# United States Department of Agriculture
# Natural Resources Conservation Service

## Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Overflow (Ov) 15-19" Northern Plains Precipitation Zone,

**Site ID:** 043BY430WY

**Major Land Resource Area:** 43B – Central Rocky Mountains

## Physiographic Features

This site occurs on areas that receive additional water from overflow of intermittent streams or runoff from adjacent slopes.

**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):** | none within 60 inches | |
| **Flooding:** | | |
| **Frequency:** | frequent | frequent |
| **Duration:** | very brief | very brief |
| **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 20"to bedrock), well drained and moderately permeable. Topsoils may vary from a sandy loam through light silty clay loams. Coarser or finer textured surface soils may also be present provided they are less than 2 to 4 inches thick. These areas receive additional water from overflow of intermittent streams or runoff from adjacent slopes.

**Parent Material Kind:** alluvium
**Parent Material Origin:** sandstone, shale
**Surface Texture:** loam, silt loam, fine sandy loam, clay loam, loamy sand, clay, sandy loam
**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
**Subsurface Fragments ≤ 3" (% Volume):** typically 0
**Subsurface Fragments > 3" (% Volume):** typically 0

| | **Minimum** | **Maximum** |
|---|---|---|
| **Drainage Class:** | moderately well | excessive |
| **Permeability Class:** | moderate | 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":** | 2.0 | 6.2 |
| **Calcium Carbonate Equivalent (percent) ≤20":** | 0 | 5 |

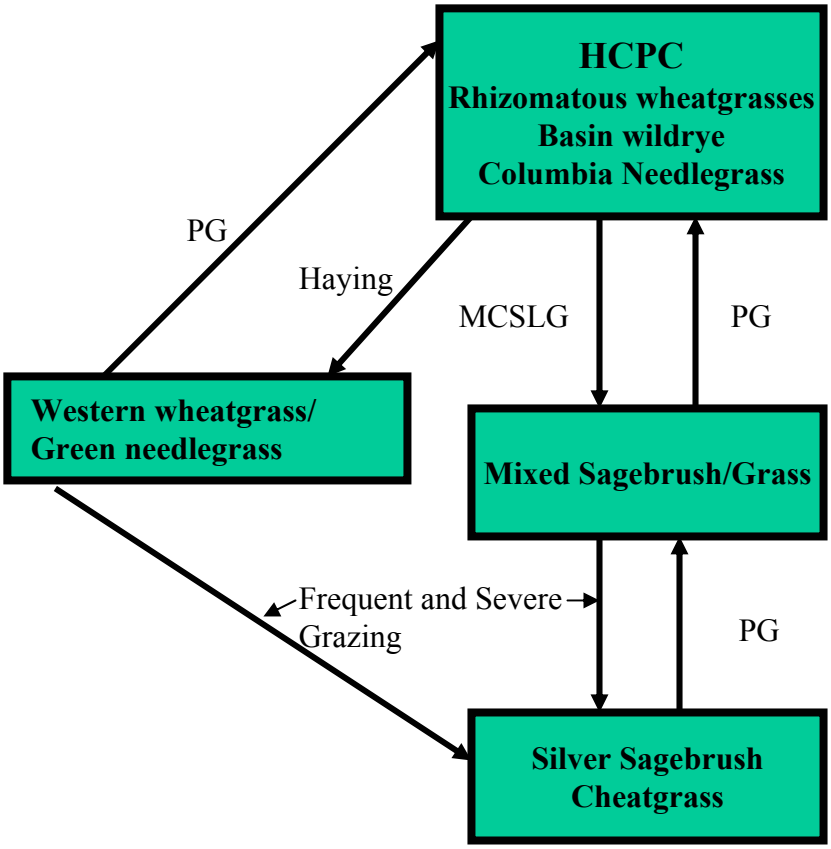
# Plant Communities

## Ecological Dynamics of the Site:

As this site deteriorates from improper grazing management, species such as blue grama and silver sagebrush will increase. Species such as cheatgrass will invade. Cool season grasses such as basin wildrye, green needlegrass and western wheatgrass 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.




**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 - 600 | 10 - 20 |
| Columbia needlegrass | Achnatherum nelsonii | ACNE9 | 4 | 150 - 300 | 5 - 10 |
| Canada wildrye | Elymus canadensis | ELCA4 | 5 | 150 - 300 | 5 - 10 |
| Slender wheatgrass | Elymus trachycaulis ssp. trachycaulis | ELTR7 | 6 | 150 - 300 | 5 - 10 |
| ***MISC. GRASSES/GRASSLIKES*** | | | **7** | **150 - 450** | **5 - 15** |
| Fowl bluegrass | Poa palustris | POPA2 | 7 | 0 - 150 | 0 - 5 |
| Idaho fescue | Festuca idahoensis | FEID | 7 | 0 - 150 | 0 - 5 |
| Needleandthread | Hesperostipa comata | HECO26 | 7 | 0 - 150 | 0 - 5 |
| Pumpelly bromegrass | Bromus inermis ssp. 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*** | | | | | |
| **MISC. SHRUBS** | | | **9** | **150 - 300** | **5 - 10** |
| American plum | Prunus americana | PRAM | 9 | 0 - 150 | 0 - 5 |
| Chokecherry | Prunus virginiana | PRVIV | 9 | 0 - 150 | 0 - 5 |
| Hawthorn | Crataegus spp. | CRATA | 9 | 0 - 150 | 0 - 5 |
| Silver sagebrush | Artemisia cana | ARCA13 | 9 | 0 - 150 | 0 - 5 |
| Snowberry | Symphoricarpus occidentalis | SYOC | 9 | 0 - 150 | 0 - 5 |
| other shrubs & half shrubs (native) | | 2SHRUB | 9 | 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, Basin Wildrye, Columbia Needlegrass Plant Community:**
The interpretive plant community for this site is the Historic Climax Plant Community. This site evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. Potential vegetation is about 80% grasses or grass-like plants, 10% forbs and 10% woody plants. The state is dominated by cool season midgrasses. The major grasses include basin wildrye, rhizomatous wheatgrass, columbia needlegrass, slender wheatgrass and green needlegrass. Other grasses occurring on the site include Sandberg bluegrass, Canada wildrye, needleleaf sedge, blue grama, and prairie junegrass. Woody plants include chokecherry, silver sagebrush, hawthorn, wild plums and snowberry.

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 will convert the plant community to the *Mixed sagebrush/Grass Vegetation State.*
- Heavy, continuous, improper grazing will convert this plant community to the *Silver sagebrush/cheatgrass Vegetation State.*
- Haying will convert the plant community to *the Western wheatgrass/Green neeedlegrass vegetation state.*

**Mixed Sagebrush/Grass 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.

Dominant grasses include rhizomatous wheatgrasses, Kentucky bluegrass, Sandberg bluegrass, and green needlegrass. Grasses of secondary importance include blue grama, prairie junegrass, and

slender wheatgrass. Cheatgrass has invaded this site. Silver sagebrush has increased, with canopy cover up to 30%. Forbs, commonly found in this plant community, include Louisiana sagewort (cudweed), plains wallflower, hairy goldaster, slimflower scurfpea, and scarlet globemallow. Fringed sagewort is commonly found. Plains pricklypear and winterfat can also occur.
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. The overstory of sagebrush 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.

This state produces between 1500 and 3000 pounds annually, depending on the growing conditions.

The state is stable and protected from excessive erosion. The biotic integrity of this plant community is usually intact. 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, will result in a plant community very similar to the *Historic Climax Plant Community* except that the silver sagebrush will persist.

- Heavy, improper grazing use will result in the *Silver sagebrush/cheatgrass plant community.*

**Silver Sagebrush/Cheatgrass Plant Community**
This plant community is the result of long-term improper grazing use. This state is dominated by western wheatgrass, Kentucky bluegrass, cheatgrass and blue grama. It has been invaded by noxious weeds such as Canada thistle and American licorice.

Production ranges from 800 to 2000 pounds annually, depending on climatic conditions.

Basin wildrye, and green needlegrass have been lost. Silver sagebrush has increased. This state is productive but lacks the diversity of the HCPC. The biotic integrity is threatened by the invasion of noxious weeds. The soil of this state is protected. The watershed is functioning but may produce excessive runoff.

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 over the long-term will return this state to near *Historic Climax Plant Community,* except that silver sagebrush will persist.

**Western Wheatgrass/Green Needlegrass Plant Community**
This plant community is the result of haying. It is dominated by western wheatgrass and green needlegrass. These grasses form a sod which is very productive and is often used for dryland hay. Basin wildrye has been lost through haying.

Production ranges from 1000 to 3000 pounds.

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 state is productive but lacks the diversity of the HCPC. The soil of this state is protected. The watershed is functioning but may produce excessive runoff. The biotic function is reduced by the lack of plant diversity.

- Proper grazing use will return this state to near *Historic Climax Plant Community*.

- Improper grazing will change this state to the Silver*sagebrush/cheatgrass Plant Community*.

# Ecological Site Interpretations

## Animal Community – Wildlife Interpretations

**Rhizomatous Wheatgrasses, Basin Wildrye, Columbia Needlegrass Plant Community (HCPC):** The predominance of grasses in this plant community favors grazers and mixed-feeders, such as bison, elk, and antelope. 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.

**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. It provides important winter, nesting, brood-rearing, and foraging habitat for sage grouse. Brewer's sparrows' nest in big sagebrush plants, and hosts of other nesting birds utilize stands in the 20-30% cover range.

**Silver Sagebrush/Cheatgrass 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.

**Western Wheatgrass/Green Needlegrass 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) |
|---|---|---|
| Rhiz. WG, Basin wildrye, Columbia Needlegrass | 2000-4000 | .8 |
| Mixed Sagebrush/Grass | 1500-3000 | .6 |
| Silver Sagebrush/Cheatgrass | 800-2000 | .4 |
| Western Wheatgrass/Green Needlegrass | 1000-3000 | .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. Infiltration ranges from moderate to 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. 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 |
| Lowland | 043BY428WY |

## 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:** R043BY430WY Overflow (Ov) 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 Slow.

**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 = Forbs > Short stature Grasses/Grasslikes

**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 :** 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"**: Blue grama, Kentucky Bluegrass, Silver sagebrush, Cheatgrass, Fringed sagewort, and Species found on Noxious Weed List

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