

## United States Department of Agriculture Natural Resources Conservation Service

### Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Shallow Loamy (SwLy) 15-19” Foothills & Mountains Southeast Precipitation Zone,

**Site ID:** 049XA162WY

**Major Land Resource Area:** 49XA - Southern Rocky Mountain Foothills, northern part

### Physiographic Features

This site usually occurs on steep slopes and ridge tops but may occur on all slopes.

**Landform:** Hill sides, ridges and escarpments

**Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	6500	8500
<b>Slope (percent):</b>	0	60
<b>Water Table Depth (inches):</b>	None within 60 inches	
<b>Flooding:</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Ponding:</b>		
<b>Depth (inches):</b>	0	0
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	negligible	high

### 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:

Site Type: Rangeland  
 MLRA: 49XA – Southern Rocky Mountain Foothills, northern part

**Shallow Loamy 15-19" P.Z.  
 R049XA162WY**

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

Mean annual precipitation: 16.04 inches

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

## Influencing Water Features

<b>Wetland Description:</b>	<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 shallow (less than 20" to bedrock) well-drained soils formed in alluvium over residuum or residuum. These soils have moderate permeability and may occur on all slopes. The bedrock may be any kind which is virtually impenetrable to plant roots, except igneous. The surface soil will have one or more of the following textures: very fine sandy loam, loam, silt loam, sandy clay loam, silty clay loam, and clay loam. Thin ineffectual layers of other textures are disregarded. Layers of the soil most influential to the plant community vary from 3 to 6 inches thick.

Major Soil Series correlated to this site includes:

Other Soil Series correlated to this site include:

**Parent Material Kind:** residuum, alluvium

**Parent Material Origin:** sandstone, shale

**Surface Texture:** loam, silt loam, clay loam, very fine sandy loam

**Surface Texture Modifier:** none

**Subsurface Texture Group:** loam

**Surface Fragments ≤ 3" (% Cover):** 0 to 10

**Surface Fragments > 3" (%Cover):** 0 to 20

**Subsurface Fragments ≤ 3" (% Volume):** 0 to 15

**Subsurface Fragments > 3" (% Volume):** 0

	<u>Minimum</u>	<u>Maximum</u>
<b>Drainage Class:</b>	well	well
<b>Permeability Class:</b>	moderate	moderately rapid
<b>Depth (inches):</b>	10	20
<b>Electrical Conductivity (mmhos/cm) ≤20":</b>	0	4
<b>Sodium Absorption Ratio ≤20":</b>	0	5
<b>Soil Reaction (1:1 Water) ≤20":</b>	6.6	8.4
<b>Soil Reaction (0.1M CaCl2) ≤20":</b>	NA	NA
<b>Available Water Capacity (inches) ≤30":</b>	1.1	4.2
<b>Calcium Carbonate Equivalent (percent) ≤20":</b>	0	5

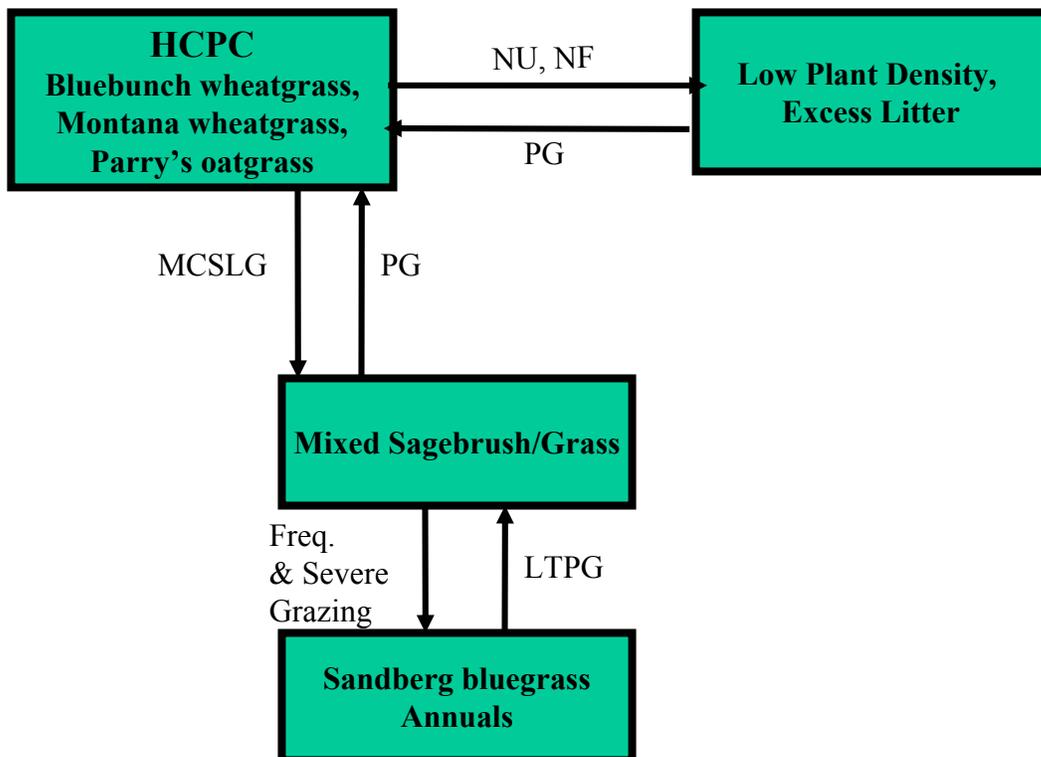
## **Plant Communities**

### **Ecological Dynamics of the Site:**

As this site deteriorates because of a combination of frequent and severe grazing, species such as Sandberg bluegrass, threadleaf sedge, prairie junegrass, and onespoke oatgrass will increase. Grasses such as bluebunch wheatgrass, Montana wheatgrass, and Parry's oatgrass will decrease in frequency and production.

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.



**Freq. & Severe Grazing** - Frequent and Severe Utilization of the Cool-season Mid-grasses during the Growing Season

**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)

**Plant Community Composition and Group Annual Production**  
**Reference Plant Community (HCPC)**

COMMON NAME/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Annual Production (Normal Year)		
			Group	lbs./acre	% Comp.
			<b>Total: 1100</b>		
<b>GRASSES AND GRASS-LIKES</b>					
<b>GRASSES/GRASSLIKES</b>			<b>1</b>	<b>385 - 715</b>	<b>35 - 65</b>
bluebunch wheatgrass	Pseudoroegneria spicata	PSSP6	1	220 - 385	20 - 35
Montana wheatgrass	Elymus albicans	ELAL7	1	55 - 165	5 - 15
Parry's oatgrass	Danthonia parryii	DAPA2	1	55 - 165	5 - 15
<b>MISC. GRASSES/GRASSLIKES</b>			<b>2</b>	<b>275 - 495</b>	<b>25 - 45</b>
big bluegrass	Poa ampla (syn. P. secunda)	POAM (POSE)	2	0 - 55	0 - 5
Canby bluegrass	Poa canbyi (syn. P. secunda)	POCA (POSE)	2	0 - 55	0 - 5
Columbia needlegrass	Achnatherum nelsonii	ACNE3	2	0 - 55	0 - 5
Idaho fescue	Festuca idahoensis	FEID	2	0 - 55	0 - 5
Indian ricegrass	Achnatherum hymenoides	ACHY	2	0 - 55	0 - 5
mountain muhly	Muhlenbergia montana	MUMO	2	0 - 55	0 - 5
needleandthread	Hesperostipa comata	HECO26	2	0 - 55	0 - 5
onespike oatgrass	Danthonia unispicata	DAUN	2	0 - 55	0 - 5
prairie junegrass	Koeleria macrantha	KOMA	2	0 - 55	0 - 5
Sandberg bluegrass	Poa secunda	POSE	2	0 - 55	0 - 5
slimstem muhly	Muhlenbergia filiculmis	MUFI	2	0 - 55	0 - 5
spike fescue	Leucopoa kingii	LEK12	2	0 - 55	0 - 5
spike trisetum	Trisetum spicatum	TRSP2	2	0 - 55	0 - 5
threadleaf sedge	Carex filifolia	CAFI	2	0 - 55	0 - 5
other perennial grasses (native)		2GP	2	0 - 55	0 - 5
<b>FORBS</b>			<b>3</b>	<b>55 - 165</b>	<b>5 - 15</b>
Hoods phlox	Phlox hoodii	PHHO	3	0 - 55	0 - 5
larkspurs	Delphinium spp.	DELPH	3	0 - 55	0 - 5
paintbrushes	Castilleja spp.	CAST	3	0 - 55	0 - 5
penstemons	Penstemon spp.	PENST	3	0 - 55	0 - 5
western yarrow	Achillea lanulosa	ACHIL	3	0 - 55	0 - 5
other perennial forbs (native)		2FP	3	0 - 55	0 - 5
<b>TREES/SHRUBS</b>			<b>4</b>	<b>55 - 110</b>	<b>5 - 10</b>
antelope bitterbrush	Purshia tridentata	PUTR2	4	0 - 55	0 - 5
big sagebrush	Artemisia tridentata	ARTR2	4	0 - 55	0 - 5
black sagebrush	Artemisia nova	ARNO4	4	0 - 55	0 - 5
green rabbitbrush	Chrysothamnus viscidiflorus	CHVI8	4	0 - 55	0 - 5
threetip sagebrush	Artemisia tripartita	ARTR4	4	0 - 55	0 - 5
other perennial shrubs (native)		2SHRUB	4	0 - 55	0 - 5

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.

**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.

**Bluebunch wheatgrass, Montana wheatgrass, Parry’s oatgrass 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 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, Montana wheatgrass and Parry’s oatgrass. Other grasses occurring on the state include threadleaf sedge, Idaho fescue, Sandberg bluegrass, big bluegrass and Columbia needlegrass. A variety of forbs also occur. Sagebrushes can be a conspicuous element of this state. Plant diversity is high.

The total annual production (air-dry weight) of this state is about 1,100 lbs./acre, but it can range from about 800 lbs./acre in unfavorable years to about 1,400 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 *Low Plant Density, Excess Litter Plant Community*.
- Moderate, continuous season-long grazing will convert the plant community to the *Mixed Sagebrush/Grass Plant Community*.

### 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. 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 needleandthread, western wheatgrass, and Sandberg bluegrass. Forbs commonly found in this plant community include Hoods phlox and western yarrow.

When compared to the Historic Climax Plant Community, sagebrushes have increased but do not produce the thick canopy cover found on sites with moderately deep to deep soils. 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 mixture of sagebrush, 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 800 pounds per acre, but it can range from about 600 lbs./acre in unfavorable years to about 1000 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. 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:

- Prescribed grazing, will convert this plant community to the *Bluebunch wheatgrass, Montana wheatgrass, Parry's oatgrass Plant Community*. The probability of this occurring is high.
- Frequent and severe grazing, will convert the plant community to the *Sandberg bluegrass, Annuals Plant Community*. The probability of this occurring is high. If bare areas exist, along with no recovery periods from grazing, annuals can invade and plants not as resistant to grazing will be reduced.

### Low Plant Density, Excess Litter Plant Community

This plant community is the result of long-term protection from grazing and fire. 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 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 1000 pounds per acre, but it can range from about 700 lbs./acre in unfavorable years to about 1,200 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 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:

- Prescribed grazing, will return this plant community to at or near the *Bluebunch wheatgrass*, *Montana wheatgrass*, *Parry's oatgrass Plant Community*.

### **Sandberg bluegrass, Annuals Plant Community**

This plant community is created when the Mixed Sagebrush/Grass Plant Community is subjected to frequent and severe grazing. Sandberg bluegrass, 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 600 pounds per acre, but it can range from about 400 lbs./acre in unfavorable years to about 800 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, Montana wheatgrass, Parry's oatgrass Plant Community*.

## Ecological Site Interpretations

### Animal Community – Wildlife Interpretations

**Bluebunch wheatgrass, Montana wheatgrass, Parry's oatgrass Plant Community (HCPC):** 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. 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 and antelope 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.

**Low Plant Density, Excess Litter 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.

**Sandberg bluegrass, 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 Preferences (Quarterly - 1,2,3,4) for commonly occurring plants in MLRA 49XA, 15-19 inch Foothills & Mtns. Southeast**

COMMON NAME/	SCIENTIFIC NAME	SCI. SYMBOL	Cattle	Sheep	Horses	Mule Deer	Antelope
<b>GRASSES/GRASSLIKES</b>							
Baltic rush	Juncus balticus	JUBA	DDDD	UUUU	DDDD	UUUU	UUUU
basin wildrye	Leymus cinereus	LECI4	PPPP	PPPP	PPPP	DDDD	DDDD
big bluegrass	Poa ampla (syn. to Poa secunda)	POAM (POSE)	PPPP	PPPP	PPPP	DDDD	DDDD
blue grama	Bouteloua gracilis	BOGR2	DDDD	DDDD	DDDD	DDDD	DDDD
bluebunch wheatgrass	Pseudoroegneria spicata	PSP6	PPPP	PPPP	PPPP	DDDD	DDDD
bluejoint reedgrass	Calamagrostis canadensis	CACA4	PPPP	DDDD	PPPP	UUUU	UUUU
Canada wildrye	Elymus canadensis	ELCA4	PPPP	PPPP	PPPP	DDDD	DDDD
Canby bluegrass	Poa canbyi (syn. to Poa secunda)	POCA (POSE)	PPPP	PPPP	PPPP	PPPP	PPPP
Columbia needlegrass	Achnatherum nelsonii	ACNE3	PPPP	PPPP	DDDD	DDDD	DDDD
Fendler's threeawn	Aristida purpurea var. fendleriana	ARPUF	UUUU	UUUU	UUUU	UUUU	UUUU
golden sedge	Carex aurea	CAAU3	DDDD	DDDD	DDDD	UUUU	UUUU
Idaho fescue	Festuca idahoensis	FEID	PPPP	PPPP	PPPP	PPPP	PPPP
Idian ricegrass	Achnatherum hymenoides	ACHY	PPPP	PPPP	PPPP	PPPP	PPPP
Letterman needlegrass	Achnatherum lettermanii	ACLE9	PPPP	PPPP	DDDD	DDDD	DDDD
mat muhly	Muhlenbergia richardsonis	MURI	UUUU	UUUU	UUUU	UUUU	UUUU
Montana wheatgrass	Elymus alibicus	ELAL7	DDDD	DDDD	DDDD	DDDD	DDDD
mountain brome	Bromus marginatus	BRMA4	PPPP	PPPP	DDDD	DDDD	UUUU
mountain muhly	Muhlenbergia montana	MUMO	DDDD	DDDD	DDDD	DDDD	UUUU
muttongrass	Poa fendleriana	POFE	PPPP	PPPP	PPPP	PPPP	PPPP
Nebraska sedge	Carex nebraskensis	CANE2	PPPP	PPPP	PPPP	DDDD	DDDD
needleandthread	Hesperostipa comata	HECO26	PPPP	PPPP	PPPP	PPPP	PPPP
nodding brome	Bromus anomalus (syn. B. porteri)	BRAN13 (BRPO2)	PPPP	PPPP	DDDD	DDDD	UUUU
northern reedgrass	Calamagrostis stricta	CAS113	PPPP	DDDD	PPPP	UUUU	UUUU
onespike oatgrass	Danthonia unispicata	DAUN	DDDD	PPPP	DDDD	PPPP	DDDD
Parry's oatgrass	Danthonia parryii	DAPA2	DDDD	PPPP	DDDD	DDDD	DDDD
plains reedgrass	Calamagrostis montanensis	CAMO	DDDD	DDDD	DDDD	DDDD	DDDD
prairie junegrass	Koeleria macrantha	KOMA	DDDD	DDDD	DDDD	DDDD	DDDD
Sandberg bluegrass	Poa secunda	POSE	DDDD	DDDD	DDDD	DDDD	DDDD
slender wheatgrass	Elymus trachycaulus	ELTR7	PPPP	DDDD	PPPP	DDDD	DDDD
slimstem muhly	Muhlenbergia filiculmis	MUFI	DDDD	DDDD	DDDD	UUUU	UUUU
slough sedge	Carex atherodes	CAAT2	DDDD	DDDD	DDDD	DDDD	DDDD
spike fescue	Leucopoa kingii	LEKI2	PPPP	DDDD	PPPP	PPPP	DDDD
spike sedge	Carex nardina	CANA2	DDDD	DDDD	DDDD	UUUU	UUUU
spike trisetum	Trisetum spicatum	TRSP2	PPPP	DDDD	PPPP	PPPP	DDDD
squirreltail	Elymus elymoides	ELELE	DDDD	DDDD	DDDD	UUUU	UUUU
tall mannagrass	Glyceria elata (syn. G. striata)	GLEL (GLST)	DDDD	UUUU	DDDD	UUUU	UUUU
threadleaf sedge	Carex filifolia	CAFI	DDDD	DDDD	DDDD	DDDD	PPPP
tufted hairgrass	Deschampsia caespitosa	DECA18	PPPP	PPPP	PPPP	DDDD	DDDD
western wheatgrass	Pascopyrum smithii	PASM	DDDD	DDDD	DDDD	DDDD	DDDD
<b>FORBS</b>							
American bistort	Polygonum bistortoides	POBI6	DDDD	DDDD	DDDD	DDDD	DDDD
arrowgrass	Triglochin spp.	TRIGL	T	T	T	T	T
biscuitroots	Lomatium spp.	LOMAT	DDDD	DDDD	UUUU	DDDD	DDDD
blue-eyed grass	Sisyrinchium spp.	SISYR	DDDD	PPPP	DDDD	DDDD	DDDD
buckwheats	Eriogonum spp.	ERIOG	UUUU	UUUU	UUUU	UUUU	UUUU
cinquefoils, herbaceous	Potentilla spp.	POTEN	UUUU	UUUU	UUUU	UUUU	UUUU
clovers	Trifolium spp.	TRIFO	PPPP	PPPP	PPPP	PPPP	PPPP
cutweed sagewort	Artemisia ludoviciana	ARLU	UUUU	UUUU	UUUU	UUUU	UUUU
fleabanes	Erigeron spp.	ERIGE2	DDDD	DDDD	DDDD	DDDD	DDDD
fringed sagewort	Artemisia frigida	ARFR4	UUUU	UUUU	UUUU	UUUU	UUUU
hairy goldenaster	Heterotheca villosa	HEVI4	UUUU	UUUU	UUUU	UUUU	UUUU
hawksbeard	Crepis acuminata	CRAC2	UUUU	PPPP	UUUU	DDDD	DDDD
Hoods phlox	Phlox hoodii	PHHO	UUUU	UUUU	UUUU	UUUU	UUUU
horsetails	Equisetum spp.	EQUIS	UUUU	UUUU	UUUU	UUUU	UUUU
iris	Iris spp.	IRIS	UUUU	UUUU	UUUU	UUUU	UUUU
larkspurs	Delphinium spp.	DELPH	T	T	T	T	T
lupines (toxic at certain times)	Lupinus spp.	LUPIN	DDDD	DDDD	DDDD	DDDD	DDDD
milkvetches	Astragalus	ASTRA	DDDD	DDDD	DDDD	DDDD	DDDD
paintbrushes	Castilleja spp.	CAST	DDDD	DDDD	DDDD	DDDD	DDDD
penstemons	Penstemon spp.	PENST	PPPP	PPPP	PPPP	PPPP	PPPP
rosy pussytoes	Antennaria rosea	ANRO2	UUUU	UUUU	UUUU	UUUU	UUUU
scarlet globemallow	Sphaeralcea coccinea	SPCO	DDDD	DDDD	DDDD	DDDD	DDDD
stonecrop	Sedum spp.	SEDUM	UUUU	UUUU	UUUU	UUUU	UUUU
violets	Viola spp.	VIOLA	DDDD	DDDD	DDDD	DDDD	DDDD
water hemlocks	Cicuta spp.	CICUT	T	T	T	T	T
waterleaf	Hydrophyllum	HYDRO4	DDDD	PPPP	DDDD	PPPP	DDDD
western yarrow	Achillea lanulosa	ACHIL	UUUU	UUUU	UUUU	UUUU	UUUU
<b>TREES, SHRUBS &amp; HALF-SHRUBS</b>							
Antelope bitterbrush	Purshia tridentata	PUTR2	PPPP	PPPP	DDDD	PPPP	PPPP
big sagebrush	Artemisia tridentata	ARTR2	UUUU	DDDD	UUUU	DDDD	DDDD
black sagebrush	Artemisia nova	ARNO4	UUUU	PPPP	UUUU	PPPP	PPPP
bog kalmia	Kalmia microphylla	KAMI	T	T	T	T	T
currant	Ribes spp.	RIBES	DDDD	DDDD	DDDD	PPPP	DDDD
junipers	Juniperus scopulorum	JUSC2	UUUU	UUUU	UUUU	DDDD	UUUU
green rabbitbrush	Chrysothamnus viscidiflorus	CHV18	DDDD	DDDD	DDDD	DDDD	DDDD
ponderosa pine (abortion in cattle)	Pinus ponderosa	PIPO	UUUU	UUUU	UUUU	UUUU	UUUU
rubber rabbitbrush	Ericameria nauseosa	ERNA10	UUUU	DDDD	UUUU	DDDD	DDDD
serviceberry	Amelanchier alnifolia	AMAL2	DDDD	PPPP	DDDD	PPPP	DDDD
shrubby cinquefoil	Dasiphora floribunda	DAFL3	UUUU	UUUU	UUUU	UUUU	UUUU
silver sagebrush	Artemisia cana	ARCA5	DDDD	DDDD	DDDD	PPPP	PPPP
snowbrush ceanothus	Ceanothus velutinus	CEVE	PPPP	DDDD	DDDD	DDDD	UUUU
threetip sagebrush	Artemisia tripartita	ARTR4	UUUU	DDDD	UUUU	UUUU	DDDD
true mountainmahogany	Cercocarpus montanus	CEMO2	DDDD	PPPP	DDDD	PPPP	DDDD
water birch	Betula occidentalis	BEOC2	UUUU	UUUU	UUUU	UUUU	UUUU
western snowberry	Symphoricarpos occidentalis	SYOC	UUUU	UUUU	UUUU	DDDD	UUUU
wildrose	Rosa woodsii var. woodsii	ROWOW	DDDD	DDDD	UUUU	DDDD	DDDD
willows	Salix L.	SALIX	PPPP	PPPP	DDDD	PPPP	UUUU
winterfat	Krascheninnikovia lanata	KRLA2	PPPP	PPPP	PPPP	PPPP	PPPP

**N = not used; U = undesirable; D = desirable; P = preferred; T = toxic**

## 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 (lb./ac)	Carrying Capacity* (AUM/ac)
Bluebunch & Montana wheatgrasses, Parry's oatgrass	1100	.5
Mixed Sagebrush/Grass	800	.25
Low Plant Density, Excess Litter	1000	.3
Sandberg bluegrass, Annuals	600	.15

\* - 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.

## Hydrology 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 ranges from moderate to moderately rapid. 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 hydrology 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 such as bluebunch wheatgrass. 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.

Site Type: Rangeland  
MLRA: 49XA – Southern Rocky Mountain Foothills, northern part

**Shallow Loamy 15-19" P.Z.  
R049XA162WY**

## Wood Products

No appreciable wood products are present on the site.

## Other Products

None noted.

## Supporting Information

### Associated Sites

Loamy 049XA122WY

### Similar Sites

Loamy, 049XA122WY has higher production

### 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

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
SCS-RANGE-417	24	1963 -1987	WY	Albany & others

### State Correlation

This site occurs entirely within Wyoming.

### Type Locality

### Field Offices

Wyoming: Baggs, Casper, Cheyenne, Douglas, Lander, Laramie, Riverton, Saratoga, and Wheatland

### Relationship to Other Established Classifications

### 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.

### Site Description Approval

\_\_\_\_\_  
State Range Management Specialist

\_\_\_\_\_  
Date

## Ecological Reference Worksheet

**Author(s)/participant(s):** \_\_\_\_\_  
**Contact for lead author:** \_\_\_\_\_ **Reference site used? Yes/No**  
**Date:** 3/05 **MLRA:** 49 **Ecological Site:** R049XA162WY Shallow Loamy (SwLy)

\_\_\_\_\_ This *must* be verified based on soils and climate (see Ecological Site Description). Current plant community *cannot* be used to identify the ecological site.

<p><b>Indicators.</b> For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for <b>each</b> community within the reference state, when appropriate &amp; (3) cite data. Continue descriptions on separate sheet.</p>
<p><b>1. Number and extent of rills:</b> Rills should not be present</p>
<p><b>2. Presence of water flow patterns:</b> Barely observable</p>
<p><b>3. Number and height of erosional pedestals or terracettes:</b> Essentially non-existent</p>
<p><b>4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are <i>not</i> bare ground):</b> Bare ground is 40-60% occurring in small areas throughout site</p>
<p><b>5. Number of gullies and erosion associated with gullies:</b> Active gullies should be restricted to areas of concentrated water flow patterns on steeper slopes</p>
<p><b>6. Extent of wind scoured, blowouts and/or depositional areas:</b> Small scoured sites may be observed</p>
<p><b>7. Amount of litter movement (describe size and distance expected to travel):</b> Litter movement is little to none based on topography and water flow patterns</p>
<p><b>8. Soil surface (top few mm) resistance to erosion (stability values are averages – most sites will show a range of values for both plant canopy and interspaces, if different):</b> 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.</p>
<p><b>9. Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness for both plant canopy and interspaces, if different):</b> Use Soil Series description for depth and color of A-horizon</p>
<p><b>10. Effect of plant community composition (relative proportion of different functional groups) &amp; spatial distribution on infiltration &amp; runoff:</b> Grass canopy and basal cover should reduce raindrop impact and slow overland flow providing increased time for infiltration to occur. Infiltration is moderate.</p>
<p><b>11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):</b> No compaction layer or soil surface crusting should be present.</p>
<p><b>12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: &gt;&gt;, &gt;, = to indicate much greater than, greater than, and equal to):</b> Mid stature Cool Season Grasses &gt; Short Grasses/Grasslikes &gt; Forbs &gt; Shrubs</p>
<p><b>13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):</b> Very Low</p>
<p><b>14. Average percent litter cover and depth :</b> Average litter cover is 15-25% with depths of 0.25 to 0.5 inches</p>
<p><b>15. Expected annual production (this is all above-ground production, not just forage production):</b> 1100 lbs/ac</p>
<p><b>16. Potential invasive (including noxious) species (native and non-native). List species which characterize degraded states and which, after a threshold is crossed, “can, and often do, continue to increase regardless of the management of the site and may eventually dominate the site”:</b> Threadleaf sedge, Sandberg bluegrass, Mat forming Forbs and Species found on Noxious Weed List</p>
<p><b>17. Perennial plant reproductive capability:</b> All species are capable of reproducing</p>