United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Very Shallow (VS) 10-14" Foothills and Basins East Precipitation Zone

Site ID: R032XY376WY

Major Land Resource Area: 32 – Northern Intermountain Desertic Basins

Physiographic Features

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

Landform: Hillsides, ridges & escarpments **Aspect:** N/A

	Minimum	Maximum
Elevation (feet):	5400	7500
Slope (percent):	0	60
Water Table Depth (inches):	None within 60 inches	
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):	0	0
Frequency:	None	None
Duration:	None	None
Runoff Class:	negligible	high

Climatic Features

Annual precipitation ranges from 10-14 inches per year. The normal precipitation pattern shows the least amount of precipitation in December, January, and February, increasing to a peak during the latter part of May. Amounts decrease through June, July, and August and then increase some in September. Much of the moisture that falls in the latter part of the summer is lost by evaporation and much of the moisture that falls during the winter is lost by sublimation. Average snowfall exceeds 20 inches annually. 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, due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks from Canada in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Chinook winds may occur in winter and bring rapid rises in temperature. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring.

Winds are generally not strong as compared to the rest of the state. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 75 mph.

Growth of native cool-season plants begins about April 15 and continues to about July 15. Cool weather and moisture in September may produce some green up of cool season plants that will continue to late October.

The following information is from the "Thermopolis 2" climate station:

	Minimum	Maximum	5 yrs. out of 10 between
Frost-free period (days):	74	149	May 23 – September 16
Freeze-free period (days):	112	180	May 8 – October 1
Annual Precipitation (inches):	7.6	21.9	

Mean annual precipitation: 12.35 inches
Mean annual air temperature: 46.2 °F (30.1°F Avg. Min. to 62.3°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" Grass Creek 1E", "Thermopolis", Thermopolis 25NW", "Buffalo Bill Dam" and "Black Mountain".

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 very shallow (less than 10" to bedrock) well-drained soils formed in residuum. These soils have rapid to slow permeability and can be of any texture. This site usually occurs on steep slopes, but may be on any slope. The bedrock will include all kinds except soft clay shales, igneous and some volcanic. The soil characteristic having the most influence on the plant community is the very shallow depth to bedrock, which drastically limits the available moisture.

Major Soil Series correlated to this site include: Rentsac

Other Soil Series in MLRA 32 correlated to this site include:

Parent Material Kind: residuum
Parent Material Origin: sandstone
Surface Texture: loam, loam, fine sandy loam, sandy loam
Surface Texture Modifier: none is most common, but channery may occur.
Subsurface Texture Group: loam
Surface Fragments ≤ 3" (% Cover): 0 to 20
Surface Fragments > 3" (%Cover): 0 to20
Subsurface Fragments ≤ 3" (% Volume): typically 0 to 15, occasionally 35 to 75
Subsurface Fragments > 3" (% Volume): typically 0, occasionally 5 to 25

	Minimum	Maximum
Drainage Class:	well	excessive
Permeability Class:	slow	moderately rapid

Depth (inches):	1	10
Electrical Conductivity (mmhos/cm) ≤20":	0	4
Sodium Absorption Ratio ≤20":	0	5
Soil Reaction (1:1 Water) ≤20":	6.6	8.4
Soil Reaction (0.1M CaCl2) ≤20":	NA	NA
Available Water Capacity (inches) ≤30":	0.3	1.7
Calcium Carbonate Equivalent (percent) ≤20":	0	5

Plant Communities

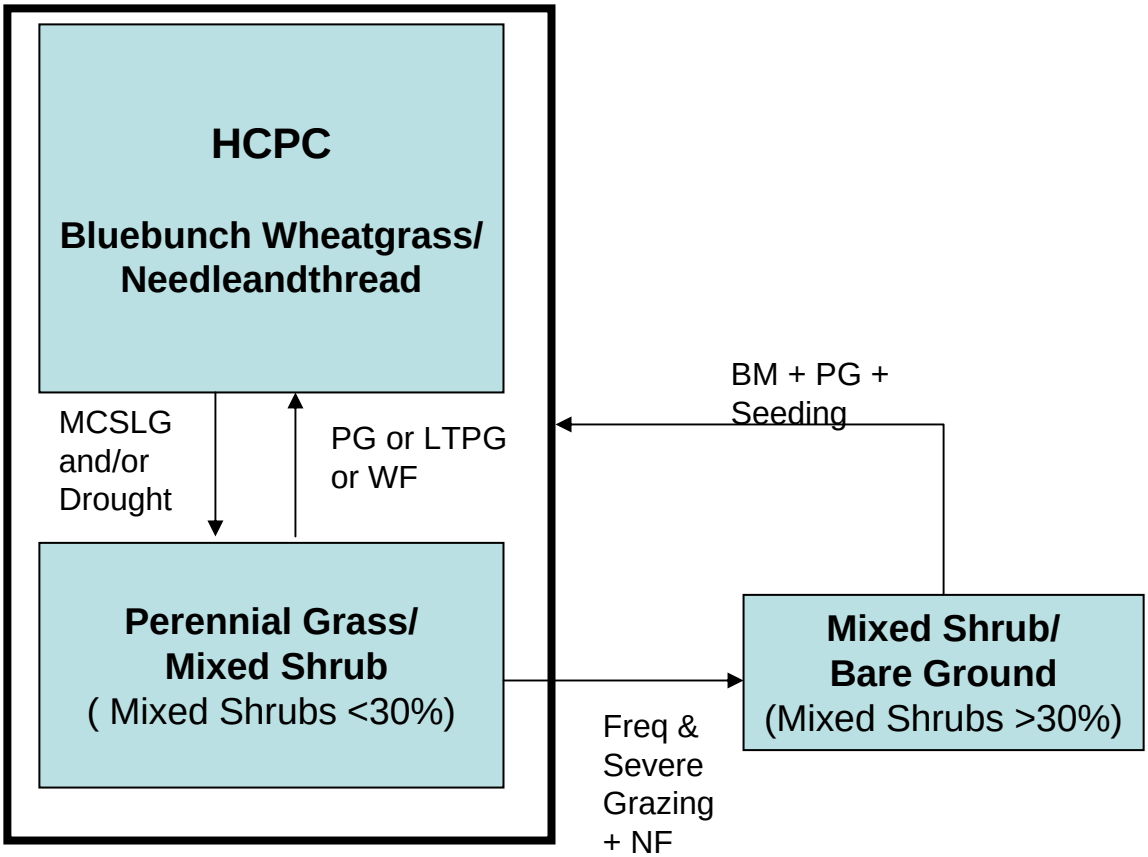
Ecological Dynamics of the Site:

Potential vegetation on this site is dominated by a variety of mid cool-season perennial grasses. Other significant vegetation includes winterfat and a variety of forbs and shrubs. The expected potential composition for this site is about 70% grasses, 10% forbs and 20% woody plants. The composition and production will vary naturally due to historical use, fluctuating precipitation and fire frequency.

As this site deteriorates, species such as short warm-season grasses, juniper, and shrubs will increase. Plains pricklypear and weedy annuals will invade. Cool season grasses such as bluebunch 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-term Prescribed Grazing
MCSLG - Moderate, Continuous Season-long Grazing
NU, NF - No Use and No Fire
PG - Prescribed Grazing (proper stocking rates with adequate recovery periods during the growing season)
VLTPG - Very Long-term Prescribed Grazing (could possibly take generations)
WF - Wildfire

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

COMMON NAME/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Annual Production (Normal Year) Total: 350		
			Group	lbs./acre	% Comp.
GRASSES AND GRASS-LIKES					
GRASSES/GRASSLIKES					
Griffiths wheatgrass or	Elymus albicans	ELAL7	1	105 - 158	30 - 45
Bluebunch wheatgrass	Pseudoroegneria spicata	PSSP6			
Needleandthread grass	Hesperostipa comata	HECO26	2	4 - 35	1 - 10
Prairie junegrass	Koeleria macrantha	KOMA	3	4 - 35	1 - 10
Indian ricegrass	Achnatherum hymenoides	ACHY	4	4 - 35	5 - 15
MISC. GRASSES/GRASSLIKES			**5**	**18 - 70**	**5 - 20**
Blue grama	Bouteloua gracilis	BOGR2	5	0 - 18	0 - 5
Bottlebrush squirreltail	Elymus elymoides	ELEL5	5	0 - 18	0 - 5
Fendler threeawn	Aristida purpurea longiseta	ARPUL	5	0 - 18	0 - 5
Indian ricegrass	Achnatherum hymenoides	ACHY	5	0 - 18	0 - 5
Sandberg bluegrass	Poa secunda	POSE	5	0 - 18	0 - 5
Threadleaf sedge	Carex filifolia	CAFI	5	0 - 18	0 - 5
Western wheatgrass	Pascopyrum smithii	PASM	5	0 - 18	0 - 5
other perennial grasses (native)		2GP	5	0 - 18	0 - 5
FORBS			**6**	**4 - 35**	**1 - 10**
Cutleaf daisy	Erigeron compositus	ERCO4	6	0 - 18	0 - 5
Evening primrose	Oenothera caespitosa	OECA10	6	0 - 18	0 - 5
Fleabane	Erigeron spp.	ERIGE2	6	0 - 18	0 - 5
Franklin's sagewort	Arenaria franklinii	ARFR	6	0 - 18	0 - 5
Fringed sagewort	Artemisia frigida	ARFR4	6	0 - 18	0 - 5
Nailwort	Paronychia spp.	PARON	6	0 - 18	0 - 5
Phlox	Phlox spp.	PHLOX	6	0 - 18	0 - 5
Prairie thermopsis	Thermopsis rhombifolia	THRH	6	0 - 18	0 - 5
Scarlet globemallow	Sphaeralcea coccinea	SPCO	6	0 - 18	0 - 5
Small-leaf pussytoes	Antennaria parvifolia	ANPA4	6	0 - 18	0 - 5
Stemless hymenoxys	Tetraneuris acaulis	TEACA2	6	0 - 18	0 - 5
Sulphur flower buckwheat	Eriogonum umbellatum	ERUM	6	0 - 18	0 - 5
Woolly groundsel	Packera cana	PACA15	6	0 - 18	0 - 5
other perennial forbs (native)		2FP	6	0 - 18	0 - 5
TREES/SHRUBS					
Black sagebrush	Artemisia nova	ARNO4	7	0 - 35	5 - 15
Curl-leaf mountainmahogany	Cercocarpus ledifolius	CELE3	8	0 - 35	5 - 10
MISC. SHRUBS/TREES			**9**	**18 - 35**	**5 - 10**
Antelope bitterbrush	Purshia tridentata	PUTR2	9	0 - 18	0 - 5
Green rabbitbrush	Chrysothamnus viscidiflorus	CHVI8	9	0 - 18	0 - 5
Limber pine	Pinus flexilis	PIFL2	9	0 - 17.5	0 - 5
Rubber rabbitbrush	Ericameria nauseosa	ERNA10	9	0 - 18	0 - 5
Shadscale	Atriplex confertifolia	ATCO	9	0 - 18	0 - 5
Skunkbush sumac	Rhus trilobata	RHTR	9	0 - 18	0 - 5
Utah juniper	Juniperus osteosperma	JUOS	9	0 - 18	0 - 5
Winterfat	Krascheninnikovia lanata	KRAL2	9	0 - 18	0 - 5
Wyoming big sagebrush	Artemisia tridentata wyomingensis	ARTRW8	9	0 - 18	0 - 5
other shrubs & half shrubs (native)		2SHRUB	9	0 - 18	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/Needleandthread Plant Community

The interpretive plant community for this site is the Historic Climax Plant Community. This state evolved with grazing by large herbivores and droughty soils due to the limited water holding capacity. Fire, although rare due to the sparseness of the vegetation is a component of this plant community. This plant community can be found on areas that are properly managed with grazing and on areas receiving occasional short periods of rest. Potential vegetation is about 70% grasses or grass-like plants, 10% forbs, and 20% woody plants. Cool season mid-grasses dominate the state.

The major grasses include bluebunch and/or Griffith's wheatgrasses, prairie junegrass, Indian ricegrass, and needleandthread. Other grasses and grasslikes occurring on the site include rhizomatous wheatgrasses, bottlebrush squirreltail, Sandberg bluegrass, Fendler threeawn, blue grama, and threadleaf sedge. Shrubs most commonly found are black and Wyoming big sagebrush, green and rubber rabbitbrush, winterfat, and juniper. Curl-leaf mountainmahogany is also a major shrub along the western slopes of the Bighorn mountains but does not occur in the Wind River Basin or along the slopes of the Owl Creek and Absaroka mountain ranges. Antelope bitterbrush and limber pine are very common on sites in the upper precipitation range of this zone. A variety of forbs can be present and plant diversity is high (see Plant Composition Table).

The total annual production (air-dry weight) of this state is about 350 pounds per acre, but it can range from about 250 lbs./acre in unfavorable years to about 500 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	25	40	10	5	10	5	0	0

(Monthly percentages of total annual growth)

The state is stable and well adapted to the Northern Intermountain Desertic Basins climate. The diversity in plant species allows for high drought resistance. This is a sustainable plant community (site/soil stability, watershed function, and biologic integrity

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

- Moderate Continuous Season-Long Grazing will convert this plant community to the *Perennial Grass/Mixed Shrub Plant Community.* Prolonged drought will exacerbate this transition.

Perennial Grass/Mixed Shrub Plant Community
Historically, this plant community evolved under grazing and a rare fire event. Currently, it is found under moderate, season-long grazing by livestock and is exacerbated by prolonged drought conditions. A fire regime for this site is basically non-existent. This plant community is still dominated by cool-season grasses, while short warm-season grasses and miscellaneous forbs account for the balance of the understory. A variety of shrubs makes up the overstory.

The dominant grasses include bluebunch wheatgrass, needleandthread, and rhizomatous wheatgrasses. Grasses and grasslikes of secondary importance include Sandberg bluegrass, blue grama, Fendler threeawn, and threadleaf sedge. Forbs commonly found in this plant community include tufted evening primrose, stemless mock goldenweed, Hood's phlox, sulfur flower buckwheat, and scarlet globemallow. Shrubs most commonly found are black and Wyoming big sagebrush, green and rubber rabbitbrush, and juniper. Curl-leaf mountainmahogany is also a major shrub along the western slopes of the Bighorn mountains but does not occur in the Wind River Basin or along the slopes of the Owl Creek and Absaroka mountain ranges. Antelope bitterbrush and limber pine are very common on sites in the upper precipitation range of this zone. These shrubs account for 20% to 30% of the total production.

When compared to the Historical Climax Plant Community, shrubs such as sagebrush and juniper have increased. Indian ricegrass and bluebunch and/or Griffiths wheatgrasses have decreased. Indian ricegrass may occur in only trace amounts under the sagebrush canopy or within patches of pricklypear. Blue grama and threadleaf sedge have increased. Plains pricklypear cactus will also have invaded, but occurs only in small patches. In addition, the amount of winterfat may or may not have changed depending on the season of use.

The total annual production (air-dry weight) of this state is about 300 pounds per acre, but it can range from about 225 lbs./acre in unfavorable years to about 450 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	25	40	10	5	10	5	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. The herbaceous component is mostly intact and plant vigor and replacement capabilities are sufficient. Water flow patterns and litter movement may be occurring but only on steeper slopes. Incidence of pedestalling is minimal. Soils are mostly stable and the surface shows minimum soil loss. The watershed is functioning and the biotic community is intact.

Transitional pathways leading to other plant communities are as follows:

- Prescribed grazing or possibly long-term prescribed grazing, will convert this plant community to the *HCPC*. The probability of this occurring is high especially if rotational grazing along with short deferred grazing is implemented as part the prescribed method of use. In addition, the removal of fire suppression will allow a somewhat natural fire regime to reoccur to more easily transition between this plant community and the HCPC. A prescribed fire treatment can be useful to hasten this transition, if desired. The wide gaps between plants, however, may create a problem in carrying a fire.

- Frequent and severe grazing over the long-term will convert this plant community to the Mixed *Shrub/Bare Ground Plant Community.*

Mixed Shrub/Bare Ground Plant Community
This state currently is found under heavy, season-long grazing by livestock and the absence of fire. Shrubs are significant components of this plant community and account for greater than 30% of the total production. Cool-season grasses have been reduced. Bare ground, warm season grasses, and annual plants dominate the understory.

The dominant grasses/grasslikes are threadleaf sedge and blue grama. Black and Wyoming big sagebrush, green rabbitbrush, and juniper are the common shrubs found on this site. Typically these sites are dominated by either black sagebrush or juniper. Concurrently, curl-leaf mountainmahogany can also dominate sites along the western slopes of the Bighorn mountains especially where fire suppression has persisted. Antelope bitterbrush, if not removed by over browsing, may still be present in the upper precipitation range of this zone, but these plants usually exhibit a gnarled hedged appearance as a result of heavy use. Limber pine may have increased on sites in the upper precipitation range of this zone, but will not exceed 10% of the total annual production.

Weedy annual species such as cheatgrass and Russian thistle may occupy the site if a seed source is available. Cactus and sageworts often invade. Noxious weeds such as Russian knapweed may invade the site if a seed source is available. The interspaces between plants have expanded significantly, leaving the amount of bare ground more prevalent. As compared with the HCPC, there is a reduction in the annual production, but the increase in juniper and sagebrush off sets some of the decline in the herbaceous production.

The total annual production (air-dry weight) of this state is about 150 pounds per acre, but it can range from about 50 lbs./acre in unfavorable years to about 250 lbs./acre in above average years.

The following is the growth curve 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	25	40	10	5	10	5	0	0

(Monthly percentages of total annual growth)

This plant community is resistant to change. These areas are actually more resistant to fire as less fine fuels are available and the bare ground between the shrubs is increased. Continued frequent and severe grazing or the removal of grazing does not seem to affect the composition or structure of the plant community. Plant diversity is poor. The plant vigor is diminished and replacement capabilities are limited due to the reduced number of cool-season grasses. Plant litter is noticeably less when compared to the HCPC.

Soil erosion is accelerated because of increased bare ground. Water flow patterns and pedestalling are obvious. Infiltration is reduced and runoff is increased. Rill channels may be noticeable in the interspaces and gullies may be establishing where rills have concentrated down slope.

Transitional pathways leading to other plant communities are as follows:

- Brush management (fire) and prescribed grazing will return this state to near *Historic Climax Plant Community.* Seeding native perennials is usually necessary to hasten establishment of these species.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

Historic Climax Plant Community: The predominance of grasses in this plant community favors grazers and mixed-feeders, such as bison, elk, and antelope. Suitable thermal and escape cover for deer may be limited due to the low quantities of woody plants. However, topographical variations could provide some escape cover. When found adjacent to sagebrush dominated states, this plant community may provide brood rearing/foraging areas for sage grouse, as well as lek sites. Other birds that would frequent this plant community include western meadowlarks, horned larks, and golden eagles. Many grassland obligate small mammals would occur here.

Perennial Grass/Mixed Shrub: The combination of a shrub overstory and an understory of grasses and forbs provide a very diverse plant community for wildlife. This diversity provides important winter ranges for mule deer and antelope as they may use this state for winter foraging. Cottontail and jack rabbits will use this area for both forage and cover year-round. It may provide winter, nesting, brood-rearing, and foraging habitat for upland game birds including sage grouse. Brewer's sparrows' nest in big sagebrush plants and hosts of other nesting birds utilize juniper stands as well.

Mixed Shrub/Bare Ground: This plant community can provide winter foraging for mule deer and antelope, as sagebrush can approach 15% protein and 40-60% digestibility during that time.
Due to the sparseness of the vegetation, this community does not provide escape and thermal cover for large ungulates or for nesting habitat for sage grouse. An exception is if large shrubs such as juniper or sometimes mountainmahogany dominate a site. In these cases, sufficient thermal and escape cover will meet the needs of many wildlife species.

Animal Preferences (Quarterly - 1,2,3,4) for commonly occuring plants in MLRA 32, 10-14 inch Foothills and Basins East

COMMON NAME/ GROUP NAME	SCIENTIFIC NAME	SCIENTIFIC SYMBOL	*Cattle*	*Sheep*	*Horses*	*Mule Deer*	*Antelope*	*Elk*	*Moose*	*Mtn. Sheep*
GRASSES/GRASSLIKES										
Alkali bluegrass	Poa juncifolia (syn. P. secunda)	POJU (POSE)	DDDD	PPPP	DDDD	PPPP	PPPP	DDDD	DDDD	DDDD
Alkali cordgrass	Spartina gracilis	SPGR	DDDD	UUUU	DDDD	UUUU	UUUU	DDDD	DDDD	UUUU
Alkali sacaton	Sporobolus airoides	SPAI	PPPP	DDDD	PPPP	DDDD	DDDD	PPPP	DDDD	DDDD
Baltic rush	Juncus balticus	JUBA	DDDD	UUUU	DDDD	UUUU	UUUU	DDDD	UUUU	UUUU
Basin wildrye	Leymus cinereus	LECI4	PPPP	PPPP	PPPP	DDDD	DDDD	PPPP	DDDD	PPPP
Big bluegrass	Poa Ampla (syn. P. secunda)	POAM (POSE)	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP
Blue grama	Bouteloua gracilis	BOGR2	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Bluebunch wheatgrass	Pseudoroegneria spicata	PSSP6	PPPP	PPPP	PPPP	DDDD	DDDD	PPPP	PPPP	DDDD
Bluejoint reedgrass	Calamagrostis canadensis	CACAM	PPPP	DDDD	PPPP	UUUU	UUUU	PPPP	DDDD	DDDD
Bottlebrush squirreltail	Elymus elymoides	ELELE	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Bulrush	Scripus spp.	SCIRP	DDDD	UUUU	DDDD	UUUU	UUUU	DDDD	DDDD	DDDD
Canada wildrye	Elymus canadensis	ELCA4	PPPP	PPPP	PPPP	DDDD	DDDD	PPPP	PPPP	PPPP
Canby bluegrass	Poa canbyi (syn. to Poa secunda)	POCA (POSE)	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP
Golden sedge	Carex aurea	CAAU3	DDDD	DDDD	DDDD	UUUU	UUUU	DDDD	UUUU	DDDD
Green needlegrass	Nassella viridula	NAVI4	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP
Indian ricegrass	Achnatherum hymenoides	ACHY	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP
Inland saltgrass	Distichlis spicata	DISP	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Inland sedge	Carex interior	CAIN11	DDDD	DDDD	DDDD	UUUU	UUUU	DDDD	DDDD	DDDD
Mat muhly	Muhlenbergia richardsonis	MURI	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Griffith's wheatgrass	Elymus albicans	ELAL7	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Nebraska sedge	Carex nebrascensis	CANE2	PPPP	PPPP	PPPP	DDDD	DDDD	PPPP	DDDD	DDDD
Needleandthread	Hesperostipa comata	HECO26	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP
Nuttall's alkaligrass	Puccinellia nuttalliana	PUNU2	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP
Prairie junegrass	Koeleria macrantha	KOMA	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Prairie sandreed	Calamovilfa longifolia	CALO	PPPP	DDDD	PPPP	UUUU	UUUU	PPPP	DDDD	DDDD
Sandberg bluegrass	Poa secunda	POSE	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Sand dropseed	Sporobolus cryptandrus	SPCR	DDDD	DDDD	DDDD	UUUU	UUUU	DDDD	UUUU	UUUU
Slender wheatgrass	Elymus trachycaulus	ELTR7	PPPP	DDDD	PPPP	DDDD	DDDD	PPPP	DDDD	DDDD
Slough sedge	Carex obnupta	CAOB3	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Spike fescue	Leucopa kingii	LEKI2	PPPP	DDDD	PPPP	PPPP	DDDD	PPPP	DDDD	DDDD
Streambank wheatgrass	Elymus lanceolatus	ELLAL3	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Thickspike wheatgrass	Elymus lanceolatus	ELLAL3	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Threadleaf sedge	Carex filifolia	CAFI	DDDD	DDDD	DDDD	DDDD	PPPP	DDDD	DDDD	DDDD
Tufted hairgrass	Deschampsia caespitosa	DECA18	PPPP	PPPP	PPPP	DDDD	DDDD	PPPP	DDDD	DDDD
Upland sedges	Carex spp.	CAREX	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Water sedge	Carex aquatilis	CAAQ	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Western wheatgrass	Pascopyrum smithii	PASM	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
FORBS										
Alkali seepweed	Suaeda vera	SUVE2	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
American bistort	Polygonum bistortoides	POB16	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Arrowgrass	Triglochin spp.	TRIGL	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
Asters	Eucephalus spp.	EUCEP2	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Biscuitroots	Lomatium spp.	LOMAT	DDDD	DDDD	UUUU	DDDD	DDDD	DDDD	DDDD	DDDD
Cinquefoil	Potentilla spp.	POTEN	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Deathcamas	Zigadenus Michx.	ZIGAD	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
Dock	Rumex spp.	RUMEX	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Evening primrose	Oenothera caespitosa	OECA10	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
False carrot	Turgenia spp.	TURGE	UUUU	DDDD	UUUU	UUUU	UUUU	UUUU	UUUU	DDDD
Fleabanes	Erigeron spp.	ERIGE2	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Fringed sagewort	Artemisia frigida	ARFR4	UUUU	UUUU	UUUU	UUUU	DDDD	UUUU	UUUU	UUUU
Goldenweed	Stenotus acaulis	STAC	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Gromwell	Buglossoides arvensis	BUAR3	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Hawksbeard	Crepis acuminata	CRAC2	UUUU	PPPP	UUUU	DDDD	DDDD	UUUU	DDDD	DDDD
Horsetails	Equisetum spp.	EQUIS	UUUU	UUUU	TTTT	UUUU	UUUU	UUUU	UUUU	UUUU
Iris	Iris spp.	IRIS	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Larkspur	Delphinium spp.	DELPH	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Milkvetch	Astragalus spp.	ASTRA	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Paintbrush	Castilleja spp.	CAST	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Penstemons	Penstemon spp.	PENST	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP
Phlox	Phlox spp.	PHLOX	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Prairie thermopsis	Thermopsis rhombifolia	THRH	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Princesplume	Stanleya spp.	STANL	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
Nuttalll's povertyweed	Monoepis nuttalliana	MONU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Pussytoes	Antennaria spp.	ANTEN	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Salsify	Tragopogon porrifolius	TRPO	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Scarlet globemallow	Sphaeralcea coccinea	SPCO	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Stemless hymenoxys	Tetraneuris acaulis	TEACA2	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Wild onion	Allium textile	ALTE	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Winterfat	Krascheninnikovia lanata	KRAL2	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP
Woody aster	Xylorhiza spp.	XYLOR	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
Wooly groundsel	Packera cana	PACA15	TTTT	UUUU	TTTT	UUUU	UUUU	TTTT	UUUU	UUUU
TREES, SHRUBS & HALF-SHRUBS										
Antelope bitterbrush	Purshia tridentata	PUTR2	PPPP	PPPP	DDDD	PPPP	PPPP	PPPP	PPPP	PPPP
Boxelder	Acer negundo L. var. interius	ACNE12	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Silver sagebrush	Artemisia cana	ARCA13	DDDD	DDDD	DDDD	PPPP	PPPP	DDDD	DDDD	DDDD
Big sagebrush	Artemisia tridentata	ARTR2	DDDD	DDDD	UUUU	DDDD	DDDD	DDDD	DDDD	DDDD
Birdfoot sagebrush	Artemisia pedatifida	ARPE6	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Black sagebrush	Artemesia nova	ARNO4	UUUU	PPPP	UUUU	PPPP	PPPP	UUUU	UUUU	DDDD
Cottonwoods (sprouts)	Populus spp.	POPUL	DDDD	DDDD	DDDD	DDDD	UUUU	DDDD	DDDD	UUUU
Curlleaf mountainmahogany	Cercocarpus ledifolius	CELE3	PPPP	PPPP	DDDD	PPPP	UUUU	PPPP	PPPP	DDDD
Gardners saltbush	Atriplex gardneri	ATGA	PPPP	PPPP	DDDD	PPPP	PPPP	PPPP	DDDD	DDDD
Greasewood	Sarcobatus vermiculatus	SAVE4	DDDD	DDDD	UUUU	DDDD	DDDD	DDDD	UUUU	UUUU
Green rabbitbrush	Chrysothamnus viscidiflorus	CHVI8	PPPP	DDDD	PPPP	PPPP	PPPP	PPPP	DDDD	DDDD
Limber pine	Pinus flexilis	PIFL2	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Rubber rabbitbrush	Ericameria nauseosa	ERNA10	UUUU	PPPP	UUUU	DDDD	PPPP	UUUU	UUUU	DDDD
Rocky Mountain juniper	Juniperus scopulorum	JUSC2	UUUU	UUUU	UUUU	DDDD	UUUU	UUUU	UUUU	UUUU
Shadscale	Atriplex confertifolia	ATCO	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Shrubby cinquefoil	Dasiphora floribunda	DAFL3	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	DDDD	UUUU
Silver buffaloberry	Shepherdia argentea	SHAR	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
skunkbush sumac	Rhus trilobata	RHTR	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD	UUUU	UUUU
Snowberry	Symphoricarpus occidentalis	SYOC	UUUU	UUUU	UUUU	DDDD	UUUU	UUUU	UUUU	UUUU
Utah juniper	Juniperus osteosperma	JUOS	UUUU	UUUU	UUUU	DDDD	UUUU	UUUU	UUUU	UUUU
Wildrose	Rosa woodsii var. woodsii	ROWOW	DDDD	DDDD	UUUU	DDDD	DDDD	DDDD	DDDD	DDDD
Willows	Salix spp.	SALIX	PPPP	PPPP	DDDD	PPPP	UUUU	PPPP	PPPP	DDDD
Winterfat	Krascheninnikovia lanata	KRAL2	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP
Yucca	Yucca spp.	YUCCA	DDDD	DDDD	UUUU	DDDD	DDDD	DDDD	UUUU	DDDD

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)
Historic Climax Plant Community	250-500	.15
Perennial Grass/Mixed Shrub	225-450	.12
Mixed Shrub/Bare Ground	50-250	.03

* - 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 highly variable and is dominated by soils in hydrologic group B and C, with localized areas in hydrologic group D. Infiltration ranges from slow to very rapid. Runoff potential for this site varies from moderate to high depending on soil hydrologic group, slope 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 may be present, but should be small. Water flow patterns should be barely distinguishable. 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 varieties 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

Shallow Sandy	032XY366WY
Shallow Loamy	032XY362WY

Similar Sites

() – Very Shallow 5-9” Wind River Basin P.Z. 032XY276WY
Very Shallow 5-9” Big Horn Basin P.Z. 032XY176WY
[Lower production than Very Shallow 10-14” E]

Inventory Data References (narrative)
Information presented here has been derived from NRCS inventory data. Field observations from range trained personnel were also used. Those involved in developing this site include: Chris Krassin, Range Management Specialist, NRCS and Everet Bainter, Range Management Specialist. Other sources used as references include USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, USDI and USDA Interpreting Indicators of Rangeland Health Version 3, and USDA NRCS Soil Surveys from various counties.

Inventory Data References
Ocular field estimations observed by trained personnel.

State Correlation
The site occurs entirely in Wyoming.

Type Locality

Field Offices
Casper, Cody, Dubois, Fort Washakie, Greybull, Lander, Powell, Riverton, Thermopolis, Worland,

Relationship to Other Established Classifications

Other References

Site Description Approval

_____ _____
State Range Management Specialist Date