United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Lowland (LL) 15-19" Northern Plains Precipitation Zone,

Site ID: 043BY428WY

Major Land Resource Area: 43B – Central Rocky Mountains

Physiographic Features

This site is located on nearly level land adjacent to streams that run water at least during the major part of the growing season.

Landform: Hill sides, alluvial fans, ridges & stream terraces **Aspect:** N/A

	Minimum	Maximum
Elevation (feet):	3700	7500
Slope (percent):	0	6
Water Table Depth (inches):	12	> 60
Flooding:		
Frequency:	occasional	frequent
Duration:	brief	long
Ponding:		
Depth (inches):	0	0
Frequency:	None	None
Duration:	None	None
Runoff Class:	negligible	low

Climatic features

Annual precipitation ranges from 15" to 19" per year. May is generally the wettest month. July, August and September are somewhat drier with daily amounts rarely exceeding one inch. Snowfall is quite heavy in the mountainous area. Annual snowfall averages close to 70 inches.

Sunshine is abundant in the latter part of the summer, the greatest amount being in July and August. Sunshine possibility during these two months averages 70 to 75% possibility with only a 65% possibility for June and September. Winter averages about 40% sunshine.

Because of the varied topography, the wind will vary considerably for different parts of the area. The wind is usually much lighter at the lower elevations and in the valleys as compared with the higher terrain. The average winter wind velocity is 8.5 mph, while the summer wind velocity averages 7.5 mph. Winds during storms and on ridges may exceed 45 mph.

Temperatures show a wide range between summer and winter, and between daily maximums and minimums. Summer nights are cool and temperatures drop into the forties at most places before sunrise. Summer daytime temperatures are usually in the seventies and occasionally reach eighty, but rarely reach the mid nineties. Winters are cold with daily lows below freezing most of the time.

January has the coldest temperatures with a range of near 10 deg. F at night to the mid thirties in the afternoon. Temperatures of well below zero to –30 deg. F are not uncommon in the winter months.

The growing season for the cool season plants will generally start about April 15 to May 1 and continue to about October 10.

The following information is from the "Sheridan Airport" climate station:
Frost-free period (32 °F): 95-156 days; (5 yrs. out of 10, these days will occur between May 21 – September 19)
Freeze-free period 28 °F): 116-187 days; (5 yrs. out of 10, these days will occur between May 4 – September 29)
Mean annual precipitation: 14.7 inches
Mean annual air temperature: 45.0 °F (31.2 °F Avg. Min. – 58.8 °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: "Parkman 5 WNW"

Influencing Water Features

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

Stream Type: None

Representative Soil Features

The soils of this site are deep (greater than 40" to bedrock), well drained and moderately permeable. A fluctuating water table occurs in these areas, but is usually deeper than 3 feet.

Parent Material Kind: alluvium and residuum
Parent Material Origin: sandstone, shale
Surface Texture: loam, clay loam, fine sandy loam,sandy loam,loamy sand
Surface Texture Modifier: none is most common but gravelly or cobbly may occur
Subsurface Texture Group: loam
Surface Fragments ≤ 3" (% Cover): 0
Surface Fragments > 3" (%Cover): typically 0, occasionally up to10
Subsurface Fragments ≤ 3" (% Volume): typically 0, occasionally up to 15
Subsurface Fragments > 3" (% Volume): typically 0, occasionally up to 10

	Minimum	**Maximum**
Drainage Class:	somewhat poorly drained	well drained
Permeability Class:	moderately slow	rapid
Depth (inches):	20	>60
Electrical Conductivity (mmhos/cm) ≤20":	0	8
Sodium Absorption Ratio ≤20":	0	10
Soil Reaction (1:1 Water) ≤20":	6.6	8.4
Soil Reaction (0.1M CaCl2) ≤20":	NA	NA
Available Water Capacity (inches) ≤30":	1.0	6.2
Calcium Carbonate Equivalent (percent) ≤20":	0	5

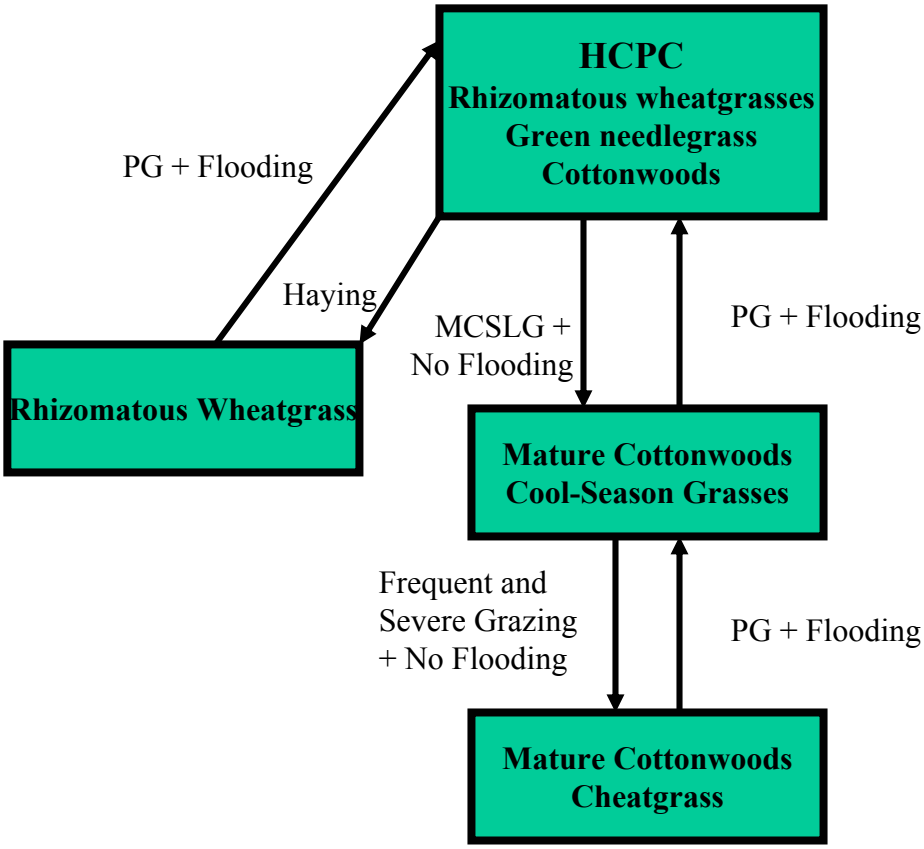
Plant Communities

Ecological Dynamics of the Site:

As this site deteriorates from improper grazing management, species such as Kentucky bluegrass and cheatgrass invade as snowberry and silver sagebrush increase. Cool season grasses such as green needlegrass and western wheatgrass will decrease in frequency and production. Mature cottonwoods do not reproduce.

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.



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

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

COMMON NAME/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Annual Production (Normal Year) Total: 3000		
			Group	lbs./acre	% Comp.
GRASSES AND GRASS-LIKES					
GRASSES/GRASSLIKES					
Green needlegrass	Nassella viridula	NAVI4	1	300 - 750	10 - 25
Western wheatgrass	Pascopyrum smithii	PASM	2	300 - 750	10 - 25
Basin wildrye	Leymus cinereus	LECI4	3	300 - 750	10 - 25
Columbia needlegrass	Achnatherum nelsonii	ACNE9	4	150 - 300	5 - 10
Canada wildrye	Elymus canadensis	ELCA4	5	150 - 300	5 - 10
Slender wheatgrass	Elymus trachycaulus	ELTR7	6	150 - 300	5 - 10
MISC. GRASSES/GRASSLIKES			**7**	**150 - 450**	**5 - 15**
Idaho fescue	Festuca idahoensis	FEID	7	0 - 150	0 - 5
Needleandthread	Hesperostipa comata	HECO26	7	0 - 150	0 - 5
Prairie junegrass	Koeleria macrantha	KOMA	7	0 - 150	0 - 5
Pumpelly bromegrass	Bromus inermis spp. pumpellianus	BRINP5	7	0 - 150	0 - 5
Sandberg bluegrass	Poa secunda	POSE	7	0 - 150	0 - 5
other perennial grasses (native)		2GP	7	0 - 150	0 - 5
FORBS			**8**	**150 - 300**	**5 - 10**
American licorice	Glycyrrhiza lepidota	GLLE3	8	0 - 150	0 - 5
American vetch	Vicia americana	VIAM	8	0 - 150	0 - 5
Cudweed sagewort	Artemisia ludoviciana	ARLU	8	0 - 150	0 - 5
Dock	Rumex spp.	RUMEX	8	0 - 150	0 - 5
Fleabane	Erigeron spp.	ERIGE2	8	0 - 150	0 - 5
Goldenrod	Solidago spp.	TEPHR3	8	0 - 150	0 - 5
Green sagewort	Artemisia dracunculus	ARDR4	8	0 - 150	0 - 5
Prairie clovers	Dalea spp.	DALEA	8	0 - 150	0 - 5
Violets	Viola spp.	VIOLA	8	0 - 150	0 - 5
yarrows	Achillea spp.	ACHIL	8	0 - 150	0 - 5
other perennial forbs (native)		2FP	8	0 - 150	0 - 5
TREES/SHRUBS					
Cottonwoods	Populus angustifolia	POAN3	9	150 - 300	5 - 10
MISC. SHRUBS/TREES			**10**	**150 - 600**	**5 - 20**
American plum	Prunus americana	PRAM	10	0 - 150	0 - 5
Boxelder	Acer negundo ssp. interius	ACNE12	10	0 - 150	0 - 5
Chokecherry	Prunus virginiana	PRVIV	10	0 - 150	0 - 5
Green ash	Fraxinus pennsylvanica	FRPE	10	0 - 150	0 - 5
Hawthorn	Crataegus spp.	CRATA	10	0 - 150	0 - 5
Silver sagebrush	Artemisia cana	ARCA13	10	0 - 150	0 - 5
Snowberry	Symphoricarpus occidentalis	SYOC	10	0 - 150	0 - 5
other shrubs & half shrubs (native)		2SHRUB	10	0 - 150	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.

Rhizomatous Wheatgrasses, Green Needlegrass, Cottonwoods Plant Community

The interpretive plant community for this site is the Historic Climax Plant Community. This state evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. Potential vegetation is about 70% grasses or grass-like plants, 10% forbs and 20% woody plants. The understory of this state is dominated by cool season midgrasses. The major grasses include rhizomatous wheatgrass, needleandthread, green needlegrass and slender wheatgrass. Other grasses occurring on the site include Sandberg bluegrass, Canada wildrye, needleleaf sedge, and prairie junegrass. Cottonwoods of various age classes dominate the overstory. Woody plants such as green ash, chokecherry, boxelder, silver sagebrush, wild plums and snowberry may make up to 20% of the production on this state.

This state produces between 2000 and 4000 pounds annually, depending on the growing conditions.

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	10	30	35	10	5	5	5	0	0

(Monthly percentages of total annual growth)

The state is extremely resilient and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allow for high drought resistance. This is a healthy and sustainable plant community (site/soil stability, watershed function, and biologic integrity).

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

- Moderate, continuous season-long grazing and lack of flooding will convert this plant community to the *Mature cottonwoods/Grass Vegetation State.*

- Heavy, continuous, improper grazing and lack of flooding will convert this plant community to the *Mature cottonwoods/Cheatgrass Vegetation State.*

- Haying will convert this state to the *Rhizomatous Wheatgrass Vegetation State.*

. **Mature Cottonwoods/Cool-Season Grasses Plant Community**

This plant community evolved under moderate grazing by domestic livestock. 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. Mature cottonwoods make up the overstory.

Dominant grasses include rhizomatous wheatgrasses, Kentucky bluegrass, needleandthread, and green needlegrass. Grasses of secondary importance include prairie junegrass, blue grama, Sandberg bluegrass,and slender wheatgrass. Forbs, commonly found in this plant community, include Louisiana sagewort (cudweed), plains wallflower, hairy goldaster, slimflower scurfpea, and scarlet globemallow. Silver sagebrush, green ash, boxelder, chokecherry, and snowberrry canopy cover may be 20-40%.

This state produces between 1200 and 3000 pounds annually, depending on the growing conditions.

When compared to the Historical Climax Plant Community, rhizomatous wheatgrasses and green needlegrass have decreased. Needleandthread and Sandberg bluegrass have increased. Silver sagebrush has increased. Reproduction of cottonwoods is limited. The overstory of cottonwoods and understory of grass and forbs provide a diverse plant community which will support domestic livestock and wildlife such as birds, mule deer and antelope.

The site is stable and protected from excessive erosion. The biotic integrity of this plant community is usually intact. However, the lack of cottonwood reproduction will reduce the wildlife habitat. The watershed is usually functioning.

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	10	30	35	10	5	5	5	0	0

(Monthly percentages of total annual growth)

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

- . Prescribed grazing and flooding will result in a plant community very similar to the *Historic Climax Plant Community.*
- Heavy, continuous, improper grazing and lack of flooding will convert this plant community to the *Mature cottonwoods/Cheatgrass Vegetation State*

Mature Cottonwoods/Cheatgrass Plant Community
This plant community is the result of long-term improper grazing use. This state is dominated by perennial short-grasses and cheatgrass. Silver sagebrush and snowberry have increased. Mature cottonwoods make up the overstory. Weeds such as American licorice, and noxious weeds, such as Canada thistle and leafy spurge may invade it.

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.

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	15	30	30	10	5	5	5	0	0

(Monthly percentages of total annual growth)

The soil of this state is protected. The watershed is functioning but may produce excessive runoff. The biotic integrity is threatened by invasive species.

Transitional pathways leading to other plant communities are as follows

- Prescribed Grazing and flooding over the long-term will return this state to near *Historic Climax Plant Community,* except that silver sagebrush and mature cottonwoods will persist.

Rhizomatous Wheatgrass Plant Community
This plant community is the result of haying. The state is dominated by western wheatgrass with some green needlegrass. The overstory is sparse mature cottonwoods.

Production ranges from 1200 to 3000 pounds, depending on climatic conditions.

When compared to the Historic Climax Plant Community this state has lost much of its diversity. Woody vegetation is mainly mature cottonwoods. There are few forbs. The soil is protected by rhizomatous wheatgrass sod. The biotic community is restricted by the lack of diversity. Watershed values are protected due to the lack of steep slopes on this site.

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	10	30	35	10	5	5	5	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:

- Proper grazing use and flooding may return this state to the *Historic climax plant community* over the long term.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

Rhizomatous Wheatgrasses, Green Needlegrass, Cottonwoods Plant Community (HCPC): The predominance of grasses in this plant community favors grazers and mixed-feeders, such as bison, elk, and antelope. Woody vegetation provides thermal cover and habitat for migratory birds. 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, migratory song birds, and golden eagles. Many grassland obligate small mammals would occur here.

Mature Cottonwoods/Grass Plant Community: The combination of an overstory of cottonwoods and an understory of grasses and forbs provide a very diverse plant community for wildlife. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. Good grasshopper habitat equals good foraging for birds.

Mature Cottonwoods/ Cheatgrass Plant Community: The plant community composition is less diverse, and thus, less apt to meet the seasonal needs of large herbivores such as deer and antelope. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. The overstory of large cottonwoods provides habitat for a variety of birds ranging from raptors to neo-tropical migrants.

Rhizomatous Wheatgrass 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. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. Good grasshopper habitat equals good foraging for birds.

Animal Preferences (Quarterly - 1,2,3,4) for commonly occuring plants in MLRA 43B, 15-19 inch Northern Plains

COMMON NAME/	SCIENTIFIC NAME	SCI. SYMBOL	*Cattle*	*Sheep*	*Horses*	*Mule Deer*	*Antelope*
GRASSES AND GRASS-LIKES							
Alpine timothy	Phelum alpinum	PHAL2	PPPP	PPPP	PPPP	DDDD	UUUU
Baltic rush	Juncus balticus	JUBA	DDDD	UUUU	DDDD	UUUU	UUUU
Basin wildrye	Leymus cinereus	LECI4	PPPP	PPPP	PPPP	DDDD	DDDD
Bearded wheatgrass	Elymus caninus	ELCA	PPPP	DDDD	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
Blue wildrye	Elymus glaucus	ELGL	PPPP	DDDD	DDDD	DDDD	DDDD
Bluebunch wheatgrass	Pseudoroegneria spicata	PSSP6	PPPP	PPPP	PPPP	DDDD	DDDD
Bluejoint Reedgrass	Calamagrostis canadensis	CACA4	PPPP	DDDD	PPPP	UUUU	UUUU
Bottlebrush squirreltail	Elymus elymoides	ELELE	DDDD	DDDD	DDDD	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
Cusic bluegrass	Ribes spp.	RIBES	DDDD	DDDD	DDDD	PPPP	DDDD
Dunehead sedge	Carex phaeocephala	CAPH2	UUUU	UUUU	UUUU	UUUU	UUUU
Fowl bluegrass	Poa palustris	POPA2	DDDD	DDDD	DDDD	UUUU	UUUU
Green needlegrass	Nassella viridula	NAVI4	PPPP	PPPP	PPPP	PPPP	PPPP
Idaho fescue	Festuca idahoensis	FEID	PPPP	PPPP	PPPP	PPPP	PPPP
Indian ricegrass	Achnatherum hymenoides	ACHY	PPPP	PPPP	PPPP	PPPP	PPPP
Letterman needlegrass	Achnatherum lettermanii	ACLE9	PPPP	PPPP	DDDD	DDDD	DDDD
Little bluestem	Schizachyrium scoparium	SCSC	PPPP	PPPP	PPPP	DDDD	DDDD
Montana wheatgrass	Elymus albicans	ELAL7	DDDD	DDDD	DDDD	DDDD	DDDD
Mountain bromegrass	Bromus marginatus	BRMA4	PPPP	PPPP	DDDD	DDDD	UUUU
Mountain muhly	Muhlenbergia montana	MUMO	DDDD	DDDD	DDDD	DDDD	UUUU
Nebraska sedge	Carex nebraskensis	CANE2	PPPP	PPPP	PPPP	DDDD	DDDD
Needleandthread	Hesperostipa comata ssp. comata	HECOC8	DPDD	UPDU	DPDD	UDUU	UDUU
Needleleaf sedge	Carex duriuscula	CADU6	UUUU	UUUU	UUUU	UUUU	UUUU
Nodding bromegrass	Bromus anomalus (syn. B. porteri)	BRAN13 (BRPO	PPPP	PPPP	DDDD	DDDD	UUUU
Northern Reedgrass	Calamagrostis stricta ssp. inexpansa	CASTI3	UPDU	UDUU	UPDU	UDUU	UDUU
Onespike oatgrass	Danthonia unispicata	DAUN	DDDD	PPPP	DDDD	PPPP	DDDD
Plains muhly	Muhlenbergia cuspidata	MUCU3	DDDD	DDDD	DDDD	UUUU	UUUU
Plains reedgrass	Calamagrostis montanensis	CAMO	DDDD	DDDD	DDDD	DDDD	DDDD
Prairie cordgrass	Spartina pectinata	SPPE	PPPP	DDDD	PPPP	UUUU	UUUU
Prairie junegrass	Koeleria macrantha	KOMA	DDDD	DDDD	DDDD	DDDD	DDDD
Pumpelly bromegrass	Bromus inermis spp. Pumpellianus	BRINP5	PPPP	PPPP	DDDD	DDDD	UUUU
Red threeawn	Aristida purpurea	ARPUL	UUUU	UUUU	UUUU	UUUU	UUUU
Reedgrasses	Calamagrostis spp.	CALAM	DDDD	UUUU	DDDD	UUUU	UUUU
Rhizomatous wheatgrasses	Pascopyrum smithii	PASM	DDDD	DDDD	DDDD	DDDD	DDDD
Richardson needlegrass	Achnatherum richardsonii	ACRI8	PPPP	PPPP	DDDD	DDDD	DDDD
Sand bluestem	Andropogon halli	ANHA	PPPP	DDDD	PPPP	UUUU	UUUU
Sand dropseed	Sporobolus cryptandrus	SPCR	DDDD	DDDD	DDDD	UUUU	UUUU
Sandberg bluegrass	Poa secunda	POSE	DDDD	DDDD	DDDD	DDDD	DDDD
Sideoats grama	Bouteloua curtipendula	BOCU	PPPP	PPPP	PPPP	DDDD	UUUU
Slender wheatgrass	Elymus trachycaulus ssp. trachycaulus	ELTRT	DPDD	UPDD	DPDD	UDUU	UDUU
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
Tall mannagrass	Glyceria elata (syn. G. striata)	GLEL (GLST)	DDDD	UUUU	DDDD	UUUU	UUUU
Thickspike wheatgrass	Elymus lanceolatus	ELLAL	DDDD	DDDD	DDDD	DDDD	DDDD
Threadleaf sedge	Carex filifolia	CAFI	DDDD	DDDD	DDDD	DDDD	PPPP
Tufted hairgrass	Deschampsia caespitosa	DECA18	PPPP	PPPP	PPPP	DDDD	DDDD
Water sedge	Carex aquatilis	CAAQ	DDDD	UUUU	DDDD	UUUU	UUUU
Western wheatgrass	Pascopyrum smithii	PASM	DDDD	DDDD	DDDD	DDDD	DDDD
FORBS							
American bistort	Polygonum bistortoides	POBI6	DDDD	DDDD	DDDD	DDDD	DDDD
American vetch	Vicia americana	VIAM	PPPP	PPPP	PPPP	PPPP	PPPP
Arrowgrass	Triglochin spp.	TRIGL	TTTT	TTTT	TTTT	TTTT	TTTT
Arrowleaf balsamroot	Triglochin spp.	TRIGL	TTTT	TTTT	TTTT	TTTT	TTTT
Aster	Asters	ASTER	UUUU	UUUU	UUUU	UUUU	UUUU
Balsamroot	Balsamorhiza spp.	BALSA	PPPP	PPPP	PPPP	PPPP	PPPP
Biscuitroot	Lomatium spp.	LOMAT	UDUU	UDDU	UDUU	UDDU	UDDU
Bluebells	Mertensia	MERTE	DDDD	PPPP	DDDD	DDDD	DDDD
Blue-eyed grass	Sisyrinchium spp.	SISYR	DDDD	PPPP	DDDD	DDDD	DDDD
Buckwheat	Eriogonum spp.	ERIOG	UUUU	UUUU	UUUU	UUUU	UUUU
Common commandra	Comandra spp.	COMAN	UUUU	UUUU	UUUU	UUUU	UUUU
Cudweed sagewort	Artemisia ludoviciana	ARLU	UUUU	UUUU	UUUU	UUUU	UUUU

Deathcamas	Zigadenus venenosus	ZIVE	TTTT	TTTT	TTTT	TTTT	TTTT
Dock	Rumex spp.	RUMEX	UUUU	UUUU	UUUU	UUUU	UUUU
Dotted gayfeather	Liatris punctata	LIPU	UPPU	UPPU	UPPU	UPPU	UPPU
Field chickweed	Cerastium arvense	CEAR4	UUUU	UUUU	UUUU	UUUU	UUUU
Flax	Linum spp.	LINUM	UUUU	UUUU	UUUU	UUUU	UUUU
Fleabane	Erigeron spp.	ERIGE2	UUUU	UUUU	UUUU	UUUU	UUUU
Fringed sagewort	Artemisia frigida	ARFR4	UUUU	UUUU	UUUU	UUUU	UUUU
Goldenrod	Solidago spp.	SOLID	NUNN	NUNN	NNNN	NUNN	NUNN
Green sagewort	Artemisia campestris	ARCA12	NNNN	NUUN	NNNN	NUUN	NUUN
Gromwell	Buglossoides spp.	BUGLO	UUUU	UUUU	UUUU	UUUU	UUUU
Groundsel	Senecio spp.	SENEC	NNNN	NNNN	NNNN	NNNN	NNNN
Hairy goldenaster	Heterotheca villosa	HEVI4	UUUU	UUUU	UUUU	UUUU	UUUU
Hawksbeard	Crepis acuminata	CRAC2	UUUU	PPPP	UUUU	DDDD	DDDD
Horsetails	Equisetum spp.	EQUIS	UUUU	UUUU	UUUU	UUUU	UUUU
Iris	Iris spp.	IRIS	UUUU	UUUU	UUUU	UUUU	UUUU
Larkspur	Delphinium spp.	DELPH	TTTT	TTTT	TTTT	TTTT	TTTT
Locoweeds	Oxytropis spp.	OXYTR	TTTT	TTTT	TTTT	TTTT	TTTT
Lupine	Lupinus spp.	LUPIN	DDDD	DDDD	DDDD	DDDD	DDDD
Mint	Menthan spp.	MENTH	UUUU	UUUU	UUUU	UUUU	UUUU
Mountain thermopsis	Thermopsis montana	THMOM3	UUUU	UUUU	UUUU	UUUU	UUUU
Nailwort	Paronychia spp.	PARON	NNNN	NNNN	NNNN	NNNN	NNNN
Pale agoseris	Agoseris glauca	AGGL	DDDD	PPPP	DDDD	DDDD	DDDD
Penstemons	Penstemon spp.	PENST	UPPU	UPPU	UPPU	UPPU	UPPU
Phlox	Phlox spp.	PHLOX	NNNN	NNNN	NNNN	NNNN	NNNN
Prairie clovers	Dalea spp.	DALEA	UPPU	UPPU	UPPU	UPPU	UPPU
Prairie coneflower	Ratibida columnifera	RACO3	DDDD	PPPP	DDDD	PPPP	PPPP
Flax	Linum spp.	LINUM	UUUU	UUUU	UUUU	UUUU	UUUU
Pussytoes	Antennaria spp.	ANTEN	NNNN	NNNN	NNNN	NNNN	NNNN
Sandwort	Arenaria spp.	ARENA	NNNN	NNNN	NNNN	NNNN	NNNN
Silverleaf scurfpea	Pediomelum argophyllum	PEAR6	UUUU	UUUU	UUUU	UUUU	UUUU
Stemless mock goldenweed	Stenotus acaulis	STAC	UUUU	UUUU	UUUU	UUUU	UUUU
Sticky geranium	Geranium viscosissimum	GEVI2	PPPP	PPPP	DDDD	PPPP	DDDD
Stonecrop	Sedum spp.	SEDUM	UUUU	UUUU	UUUU	UUUU	UUUU
Toadflax	Comandra umbellata	COUMP	UUUU	UUUU	UUUU	UUUU	UUUU
Violets	Viola spp.	VIOLA	DDDD	DDDD	DDDD	DDDD	DDDD
Water hemlock	Cicuta spp.	CICUT	TTTT	TTTT	TTTT	TTTT	TTTT
Waterleaf	Hydrophyllum	HYDRO4	DDDD	PPPP	DDDD	PPPP	DDDD
Western virginsbower	Clematis lequsticifolia	CLLI2	UUUU	DDDD	UUUU	DDDD	DDDD
Western wallflower	Erysimum capitatum	ERCAC	DDDD	DDDD	DDDD	DDDD	DDDD
Western yarrow	Achillea millefolium	ACMI2	NUUN	NUUN	NNNN	NUUN	NUUN
TREES/SHRUBS							
American plum	Prunus americana	PRAM	DDDD	DDDD	DDDD	DDDD	UUUU
Big sagebrush	Artemisia tridentata	ARTR2	UUUU	DDDD	UUUU	DDDD	DDDD
Black sagebrush	Artemisia nova	ARNO4	UUUU	PPPP	UUUU	PPPP	PPPP
Boxelder	Acer negundo	ACNE2	UUUU	UUUU	UUUU	UUUU	UUUU
Chokecherry	Prunus virginiana	PRVI	DDDD	DDDD	DDDD	PPPP	DDDD
Common Juniper	Juniperus communis	JUSCO6	UUUU	UUUU	UUUU	UUUU	UUUU
Cottonwoods	Tanacetum vulgare	TAVU	UUUU	UUUU	UUUU	UUUU	UUUU
Green ash	Fraxinus pennsylvanica	FRPE	UUUU	UUUU	UUUU	UDDU	UDDU
Hawthorn	Crataegus spp.	CRATA	UUUU	UUUU	UUUU	UUUU	UUUU
Juniper	Juniperus scopulorum	JUSC2	UUUU	UUUU	UUUU	DDDD	UUUU
Mountain mahogany	Cercocarpus spp.	CERCO	DDDD	PPPP	UUUU	PPPP	UUUU
Ponderosa pine	Pinus ponderosa	PIPO	UTTU	UNNU	UNNU	UNNU	UNNU
Rocky-Mountain juniper	Juniperus scopulorum	JUSC2	UNNU	UNNU	UNNU	UNNU	DUUD
Rubber rabbitbrush	Ericameria nauseosa	ERNA10	UUUU	DDDD	UUUU	DDDD	DDDD
Silver sagebrush	Artemisia cana	ARCAC5	DDDD	DDDD	DDDD	PPPP	PPPP
Skunkbush sumac	Rhus trilobata	RHTR	DDDD	DDDD	DDDD	DDDD	DDDD
Snowberry	Symphoricarpus occidentalis	SYOC	UUUU	UUUU	UUUU	DDDD	UUUU
Threetip sagebrush	Artemisia tripartita	ARTR4	UUUU	DDDD	UUUU	UUUU	DDDD
Wild rose	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
Yucca	Yucca glauca	YUGL	DDDD	DDDD	DDDD	DDDD	DDDD

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)
Rhizomatous WG, Green Needlegrass,Cottonwoods	2000-4000	.8
Mature Cottonwoods/Grass	1200-3000	.7
Mature Cottonwoods/Cheatgrass	600-1200	.25
Rhizomatous Wheatgrass	1200-3000	.4

* - 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 moderately slow to rapid. Runoff potential for this site varies from low to moderate 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. 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.

Supporting Information

Associated Sites

Sandy	043BY450WY
Clayey	043BY404WY
Overflow	043BY430WY

Similar Sites
() – Lowland 10-14" Northern Plains P.Z., 058BY128WY has lower 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. 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.

Inventory Data References

Data Source	Number of Records	Sample Period	State	County
SCS-RANGE-417		1971-1994	WY	
Ocular estimates	5	1990-1999	WY	

Site Correlation

Type Locality

Field Offices - Buffalo, Sheridan

Relationship to Other Established Classifications

Other References

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: __4/05_ ___ **MLRA:** ___43B__ **Ecological Site:** R043BY428WY Lowland (LL) 15-19"NP

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

Indicators. 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 **each** community within the reference state, when appropriate & (3) cite data. Continue descriptions on separate sheet.

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 10-20% occurring in small areas throughout site

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

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

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.

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): Plant cover and litter is at 80% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 5 or greater.

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): Use Soil Series description for depth and color of A-horizon

10. Effect of plant community composition (relative proportion of different functional groups) & spatial distribution on infiltration & 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 moderately slow to 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 weight using symbols: >>, >, = to indicate much greater than, greater than, and equal to): Mid stature Cool Season Grasses >> Shrubs > Trees = Short Grasses = Forbs

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Some decadence and mortality among tree species

14. Average percent litter cover and depth : Average litter cover is 35-45% with depths of 0.25 to 1.0 inches

15. Expected annual production (this is all above-ground production, not just forage production):
3000 lbs/ac

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": Kentucky bluegrass, Cheatgrass, Silver sagebrush, Snowberry and Species found on Noxious Weed List

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