

# Ecological site R049XA108WY Coarse Upland (Foothills and Mountains Southeast)

Accessed: 05/06/2024

## 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.

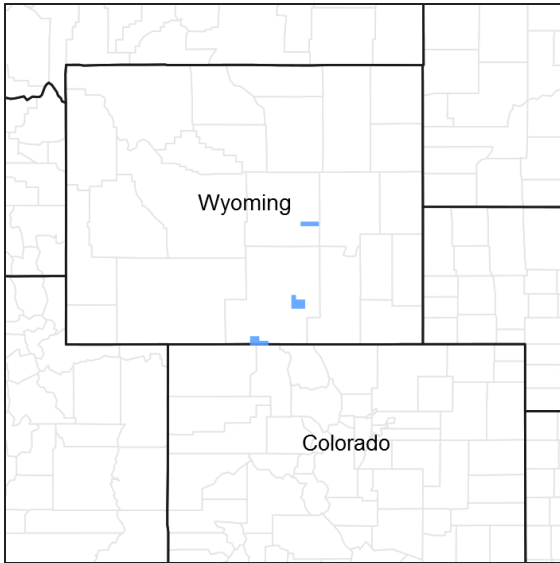


Figure 1. Mapped extent

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

R049XA122WY	<b>Loamy (Foothills and Mountains Southeast)</b> Loamy
R049XA162WY	<b>Shallow Loamy (Foothills and Mountains Southeast)</b> Shallow Loamy

## Similar sites

R049XA122WY	<b>Loamy (Foothills and Mountains Southeast)</b> Loamy, 049XA122WY has higher production
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

## Physiographic features

This site occurs in an upland position on terraces or glacial moraines, and may occur on all slopes.

**Table 2. Representative physiographic features**

Landforms	(1) Hill (2) Stream terrace
Flooding frequency	None
Ponding frequency	None
Elevation	1,981–2,591 m
Slope	0–50%
Ponding depth	0 cm
Aspect	Aspect is not a significant factor

## 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.

Prevailing winds are from the southwest and 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 May 1 and continues to about August 1.

The following information is from the “Hecla 1E” climate station:

Minimum Maximum 5 yrs. out of 10 between  
 Frost-free period (days): 93 151 May 20 – September 14  
 Freeze-free period (days): 106 184 May 9 – September 26  
 Annual Precipitation (inches): 9.56 24.23

Mean annual precipitation: 16.04 inches

Mean annual air temperature: 44.7F (32.1F Avg. Min. to 57.2F 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 “Glenrock 14 SSE”, “Foxpark” and “Horse Creek 2 NW”.

**Table 3. Representative climatic features**

Frost-free period (average)	151 days
Freeze-free period (average)	184 days
Precipitation total (average)	483 mm

## Influencing water features

### Soil features

The soils of this site are deep, well-drained soils on glacial moraines and adjacent alluvium. They contain at least 35 percent by volume coarse fragments in the top 20 inches but typically have more than 50 percent. The volume of coarse fragments generally increases with depth. These stony, and/or bouldery soils occur as terraces, fan terraces, or glacial moraines.

Major Soil Series correlated to this site includes:

**Table 4. Representative soil features**

Surface texture	(1) Very stony sandy loam (2) Very cobbly fine sandy loam (3) Cobbly
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate to moderately rapid
Soil depth	102–152 cm
Surface fragment cover <=3"	0–30%
Surface fragment cover >3"	25–60%
Available water capacity (0-101.6cm)	8.89–11.43 cm
Calcium carbonate equivalent (0-101.6cm)	0–5%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	5.6–7.2
Subsurface fragment volume <=3" (Depth not specified)	10–40%
Subsurface fragment volume >3" (Depth not specified)	20–50%

## Ecological dynamics

As this site deteriorates because of a combination of frequent and severe grazing, species such as Sandberg bluegrass, threadleaf sedge, threetip sagebrush and big sagebrush will increase. Grasses such as bluebunch wheatgrass will decrease in frequency and production.

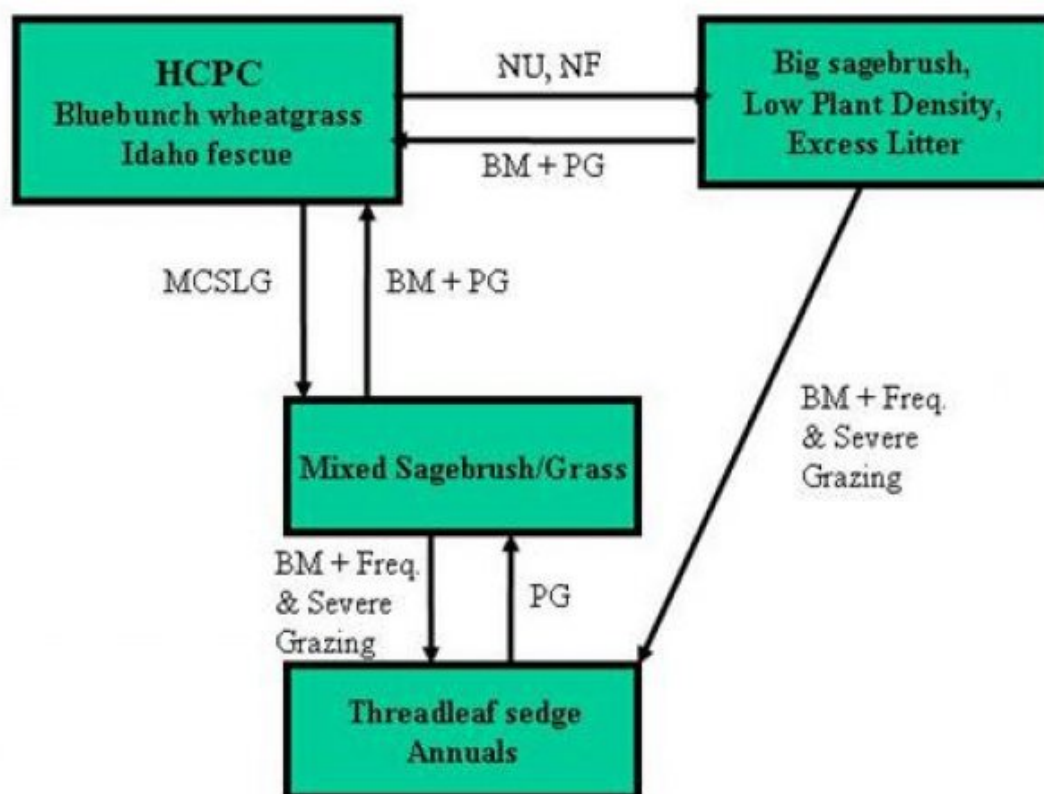
Big sagebrush may become dominant on some areas with an absence of fire. Wildfires are actively controlled in recent times so chemical control using herbicides has replaced the historic role of fire on this site. Recently, prescribed burning has regained some popularity.

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.

## State and transition model



BM - Brush Management (fire, chemical, mechanical, biological)  
 Freq. & Severe Grazing - Frequent and Severe Utilization of the Cool-season Mid-grasses during the Growing Season  
 LTPG - Long-term 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)

## State 1

### Bluebunch wheatgrass, Idaho fescue Plant Community

#### Community 1.1

##### Bluebunch wheatgrass, Idaho fescue Plant Community

This plant community is the interpretive plant community for this site and is considered to be the Historic Climax Plant Community (HCPC). This plant community evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. This plant community can be found on areas that are properly managed with grazing and/or prescribed burning, and sometimes on areas receiving occasional short periods of rest. The potential vegetation is about 75% grasses or grass-like plants, 15% forbs, and 10% woody plants. The major grasses include bluebunch wheatgrass, Idaho fescue, prairie junegrass and western wheatgrass. Other grasses occurring on the state include threadleaf sedge, Sandberg bluegrass, big bluegrass and Columbia needlegrass. A variety of forbs also occur. Big sagebrush is a conspicuous element of this state. Plant diversity is high. The total annual production (air-dry weight) of this state is about 1,300 lbs./acre, but it can range from about 800 lbs./acre in unfavorable years to about 1,700 lbs./acre in above average years. The following is the growth curve of this plant community expected during a normal year: Growth curve number: Growth curve name: Growth curve description: JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 0 0 0 5 20 45 20 5 5 0 0 0 (Monthly percentages of total annual growth) This plant community is extremely stable and well adapted to the climatic conditions. The diversity in plant species allows for high drought tolerance. 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: • No use and no fire for 20 years or more will convert this plant community to the Big sagebrush, Low Plant Density, Excess Litter Plant Community. • Moderate, continuous season-long grazing will convert the plant community to the Mixed Sagebrush/Grass Plant Community.

Figure 4. Plant community growth curve (percent production by month). WY1001, 15-19SE upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	45	20	5	5	0	0	0

## State 2

### Mixed Sagebrush/Grass Plant Community

#### Community 2.1

##### Mixed Sagebrush/Grass Plant Community

Historically, this plant community evolved under grazing and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock in the absence of fire or brush management. 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 annual cool-season grasses, and miscellaneous forbs. Dominant grasses include western wheatgrass, Letterman needlegrass and Sandberg bluegrass. Forbs commonly found in this plant community include Hoods phlox and western yarrow. Sagebrush canopy ranges from 20% to 30%. When compared to the Historic Climax Plant Community, big sagebrush has increased. Production of cool-season grasses has been reduced. The cool-season mid-grasses are protected by the sagebrush canopy, but this protection makes them unavailable for grazing. Cheatgrass (downy brome) can invade the state. The overstory of sagebrush and understory of grass and forbs provide a diverse plant community that will support domestic livestock and wildlife such as mule deer and antelope. The total annual production (air-dry weight) of this state is about 1000 pounds per acre, but it can range from about 700 lbs./acre in unfavorable years to about 1200 lbs./acre in above average years. The following is the growth curve of this plant community expected during a normal year: Growth curve number: Growth curve name: Growth curve description: JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 0 0 0 5 20 45 20 5 5 0 0 0 (Monthly percentages of total annual growth) This plant community is resistant to change. A significant reduction of big sagebrush can only be accomplished through fire or brush management. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component is intact, it tends to be resilient if the disturbance is not long-term. Transitions or pathways leading to other plant communities are as follows: • Brush management (chemical, fire, or mechanical), followed by prescribed grazing, will convert this plant community to the Bluebunch wheatgrass,

Idaho fescue Plant Community. The probability of this occurring is high. When prescribed fire is used, sufficient fine fuels will need to be present. This may require deferment from grazing prior to treatment. Post management is critical to ensure success. This can range from two or more years of rest to partial growing season deferment, depending on the condition of the understory at the time of treatment and the growing conditions following treatment. In the case of an intense wildfire that occurs when desirable plants are not completely dormant, the length of time required to reach the Bluebunch wheatgrass, Idaho fescue Plant Community may be increased. • Brush management, followed by frequent and severe grazing, will convert the plant community to the Threadleaf sedge, Annuals Plant Community. The probability of this occurring is high. If bare areas exist after treatment, along with no recovery periods from grazing, cheatgrass will invade and plants not as resistant to grazing will be reduced.

**Figure 5. Plant community growth curve (percent production by month). WY1001, 15-19SE upland sites.**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	45	20	5	5	0	0	0

### State 3

#### Big Sagebrush, Low Plant Density, Excess Litter Plant Community

##### Community 3.1

#### Big Sagebrush, Low Plant Density, Excess Litter Plant Community

This plant community is the result of long-term protection from grazing and fire. Big sagebrush eventually dominates this plant community with canopy cover often exceeding 60%. At first, excessive litter builds up shading out some of the grasses and forbs. Other plants become decadent with low vigor. Bunch grasses often develop dead centers. Eventually, the interspaces between plants increase in size leaving more soil surface exposed. Organic matter oxidizes in the air rather than being incorporated into the soil. The dominant plants tend to be somewhat similar to those found in the Historic Climax Plant Community. Weedy species, cool-season grasses, and sedges have increased. Rodent activity has resulted in an increase in soil disturbance. Noxious weeds may invade the state if a seed source is present. Plant diversity is moderate to high. The total annual production (air-dry weight) of this state is about 1100 pounds per acre, but it can range from about 800 lbs./acre in unfavorable years to about 1,300 lbs./acre in above average years. The following is the growth curve of the plant community expected during a normal year: Growth curve number: Growth curve name: Growth curve description: JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 0 0 0 5 20 45 20 5 5 0 0 0 (Monthly percentages of total annual growth) This plant community is not resistant to change and is more vulnerable to severe disturbance than the HCPC. The introduction of grazing or fire quickly changes the plant community. Soil erosion is accelerated because of increased bare ground. Water flow patterns and pedestaling are obvious. Infiltration is reduced and runoff is increased. Transitions or pathways leading to other plant communities are as follows: • Brush management, followed by prescribed grazing, will return this plant community to at or near the Bluebunch wheatgrass, Idaho fescue Plant Community. • Brush management, followed by frequent and severe grazing, will convert the plant community to the Threadleaf sedge, Annuals Plant Community. The probability of this occurring is high because of the amount of bare ground exposed to cheatgrass invasion.

**Figure 6. Plant community growth curve (percent production by month). WY1001, 15-19SE upland sites.**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	45	20	5	5	0	0	0

### State 4

#### Threadleaf sedge, Annuals Plant Community

##### Community 4.1

#### Threadleaf sedge, Annuals Plant Community

This plant community is created when the Mixed Sagebrush/Grass Plant Community or the Heavy Sagebrush Plant Community is subjected to fire or brush management not followed by prescribed grazing. Threadleaf sedge and annuals will dominate the state. Compared to the HCPC, annuals have increased. Virtually all cool-season mid-

grasses are severely decreased. Plant diversity is low. 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. The following is the growth curve of the plant community expected during a normal year: Growth curve number: Growth curve name: Growth curve description: JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 0 0 0 5 20 45 20 5 5 0 0 0 (Monthly percentages of total annual growth) This plant community is relatively stable and somewhat resistant to overgrazing. The annuals effectively compete against the establishment of perennial cool-season grasses. An increase in bare ground reduces water infiltration and increases soil erosion. The watershed is usually functioning. The biotic integrity is reduced by the lack of diversity in the plant community. Transitions or pathways leading to other plant communities are as follows: • Prescribed grazing will eventually return this plant community to the Mixed Sagebrush/Grass Plant Community. • Long-term, prescribed grazing will eventually return this plant community to at or near the Bluebunch wheatgrass, Idaho fescue Plant Community.

Figure 7. Plant community growth curve (percent production by month). WY1001, 15-19SE upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	45	20	5	5	0	0	0

## Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1				510–1020	
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	291–437	–
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	146–291	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	15–146	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	73–146	–
2				291–437	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–73	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	0–73	–
	Letterman's needlegrass	ACLE9	<i>Achnatherum lettermanii</i>	0–73	–
	mountain brome	BRMA4	<i>Bromus marginatus</i>	0–73	–
	threadleaf sedge	CAFI	<i>Carex filifolia</i>	0–73	–
	plains reedgrass	CAMO	<i>Calamagrostis montanensis</i>	0–73	–
	Parry's oatgrass	DAPA2	<i>Danthonia parryi</i>	0–73	–
	Montana wheatgrass	ELAL7	<i>Elymus albicans</i>	0–73	–
	squirreletail	ELELE	<i>Elymus elymoides ssp. elymoides</i>	0–73	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	0–73	–
	spike fescue	LEKI2	<i>Leucopoa kingii</i>	0–73	–
	slimstem muhly	MUFI	<i>Muhlenbergia filiculmis</i>	0–73	–
	mountain muhly	MUMO	<i>Muhlenbergia montana</i>	0–73	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–73	–
	spike trisetum	TRSP2	<i>Trisetum spicatum</i>	0–73	–
<b>Forb</b>					
3				146–219	
	Forb, perennial	2EP	<i>Forb, perennial</i>	0–73	–



Plant Name	Code	Scientific Name	Height	Notes
yarrow	ACHIL	<i>Achillea</i>	0-73	-
textile onion	ALTE	<i>Allium textile</i>	0-73	-
prairie sagewort	ARFR4	<i>Artemisia frigida</i>	0-73	-
Indian paintbrush	CASTI2	<i>Castilleja</i>	0-73	-
larkspur	DELPH	<i>Delphinium</i>	0-73	-
beardtongue	PENST	<i>Penstemon</i>	0-73	-
spiny phlox	PHHO	<i>Phlox hoodii</i>	0-73	-
scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	0-73	-
clover	TRIFO	<i>Trifolium</i>	0-73	-
<b>Shrub/Vine</b>				
4			146-219	
Saskatoon serviceberry	AMAL2	<i>Amelanchier alnifolia</i>	0-73	-
big sagebrush	ARTR2	<i>Artemisia tridentata</i>	0-73	-
threetip sagebrush	ARTR4	<i>Artemisia tripartita</i>	0-73	-
yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	0-73	-
winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	0-73	-
antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	0-73	-

## Animal community

### Animal Community – Wildlife Interpretations

Bluebunch wheatgrass, Idaho fescue Plant Community (HCPC): The predominance of grasses in this plant community favors grazers and mixed-feeders, such as bison and elk. 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. Birds that would frequent this plant community include Western meadowlarks, horned larks, and golden eagles. Many grassland obligate small mammals would occur here.

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

Big sagebrush, Low Plant Density, Excess Litter Plant Community: This plant community can provide important winter foraging for elk and mule deer, as sagebrush can approach 15% protein and 40-60% digestibility during that time.

Threadleaf sedge, Annuals Plant Community: This plant community may be useful for the same large grazers that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals

### 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 Carrying Capacity\*

(lb./ac) (AUM/ac)

Bluebunch wheatgrass, Idaho fescue 1300 .4

Big sagebrush, Low Plant Density, Excess Litter 1100 .35

Mixed Sagebrush/Grass 1000 .3

Threadleaf sedge, Annuals 800 .2

\* - 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

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group B and C, with localized areas in hydrologic group D. Infiltration and 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. However, the exception would be where short-grasses form a strong sod and dominate the site – in these areas, runoff would be increased and infiltration decreased because of the dense growth. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Section 4, NRCS National Engineering Handbook for runoff quantities and hydrologic curves).

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 such as bluebunch wheatgrass. 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

Inventory Data References (narrative)

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel was also used.

Inventory Data References

Data Source Number of Records Sample Period State County

SCS-RANGE-417 24 1963 -1987 WY Albany & others

## Other references

Other sources used as references include: High Plains Regional Climate Center, USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

## 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	03/01/2005
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
- 

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

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

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is 30-40% occurring in small areas throughout site
- 

5. **Number of gullies and erosion associated with gullies:** Active gullies should be restricted to areas of concentrated water flow patterns on steeper slopes
- 

6. **Extent of wind scoured, blowouts and/or depositional areas:** Small scoured sites may be observed
- 

7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement is little to none based on topography and water flow patterns
- 

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 50% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 4 or greater.
- 

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. Infiltration is moderate.
- 

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.
- 

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 Grasses > 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
- 

14. **Average percent litter cover (%) and depth ( in):** Average litter cover is 15-25% with depths of 0.25 to 0.5 inches
- 

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 1300 lbs/ac
- 

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:** Threadleaf sedge, Sagebrush species, Species found on Noxious Weed List
- 

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