 38	2 - 5
purple prairie clover	Dalea purpurea var. purpurea	DAPUP	2	8 - 23	1 - 3
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	8 - 23	1 - 3
dotted gayfeather	Liatris punctata	LIPU	2	8 - 15	1 - 2
Fremont goldenweed	Oenopsis foliosa var. foliosa	OOFOL	2	0 - 15	0 - 2
blanketflower	Gaillardia pinnatifida	GAPI	2	0 - 8	0 - 1
hairy goldaster	Heterotheca villosa	HEVI4	2	0 - 8	0 - 1
Louisiana sagewort	Artemisia ludoviciana	ARLU	2	0 - 8	0 - 1
plains bahia	Picradeniopsis oppositifolia	PIOP	2	0 - 8	0 - 1
prairie coneflower	Ratibida columnifera	RACO3	2	0 - 8	0 - 1
prairie sunflower	Helianthus petiolaris	HEPE	2	0 - 8	0 - 1
rush skeletonweed	Lygodesmia juncea	LYJU	2	0 - 8	0 - 1
scarlet gaura	Gaura coccinea	GACO5	2	0 - 8	0 - 1
silky crazyweed	Oxytropis sericea	OXSE	2	0 - 8	0 - 1
silky sophora	Sophora nuttalliana	SONU	2	0 - 8	0 - 1
slimflower scurfpea	Psoralea tenuiflorum	PSTE5	2	0 - 8	0 - 1
twogrooved milkvetch	Astragalus bisulcatus	ASBI2	2	0 - 8	0 - 1
wooly Indianwheat	Plantago patagonica	PLPA2	2	0 - 8	0 - 1
wooly locoweed	Astragalus mollissimus	ASMO7	2	0 - 8	0 - 1
other perennial forbs		2FP	2	8 - 38	1 - 5
SHRUBS			3	38 - 113	5 - 15
fourwing saltbush	Atriplex canescens	ATCA2	3	38 - 75	5 - 10
winterfat	Krascheninnikovia lanata	KRLA2	3	15 - 38	2 - 5
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 8	0 - 1
green plume rabbitbrush	Ericameria nauseosa ssp. nauseosa var. glabrata	ERNAG	3	0 - 8	0 - 1
James' frankenia	Frankenia jamesii	FRJA	3	0 - 8	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 8	0 - 1
shadscale	Atriplex confertifolia	ATCO	3	0 - 8	0 - 1
walking stick cholla	Opuntia imbricata	OPIM	3	0 - 8	0 - 1
other native shrubs		2SHRUB	3	8 - 30	1 - 4
Annual Production lbs./acre			LOW	RV*	HIGH
GRASSES & GRASS-LIKES			230 -	600	- 870
FORBS			35 -	75	- 115
SHRUBS			35 -	75	- 115
TOTAL			300 -	750	- 1100

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, Blue Grama, Galleta, 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 and 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 plant community consists of 70-90% grasses and grass-like, 5-15% forbs and 5-15% shrubs. Dominant grasses include western wheatgrass, blue grama and galleta. Other grasses and grass-like plants that occur in minor amounts are green needlegrass, alkali sacaton, buffalograss, sideoats grama and sun sedge. Significant forbs are American vetch, purple prairieclover and scarlet globemallow. Dominant shrubs that occupy this community are fourwing saltbush and winterfat.

This plant community is diverse, stable, and productive. 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. Plant litter is properly distributed with very little movement off-site and natural plant mortality is very low. This community is resistant to many disturbances except continuous grazing, tillage and/or development into urban or other uses.

Total annual production, during an average year, ranges from 300 to 1100 pounds per acre air-dry weight and will average 750 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6901

Growth curve name: Warm season/cool season co-dominant; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	20	30	20	10	3	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 between grazing events shifts this plant community toward the *Increased Blue Grama/Galleta with Cool Season and Shrub Remnants Plant Community*.
- Non-use and lack of fire will move this plant community toward the *Low Plant Density and Excessive Litter Plant Community*.
- Prescribed grazing that allows for adequate recovery opportunity following each grazing event and proper stocking will maintain the *Western Wheatgrass, Blue Grama, Galleta, Fourwing Saltbush Plant Community (HCPC)*.

Increased Blue Grama/Galleta with Remnant Cool Season and Shrubs Plant Community

This plant community evolved with continuous grazing without adequate recovery periods between each grazing event during the growing season. Recognition of this plant community will enable the land user to implement key management decisions before a significant economic/ecological threshold is crossed.

Key species such as western wheatgrass, green needlegrass, American vetch, fourwing saltbush and winterfat have been reduced to remnant amounts. Blue grama and galleta have increased in abundance and dominate the community. Sand dropseed, red threeawn, sixweeks fescue, bottlebrush squirreltail and hairy goldaster have also increased. This plant community is at risk of losing western wheatgrass, green needlegrass, American vetch, fourwing saltbush and winterfat. Once these key species are completely removed and other plants have increased, it will take a long time to bring them back by management alone. Substantial increases in money and other resources will be required to replace the lost species in a shorter period of time.

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 shortgrasses has begun to alter the biotic integrity of this community. Water and nutrient cycles are impaired. This is an early stage of desertification.

Total annual production, during an average year, ranges from 100 to 700 pounds per acre air-dry weight and will average 400 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 across an ecological threshold to a *Blue Grama Sod Plant Community*. This transition leads to a dramatically altered plant community.
- Prescribed grazing with adequate recovery opportunities between grazing events and proper stocking will bring this community back to the *Western Wheatgrass, Blue Grama, Galleta, Fourwing Saltbush Plant Community (HCPC)*.

Excessive Litter, Low Density Plant Community

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

Much of the nutrients are tied up in excess 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 die off. Thick litter and absence of grazing or fire 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 can vary from 200 to 1000 pounds of air-dry vegetation per acre and will average 600 pounds during an average year.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6902

Growth curve name: Warm season/cool season co-dominant, excess litter; MLRA-69; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	7	22	33	18	12	5	0	0	0

(monthly percentages of total annual growth)

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

- Prescribed grazing with adequate recovery periods between grazing events during the growing season will move this plant community toward the *Western Wheatgrass, Blue Grama, Galleta, Fourwing Saltbush Plant Community (HCPC)*. This can be a relatively short-term transition depending upon how degraded the plant community has become.

Blue Grama Sod Plant Community

This plant community evolved with continuous grazing and occurs frequently throughout most of the eastern plains of Colorado. Most of the key grass, forb and shrub species are absent. Western wheatgrass and galleta may persist in trace amounts, greatly reduced in vigor and not readily seen. Blue grama dominates the community with a tight “sodbound” appearance. Red threeawn, sand dropseed, sixweeks fescue and hairy goldaster have 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 from this community 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 blue grama and buffalograss. Soil loss may be obvious where flow paths are connected.

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

Total annual production, during an average year, ranges from 50 to 400 pounds per acre air-dry weight and will average 200 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:

- Heavy continuous grazing or excessive defoliation without adequate recovery periods following each grazing event will shift this plant community toward the *Red threeawn, Annuals, Bare Ground Plant Community*. Erosion and loss of organic matter/carbon reserves are concerns.
- Long-term prescribed grazing with adequate recovery periods following each grazing event and proper stocking over long periods of time move this plant community toward the *Blue Grama/Galleta with Cool Season Remnants Plant Community* and will eventually return to the *HCPC* or associated successional plant communities, assuming an adequate seed/vegetative source is available. This process may take greater than 40 years.

Red Threeawn, Annuals and Bare Ground Plant Community

This plant community develops with heavy continuous grazing and/or occupation by prairie dogs. Red threeawn, curlycup gumweed and annual plants such as sixweeks fescue, cheatgrass and Russian thistle have increased and/or invaded. Blue grama may persist in localized areas. Introduced species such as field bindweed can also be present, especially on prairie dog towns.

This community lacks stability, diversity and productivity. Litter levels are extremely low. Erosion is evident where flow paths are continuous. Rills may occur on steeper slopes. The nutrient cycle, water cycle and overall energy flow are greatly impaired. Organic matter/carbon reserves are greatly reduced. Desertification is advanced.

Total annual production can vary from 50 to 150 pounds of air-dry vegetation per acre.

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:

- Long-term prescribed grazing with adequate recovery periods between each grazing event and proper stocking can eventually move this community back to the *Western Wheatgrass, Blue Grama, Galleta, Fourwing Saltbush Plant Community (HCPC)* or associated successional plant community stages, assuming an adequate seed/vegetative source exists. This transition will take a long time (40 to 80 years or more) to achieve.
- 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 matter 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 are active.

Go-back land evolves through several plant communities beginning with an early annual plant community, which initiates the revegetation process. Plants such as Russian thistle, kochia and other annuals begin to establish. These plants give some protection from erosion and start to build minor levels of soil organic matter. This early annual plant community lasts for two to several years. Red threeawn, sand dropseed and several other early perennials can dominate the plant community for five to eight years or more. Buffalograss establishes next and dominates for many years. Eventually western wheatgrass, blue grama and other natives become reestablished.

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 will eventually move the plant communities establishing on *Go-back Land*, back to the *HCPC* or *Any Community*, assuming an adequate seed/vegetative source is available. This process takes many years (40-80 years or more).
- Range seeding followed with prescribed grazing can be used to convert *Go-back Land* to *Seeded Rangeland*. This is a quick transition requiring a substantial energy and financial inputs.

Seeded Rangeland

This plant community can vary considerably depending on how eroded the soil was, the species seeded, the stand that was established, how long ago the stand was established, and the management of the stand since establishment.

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

- Continuous grazing without adequate recovery period between grazing events can shift this plant community to a plant community resembling *Go-back Land*.
- Long-term prescribed grazing with adequate recovery periods between grazing events will eventually move this plant community toward the *Western Wheatgrass*, *Blue Grama*, *Galleta*, *Fourwing Saltbush Plant Community (HCPC)* or associated successional plant communities. This transition can take 40 years or more.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

The heavy soils and grasses, forbs, and shrubs found on this ecological site provides 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.

Western Wheatgrass, Blue Grama, Galleta, Fourwing Saltbush Plant Community-Historic Climax Plant Community (HCPC)

Reptiles using this community include western rattlesnake, bullsnake, western hognose snake, racer, western box turtle, and six-lined racerunner. The structural diversity in the plant community on this site provides habitat for Cassin's and Brewer's sparrow, lark bunting, scaled quail, and ferruginous and Swainson's hawks. The combination of mid-tall grasses and shrubs provides habitat for lesser prairie chicken in the eastern part of this ecological site. Small mammals such as white-tailed jackrabbit, badger, swift fox, and several species of mice are common in this plant community. Pronghorn is a typical ungulate found in this community.

Increased Blue Grama/Galleta with Remnant Cool Season and Shrubs Plant Community

The reduction of shrubs and taller grasses in this plant community results in a shift of bird species away from the HCPC birds. Lark bunting and Cassin's sparrow use declines because of the loss in shrub cover. Habitat conditions improve for long-billed curlew, burrowing owl, mountain plover, killdeer, and horned lark. Ferruginous and Swainson's hawks are frequent users of this community. Most mammals will be the same as in the HCPC, however, black-tailed prairie dog use will increase because of the changing plant community. Reptiles using this community are the same as in the HCPC.

Excessive Litter, Low Density Plant Community; Blue Grama/Buffalograss Sod Plant Community; Red Threeawn, Annuals, Bare Ground Plant Community; and Go-back Land Plant Community

As these communities develop into an open landscape the wildlife species will shift away from HCPC species and toward the species that prefer unvegetated areas and short plants. Texas short-lizard, six-lined racerunner, and black-tailed jackrabbit would be expected more frequently here than in the HCPC. In addition, mountain plover, black-tailed prairie dog, and burrowing owl might use these communities where slopes are less than 5% and vision is unobstructed.

Seeded Rangeland

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

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

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses and Grass-like							
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
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
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
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
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
tall dropseed	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 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
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
blanketflower	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
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
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
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
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
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 P P U
prairie sunflower	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
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
rush skeletonweed	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	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
silky crazyweed	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
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
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
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
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
James' frankenia	N N U U	U U N U	N N U U	U U N U	U U N U	N N U U	N N U 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
shadscale	D D P D	D U U D	D D P D	D U U D	D U U D	D D P D	D U U D
walking stick cholla	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 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

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, Blue Grama, Galleta, Fourwing (HCPC)	750	0.24
Blue Grama/Galleta w/Remnant Cool Seasons/Shrubs	400	0.13
Blue Grama Sod	200	0.06
Low Plant Density, Excessive Litter	*	*
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 and runoff potential for this site is moderate 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

- (069XY006CO) – Loamy (formerly Loamy Plains)
- (069XY037CO) – Saline Overflow
- (069XY046CO) – Shaly Plains
- (069XY047CO) – Alkaline Plains

Similar Sites

- (069XY006CO) – Loamy (formerly Loamy Plains)
[surface texture consists of vfst to sil, higher cool season production]
- (069XY047CO) – Alkaline Plains
[higher salt content, more alkali sacaton and alkali bluegrass]

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

This site is specific to Colorado (formerly Clayey Plains).

Field Offices

Canon City, Colorado Springs, Cheyenne Wells, Hugo, Pueblo, Rocky Ford, Simla, Springfield, 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