Ecological site R061XY104WY
Clayey-West (16-20" PZ)

Accessed: 04/24/2024

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Associated sites

R061XY104WY	**Clayey-West (16-20" PZ)**
R061XY122WY	**Loamy-West (16-20" PZ)**
R061XY128WY	**Lowland (LL) 15-19" Precipitation Zone, Black Hills**
R061XY130WY	**Overflow (Ov) 15-19" Precipitation Zone, Black Hills**
R061XY150WY	**Sandy (Sy) 15-19" Precipitation Zone, Black Hills**

Similar sites

R058BY204WY	**Clayey (Cy) 15-17” PZ** Clayey 15-17" Northern Plains P.Z. has lower production.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on nearly level to 30% slopes.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Alluvial fan (3) Stream terrace
Flooding frequency	None
Ponding frequency	None
Elevation	3,500–5,000 ft
Slope	0–30%
Ponding depth	0 in
Water table depth	60 in

Climatic features

Climatic features
Annual precipitation ranges from 15-19 inches per year. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal precipitation. Temperatures show a wide range between summer and winter and between daily maximums and minimums. This is predominantly due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring.

Strong winds are less frequent than over other areas of Wyoming. Occasional storms, however, can bring brief periods of high winds with gusts exceeding 50 mph.

Growth of native cool season plants begins about April 1 and continues to about July 1. Native warm season plants begin about May 15 and continue to about August 15. Fall green-up may occur in September and last through October.

The following information is from the “Devils Tower 2” climate station:

Minimum Maximum 5 yrs. out of 10 between
Frost-free period (days) (32°F): 58 93 June 6 – September 7
Freeze-free period (days) (28°F): 95 125 May 18 – September 20
Annual Precipitation (inches): 14.81 20.17

Mean annual precipitation: 17.66 inches
Mean annual air temperature: 44.4 F (28.6 F Avg. Min. to 60.1 F Avg. Max.)
For detailed information visit the Natural Resources Conservation Service National Water and Climate Center at http://www.wcc.nrcs.usda.gov/ website. Other climate station(s) representative of this precipitation zone include ”Hulett” and “Sundance”.

Table 3. Representative climatic features

Frost-free period (average)	93 days
Freeze-free period (average)	125 days
Precipitation total (average)	20 in

Influencing water features

Influencing Water Features

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

Stream Type: None

Soil features

The soils of this site are moderately deep (greater than 20” to bedrock) to very deep, well-drained soils that formed in alluvium or alluvium over residuum. These soils have slow permeability. The layers of soil having the most influence on plants vary from 4 to 8 inches thick. The surface soil will vary from 2 to 5 inches deep and have one of the following textures: silty clay, sandy clay, clay, and the finer portions of silty clay loam, clay loam, and sandy clay loam. These soils may develop severe cracks.

Representative Soil Features

Parent Material Kind: alluvium and residuum
Parent Material Origin: shale, calcareous
Surface Texture: clay loam, clay, silty clay loam, silty clay
Surface Texture Modifier: none is most common but gravelly or cobbly may occur
Subsurface Texture Group: clay,
Surface Fragments ? 3” (% Cover): 0
Surface Fragments > 3” (%Cover): typically 0, occasionally up to 10
Subsurface Fragments ? 3” (% Volume): typically 0, occasionally up to 15
Subsurface Fragments > 3” (% Volume): typically 0, occasionally up to 10

Minimum Maximum
Drainage Class: moderately well drained well drained
Permeability Class: slow moderately slow
Depth (inches): 20 >60
Electrical Conductivity (mmhos/cm) <20”: 0 4
Sodium Absorption Ratio <20”: 0 5
Soil Reaction (1:1 Water) <20”: 6.6 8.4
Soil Reaction (0.1M CaCl2) <20” NA NA
Available Water Capacity (inches) <30”: 2.8 5.7
Calcium Carbonate Equivalent (percent) <20”: 0 5

Table 4. Representative soil features

Surface texture	(1) Clay loam (2) Clay (3) Silty clay loam
Family particle size	(1) Clayey
Drainage class	Moderately well drained to well drained
Permeability class	Slow to moderately slow
Soil depth	20–60 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0–10%
Available water capacity (0-40in)	2.8–5.7 in

Calcium carbonate equivalent (0-40in)	0–5%
Electrical conductivity (0-40in)	0–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0–5
Soil reaction (1:1 water) (0-40in)	6.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–15%
Subsurface fragment volume >3" (Depth not specified)	0–10%

Ecological dynamics

Plant Communities

Ecological Dynamics of the Site:

As this site deteriorates because of a combination of frequent and severe grazing, species such as blue grama and big sagebrush will increase. Grasses such as green needlegrass, sideoats grama, and western wheatgrass will decrease in frequency and production.

Big sagebrush may become dominant on some areas with an absence of fire. Wildfires are actively controlled in recent times so chemical control using herbicides has replaced the historic role of fire on this site. Recently, prescribed burning has regained some popularity.

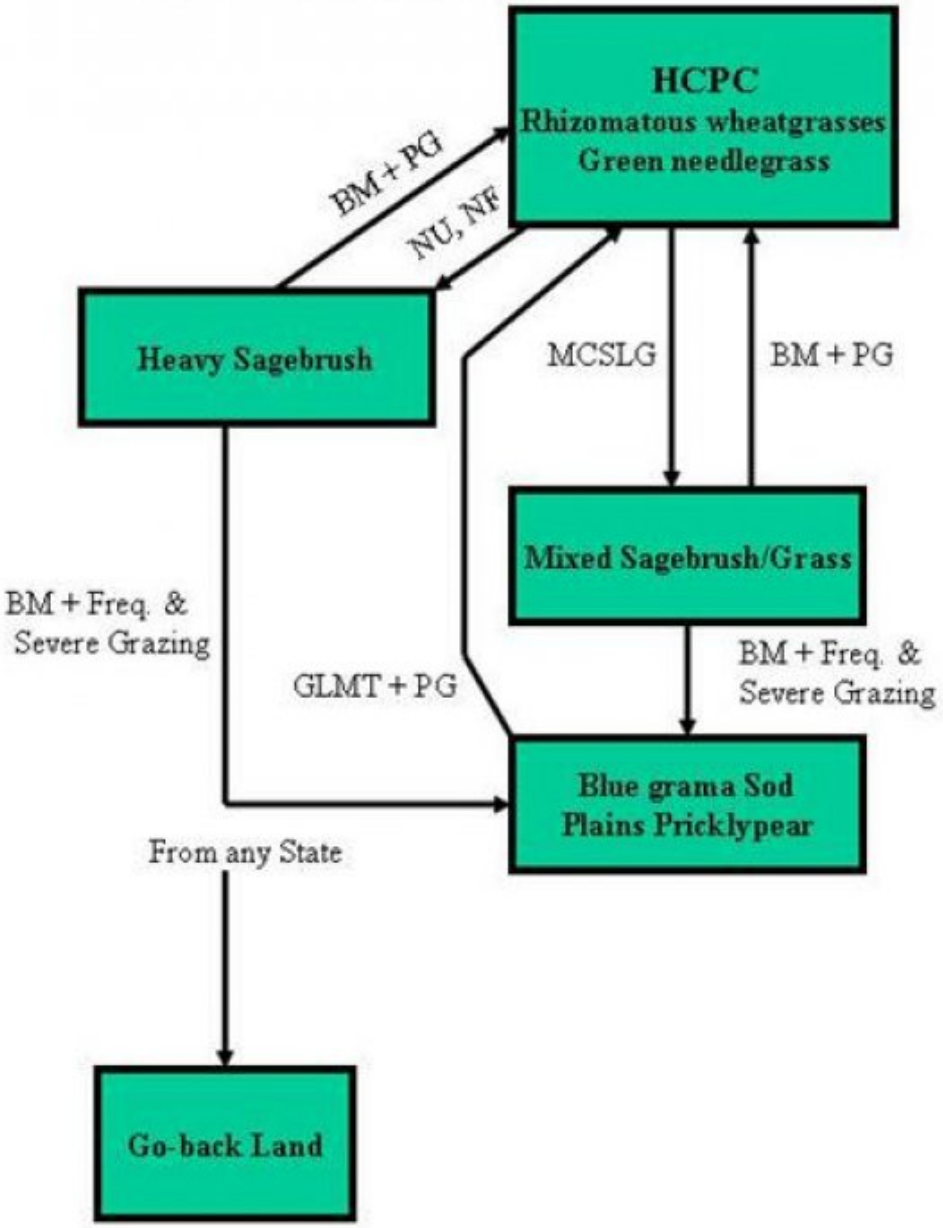
Due to the amount and pattern of the precipitation, the big sagebrush component typically is not resilient once it has been removed if a healthy and vigorous stand of grass exists and is maintained. The exception to this is where the herbaceous component is severely degraded at the time of treatment, growing conditions are unfavorable after treatment, and/or recovery periods are inadequate.

The Historic Climax Plant Community (description follows the plant community diagram) has been determined by study of rangeland relic areas, or areas protected from excessive disturbance. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical accounts have also been used.

The following is a State and Transition Model Diagram that illustrates the common plant communities (states) that can occur on the site and the transitions between these communities. The ecological processes will be discussed in more detail in the plant community narratives following the diagram.

Plant Community Narratives
Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities”. According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities (DPC’s) 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.

State and transition model



BM - Brush Management (fire, chemical, mechanical)
Freq. & Severe Grazing - Frequent and Severe Utilization of the Cool-season Mid-grasses during the Growing Season
GLMT - Grazing Land Mechanical Treatment
LTPG - Long-tem Prescribed Grazing
MCSLG - Moderate, Continuous Season-long Grazing
NU, NF - No Use and No Fire
PG - Prescribed Grazing (proper stocking rates with adequate recovery periods during the growing season)
VLTPG - Very Long-term Prescribed Grazing (could possibly take generations)
Na - Moderate Sodium in Soil

State 1
Rhizomatous Wheatgrasses, Green needlegrass

Community 1.1
Rhizomatous Wheatgrasses, Green needlegrass

Rhizomatous Wheatgrasses, Green needlegrass Community The interpretive plant community for this site is the Historic Climax Plant Community (HCPC). This state evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. Potential vegetation is about 85% grasses or grass-like plants, 10% forbs, and 5% woody plants. The state is a mix of cool season midgrasses and warm season grasses. The major grasses include western wheatgrass, big bluestem, sideoats grama, and green needlegrass. Other grasses occurring in this state include Sandberg bluegrass, little bluestem, blue grama, and Fowl bluegrass. Big sagebrush is a conspicuous element of this state, occurs in a mosaic pattern, and makes up 5 to 10% of the annual production. Big sagebrush may become dominant on some areas with absence of fire. Natural fire occurred frequently in this community and prevented big sagebrush from being the dominant landscape. Wildfires are actively controlled in recent times so chemical control using herbicides has replaced the historic role of fire on this site. Recently, controlled burning has regained some popularity. The total annual production (air-dry weight) of this state is about 2000 pounds per acre, but it can range from about 1400 lbs/acre in unfavorable years to about 2900 lbs/acre in above average years. The following is the growth curve of this plant community expected during a normal year: Growth curve number: WY1601 Growth curve name: 15-19BL, Upland Sites Growth curve description: All Upland Sites JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 0 0 0 5 20 40 15 5 10 5 0 0 (monthly percentages of total annual growth) The state is stable and well adapted to the Black Hills Foot Slopes climatic conditions. The diversity in plant species allow for high drought resistance. This is a sustainable plant community (site/soil stability, watershed function, and biologic integrity). Transitions or pathways leading to other plant communities are as follows: • Protection from grazing and fire, will convert this plant community to the Heavy Sagebrush Plant Community. • Moderate, continuous season-long grazing will convert the plant community to the Mixed Sagebrush/Grass Plant Community. • Frequent and severe grazing and Brush Management that eliminates the sagebrush will convert the plant community to the Blue grama/Plains Pricklypear Plant Community. • When cropped annually and then abandoned without reseeding, this state is converted to the Go-back Land Plant Community.

Figure 3. Plant community growth curve (percent production by month). WY1601, 15-19BL Upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			5	20	40	15	5	10	5		

State 2
Heavy Sagebrush

Community 2.1
Heavy Sagebrush

Heavy Sagebrush Plant Community This plant community is the result of protection from grazing and fire. Sagebrush dominates this plant community with canopy cover often exceeding 60%. The understory of grass includes rhizomatous wheatgrasses, green needlegrass, sideoats grama, Sandberg bluegrass, and prairie junegrass. The sagebrush canopy protects the cool season grasses, but this protection makes them unavailable for grazing. Big sagebrush is long-lived and will persist for a long period. The total annual production (air-dry weight) of this state is about 900 pounds per acre, but it can range from about 600 lbs/acre in unfavorable years to about 1200 lbs/acre in above average years. This state differs from the Historic Climax Plant Community by an increase in big sagebrush and a decrease in grasses such as green needlegrass and big bluestem. The following is the growth curve expected during a normal year: Growth curve number: WY1601 Growth curve name: 15-19BL, Upland Sites Growth curve description: All Upland Sites JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 0 0 0 5 20 40 15 5 10 5 0 0 (monthly percentages of total annual growth) This plant community can provide valuable winter feed for both livestock (especially sheep) and wildlife (such as mule deer and antelope). The soil is protected from erosion. The watershed is functioning and the biotic community is intact. Transitional pathways leading to other plant communities are as follows: • Brush management followed by deferment for 1 to 2 years and prescribed grazing management thereafter will return this state to near Historic Climax Plant Community. Care should be taken

when planning brush control to exclude critical winter ranges. • Frequent and severe grazing and Brush Management that eliminates the sagebrush will convert the plant community to the Blue grama/Plains Pricklypear Plant Community.

Figure 4. Plant community growth curve (percent production by month). WY1601, 15-19BL Upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			5	20	40	15	5	10	5		

State 3
Mixed Sagebrush/Grass

Community 3.1
Mixed Sagebrush/Grass

Mixed Sagebrush/Grass Plant Community Historically, this plant community evolved under grazing by bison and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock in the absence of fire or brush control. Big sagebrush is a significant component of this plant community. Cool-season grasses make up the majority of the understory with the balance made up of short warm-season grasses, annual cool-season grass, and miscellaneous forbs. Dominant grasses include rhizomatous wheatgrasses, and green needlegrass. Grasses of secondary importance include blue grama, prairie junegrass, sideoats grama, and Sandberg bluegrass. Forbs commonly found in this plant community include Louisiana sagewort (cudweed), plains wallflower, hairy goldaster, slimflower scurfpea, and scarlet globemallow. Sagebrush canopy ranges from 20% to 30%. Fringed sagewort is commonly found. Plains pricklypear and winterfat can also occur. When compared to the Historic Climax Plant Community, sagebrush and blue grama have increased. Green needlegrass and big bluestem have decreased, often occurring only where protected from grazing by the sagebrush canopy. Production of cool-season grasses has also been reduced. Cheatgrass (downy brome) has invaded the state. The overstory of sagebrush and understory of grass and forbs provide a diverse plant community, which will support domestic livestock and wildlife such as mule deer and antelope. The total annual production (air-dry weight) of this state is about 1200 pounds per acre, but it can range from about 900 lbs/acre in unfavorable years to about 1500 lbs/acre in above average years. The following is the growth curve expected during a normal year: Growth curve number: WY1601 Growth curve name: 15-19BL, Upland Sites Growth curve description: All upland Sites JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 0 0 0 5 20 40 15 5 10 5 0 0 (monthly percentages of total annual growth) This state is stable and protected from excessive erosion. The biotic integrity of this plant community is usually intact. However, it can be at risk depending on how far a shift has occurred in plant composition toward blue grama, big sagebrush, and/or cheatgrass. The watershed is usually functioning. However, it can become at risk when blue grama sod, and/or bare ground increases. Transitional pathways leading to other plant communities are as follows: • Brush control followed by prescribed grazing, will result in a plant community very similar to the Historic Climax Plant Community. • Brush management followed by frequent and severe grazing, will result in a Blue grama/ Plains Pricklypear Plant Community.

Figure 5. Plant community growth curve (percent production by month). WY1601, 15-19BL Upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			5	20	40	15	5	10	5		

State 4
Blue grama Sod Plains Pricklypear

Community 4.1
Blue grama Sod Plains Pricklypear

Blue Grama Sod/Plains Pricklypear Plant Community This plant community is the result of frequent and severe grazing. It is dominated by a dense sod of blue grama and pricklypear cactus that covers up to 90% of the soil surface. Pricklypear cactus can become dense enough so that livestock cannot graze forage growing within the cactus clumps. The total annual production (air-dry weight) of this state is about 800 pounds per acre, but it can

range from about 600 lbs/acre in unfavorable years to about 1100 lbs/acre in above average years. When the historic climax plant community is replaced by warm season grass dominated communities grass production is reduced. The sod formed by these grasses is resistant to water infiltration. While the soil is protected by this sod, off-site areas are affected by excessive runoff which may cause gully erosion. This sod is resistant to change and may require practices such as range renovation to return to a cool season grass community. The following is the growth curve expected during a normal year: Growth curve number: WY1601 Growth curve name: 15-19BL, Upland Sites Growth curve description: All Upland Sites JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 0 0 0 5 20 40 15 5 10 5 0 0 (monthly percentages of total annual growth) This state is stable and protected from excessive erosion. The biotic integrity of this plant community is not intact. The watershed is usually functioning, although runoff may affect adjoining sites. However, it can become at risk when bare ground increases. Transitional pathways leading to other plant communities are as follows: • Grazing land mechanical treatment (chiseling, etc.) and pricklypear cactus control (if needed) followed by prescribed grazing will return this plant community to near Historic Climax Plant Community.

Figure 6. Plant community growth curve (percent production by month). WY1601, 15-19BL Upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			5	20	40	15	5	10	5		

State 5
Go-Back Land

Community 5.1
Go-Back Land

Go-back Land This plant community occurs on land that has been cropped annually in the past and then abandoned without reseeding. Natural succession has resulted in a plant community dominated by varying combinations of red threeawn, cheatgrass, blue grama, Sandberg bluegrass, and some rhizomatous wheatgrasses. Forage production is low and grasses such as red threeawn and cheatgrass are not used efficiently by livestock. The total annual production (air-dry weight) of this state is about 700 pounds per acre, but it can range from about 500 lbs/acre in unfavorable years to about 900 lbs/acre in above average years. Growth curve description: Too variable to estimate The potential for accelerated erosion can be highly variable depending on amount of bare ground present. Biological diversity is low. Transitional pathways leading to other plant communities are as follows: • Prescribed grazing may increase desirable native cool season grass production. It may be difficult to return to near Historic Climax Plant Community condition, in a timely manner, because of past soil loss. • Grazing land mechanical treatment (chiseling, etc.) may improve forage production where significant rhizomatous wheatgrass is present to respond to the treatment. • Where there is a lack of perennial grass, reseeding to tame or native species may be necessary to return these lands to production in the form of pastureland. These pastures are normally seeded to crested wheatgrass, pubescent wheatgrass, or Russian wildrye. They require considerable investment to establish and have a variable life expectancy. The total annual production (air-dry weight) of these pastures is about 1900 pounds per acre, but it can range from about 1000 lbs/acre in unfavorable years to about 2500 lbs/acre in above average years. Introduced pastures do produce up to 50% more than native range, but their value as forage is somewhat limited due to the single species usually seeded.

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1				500–1000	
	green needlegrass	NAVI4	*Nassella viridula*	500–1000	–
2				400–600	
	western wheatgrass	PASM	*Pascopyrum smithii*	400–600	–
3				200–500	
	Columbia needlegrass	ACNE9	*Achnatherum nelsonii*	200–500	–
4				100–300	
	sideoats grama	BOCU	*Bouteloua curtipendula*	100–300	–
5				100–200	
	Richardson's needlegrass	ACRI8	*Achnatherum richardsonii*	100–200	–
6				100–200	
	big bluestem	ANGE	*Andropogon gerardii*	100–200	–
7				100–200	
	Cusick's bluegrass	POCU3	*Poa cusickii*	100–200	–
8				300–400	
	needleleaf sedge	CADU6	*Carex duriuscula*	0–110	–
	fowl bluegrass	POPA2	*Poa palustris*	0–100	–
	Sandberg bluegrass	POSE	*Poa secunda*	0–100	–
	little bluestem	SCSC	*Schizachyrium scoparium*	0–100	–
	Grass, perennial	2GP	*Grass, perennial*	0–100	–
	blue grama	BOGR2	*Bouteloua gracilis*	0–100	–
	hairy grama	BOHI2	*Bouteloua hirsuta*	0–100	–
Forb					
9				100–200	
	Forb, perennial	2FP	*Forb, perennial*	0–100	–
	yarrow	ACHIL	*Achillea*	0–100	–
	prairie clover	DALEA	*Dalea*	0–100	–
	fleabane	ERIGE2	*Erigeron*	0–100	–
	buckwheat	ERIOG	*Eriogonum*	0–100	–
	desertparsley	LOMAT	*Lomatium*	0–100	–
	bluebells	MERTE	*Mertensia*	0–100	–
	American vetch	VIAM	*Vicia americana*	0–100	–
Shrub/Vine					
10				0–100	
	big sagebrush	ARTR2	*Artemisia tridentata*	0–100	–
11				0–100	
	Shrub (>.5m)	2SHRUB	*Shrub (>.5m)*	0–100	–

Animal community

Animal Community – Wildlife Interpretations
Rhizomatous Wheatgrasses/ Green needlegrass Plant Community: The predominance of grasses in this plant community favors grazers and mixed-feeders, such as bison, elk, and antelope. Suitable thermal and escape cover

for deer may be limited due to the low quantities of woody plants. However, topographical variations could provide some escape cover. When found adjacent to sagebrush dominated states, this plant community may provide brood rearing/foraging areas for sage grouse, as well as lek sites. Other birds that would frequent this plant community include western meadowlarks, horned larks, and golden eagles. Many grassland obligate small mammals would occur here.

Heavy Sagebrush Plant Community: This plant community can provide important winter foraging for elk, mule deer and antelope, as sagebrush can approach 15% protein and 40-60% digestibility during that time. This community provides excellent escape and thermal cover for large ungulates, as well as nesting and brood rearing habitat for sage grouse.

Mixed Sagebrush/Grass Plant Community: The combination of an overstory of sagebrush and an understory of grasses and forbs provides a very diverse plant community for wildlife. The crowns of sagebrush tend to break up hard crusted snow on winter ranges, so mule deer and antelope may use this state for foraging and cover year-round, as would cottontail and jack rabbits. It provides important winter, nesting, brood-rearing, and foraging habitat for sage grouse. Brewer's sparrows nest in big sagebrush plants, and a host of other nesting birds utilize stands in the 20-30% cover range.

Blue Grama Sod/Plains Pricklypear Plant Community: These communities provide limited foraging for antelope and other grazers. They may be used as a foraging site by sage grouse if proximal to woody cover and if the Historic Climax Plant Community or the Mixed sagebrush/Grass Plant Community are limiting. Generally, these are not target plant communities for wildlife habitat management.

Go-back Land: These communities provide limited foraging for antelope and other grazers. They may be used as a foraging site by sage grouse if proximal to woody cover and if the Historic Climax Plant Community or the Mixed sagebrush/Grass Plant Community are limiting. Generally, these are not target plant communities for wildlife habitat management.

Introduced Pasture: These communities are highly variable depending on the species planted. Refer to Forage Suitability Groups for more information.

Animal Community – Grazing Interpretations

The following table lists suggested stocking rates for cattle under continuous season-long grazing under normal growing conditions. 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. If distribution problems occur, stocking rates must be reduced to maintain plant health and vigor.

Plant Community	Production (Lbs/acre)	Carrying Capacity* (AUM/acre)
Historic Climax Plant Community	1400-2900	.5
Heavy Sagebrush	900-1500	.33
Blue Grama Sod/Plains Pricklypear	600-1100	.25
Mixed Sagebrush/Grass	900-1500	.4
Go-back Land	500- 900	.2
Introduced Pasture	1000-2500	1.0

* - Continuous, season-long grazing by cattle under average growing conditions.

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage for cattle, sheep, or horses. During the dormant period, the forage for livestock use needs to be supplemented with protein because the quality does not meet minimum livestock requirements.

Hydrological functions

Hydrology Functions
Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group C, with localized areas in hydrologic group D. Infiltration ranges from slow to moderately slow. Runoff potential for this site varies from moderate to high depending on soil hydrologic group and 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 Part 630, NRCS National Engineering Handbook for detailed hydrologic information).

Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses. Litter typically falls in place, and signs of movement are not common. Chemical and physical crusts are rare to non-existent. Cryptogamic crusts are present, but only cover 1-2% of the soil surface.

Recreational uses

This site provides hunting opportunities for upland game species. The wide variety of plants which 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

Inventory data references

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel were also used. Other sources used as references include: USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

Contributors

G. Mitchell

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	04/01/2005
Approved by	E. Bainter
Approval date	

Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills should not be present

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2. **Presence of water flow patterns:** Barely observable

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3. **Number and height of erosional pedestals or terracettes:** Essentially non-existent

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is 15-25% occurring in small areas throughout site

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5. **Number of gullies and erosion associated with gullies:** Active gullies should not be present

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6. **Extent of wind scoured, blowouts and/or depositional areas:** None

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7. **Amount of litter movement (describe size and distance expected to travel):** Little to no plant litter movement. Plant litter remains in place and is not moved by erosional forces.

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Plant cover and litter is at 75% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 5 or greater.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Use Soil Series description for depth and color of A-horizon

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Grass canopy and basal cover should reduce raindrop impact and slow overland flow providing increased time for infiltration to occur. Healthy deep rooted native grasses enhance infiltration and reduce runoff. Infiltration is Slow.

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** No compaction layer or soil surface crusting should be present.

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant:

Sub-dominant:

Other:

Additional: Mid stature Cool Season Bunch Grasses > Mid stature Warm Season Grasses > Mid stature Cool Season Rhizomatous Grasses > Short stature Grasses/grasslikes > Forbs > Shrubs

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very Low

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14. **Average percent litter cover (%) and depth (in):** Average litter cover is 30-40% with depths of 0.5 to 1.0 inches

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 2000 lbs/ac

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** Blue grama, Big sagebrush, Fringed sagewort, Prickly Pear, and Species found on Noxious Weed List

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17. **Perennial plant reproductive capability:** All species are capable of reproducing

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