United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Loamy Lowland 12-17" Precipitation Zone

Site ID: R067XY124WY

Major Land Resource Area: 67 – North Central High Plains

Physiographic Features

This site occurs on nearly level areas that receive additional water from overflow of intermittent streams or runoff from adjacent slopes and have a water table within reach of trees (within 20 feet).

Landform: alluvial fans, stream terraces **Aspect:** N/A

	Minimum	Maximum
Elevation (feet):	3800	6500
Slope (percent):	0	6
Water Table Depth (inches):	60	240
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 12-17 inches per year. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal precipitation. Temperatures show a wide range between summer and winter and between daily maximums and minimums, 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.

Wind speed averages about 8 mph, ranging from 10 mph during the spring to 7 mph during late summer. 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 1 and continues to about July 1. Native warm-season plants begin growth about May 15 and continue to about August 15. Green up of cool season plants may occur in September and October of most years.

The following information is from the "Lusk 2SW" climate station.

	Minimum	Maximum
Frost-free period (days):	74	148
Freeze-free period (days):	101	181
Mean Annual Precipitation (inches):	12	17

Mean annual precipitation: 15.71 inches
Mean annual air temperature: 45.2 °F (31.0°F Avg. Min. – 59.3°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: "Chugwater, Wheatland 4N, Cheyenne AP, and Scottsbluff WSO AP".

Influencing Water Features

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

Stream Type: C (Rosgen System)

Representative Soil Features

The soils of this site are deep to very deep well-drained soils formed in mixed alluvium. Layers of soil most influential to the plant community vary from 3 to 6 inches thick. These soils have moderate permeability.

Major Soil Series correlated to this site include: Haverson Variant, Haverson, McCook , Craft.

Other Soil Series correlated to this site include: none

Parent Material Kind: alluvium
Parent Material Origin: shale, sandstone
Surface Texture: loam
Surface Texture Modifier: none
Subsurface Texture Group: loam
Surface Fragments ≤ 3" (% Cover): 0
Surface Fragments > 3" (%Cover): 0
Subsurface Fragments ≤ 3" (% Volume): 0
Subsurface Fragments > 3" (% Volume): 0

	Minimum	Maximum
Drainage Class:	moderately well	well
Permeability Class:	moderately slow	moderate
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
Available Water Capacity (inches) ≤30":	1.0	6.2
Calcium Carbonate Equivalent (percent) ≤20":	0	5

Plant Communities

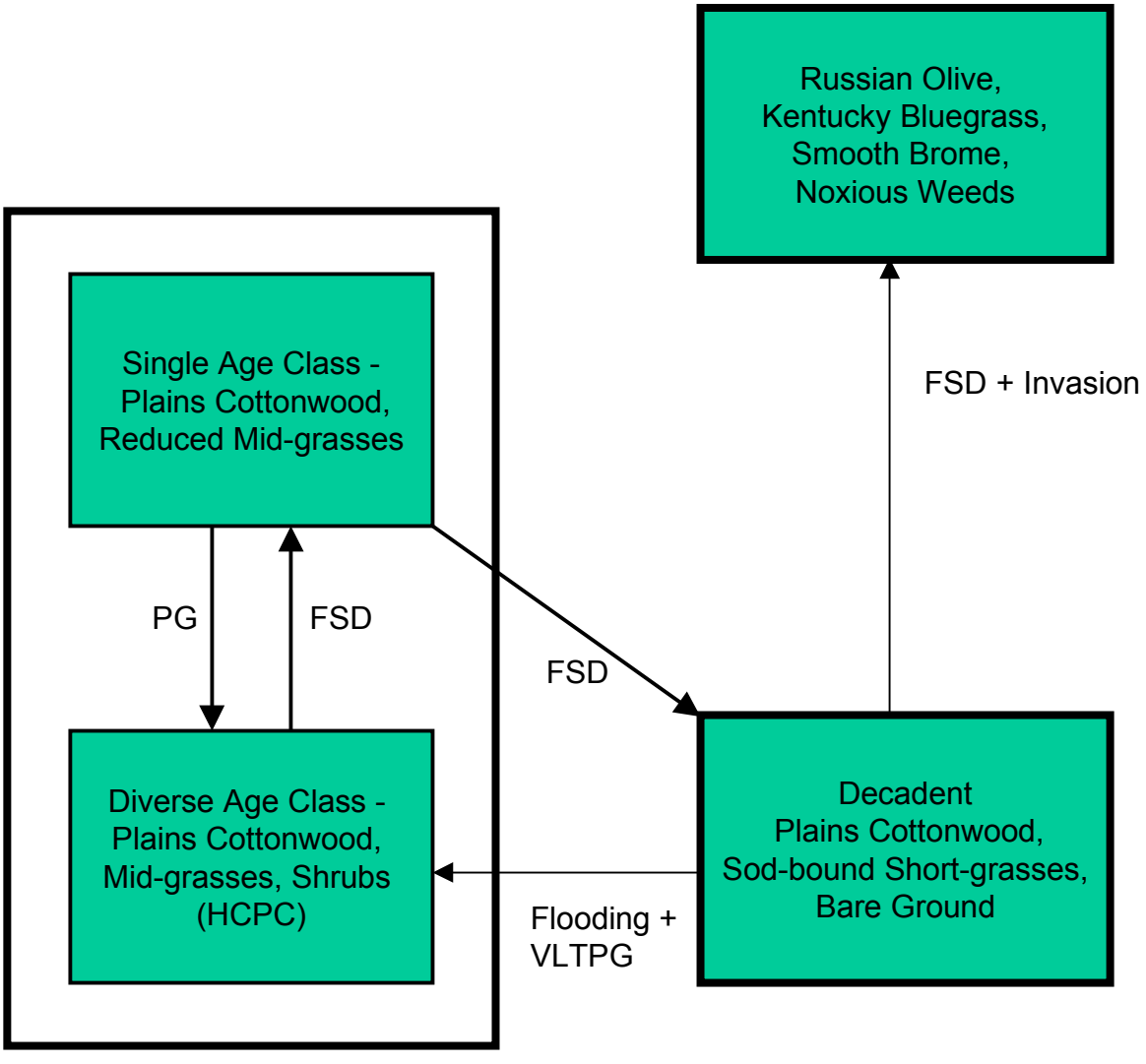
Ecological Dynamics of the Site
As this site deteriorates from frequent and severe grazing, mid to tall grasses such as needleandthread, little bluestem, and big bluestem decrease. Eventually, western wheatgrass will decrease in frequency and production. New seedlings of plains cottonwood will be eliminated before they can become established. Short, sod-forming grasses such as blue grama and threadleaf sedge will increase. Eventually, only a single age-class of plains cottonwood will remain.

Under continued frequent and severe defoliation, in combination with trampling, areas of bare ground will begin to develop. Introduced grasses, resistant to grazing, such as Kentucky bluegrass and smooth bromegrass, typically invade and can eventually dominate the site. Noxious weeds, such as leafy spurge, Canada thistle, and hounds tongue, can also invade. The few mature cottonwoods that remain will become decadent and eventually die. Introduced woody species, such as Russian olive and tamarix can invade the site. At this point, there is little that can be done to the site to return it to a native plant community.

Plains cottonwood can persist on terraces adjacent to streams, as long as occasional flooding occurs and the level of browsing is controlled. The exception to this is where down-cutting of the stream has lowered the water table.

The historic climax plant community (description follows the State and Transition Model 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 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.



FSD - Frequent and Severe Defoliation.
PG - Prescribed Grazing (proper stocking rates with adequate recovery periods during the growing season).
VLTPG - Very Long-term Prescribed Grazing (could take generations)

Plant Community Composition and Group Annual Production
Diverse Age Class Plains Cottonwood, Mid-tall grasses, Shrubs Plant Community (HCPC)

COMMON NAME/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Annual Production (Normal Year) Total: 2500		
			Group	lbs./acre	% Comp.
GRASSES AND GRASS-LIKES					
COOL-SEASON MID-GRASSES			**1**	**625 - 750**	**25 - 30**
needleandthread	Hesperostipa comata	HECO26	1	500 - 625	20 - 25
green needlegrass	Nassella viridula	NAVI4	1	125 - 250	5 - 10
RHIZOMATOUS WHEATGRASSES			**2**	**625 - 750**	**25 - 30**
western wheatgrass	Pascopyrum smithii	PASM	2	625 - 750	25 - 30
thickspike wheatgrass	Elymus lanceolatus	ELLAL	2	125 - 250	5 - 10
WARM-SEASON SHORT GRASSES			**3**	**250 - 375**	**10 - 15**
blue grama	Bouteloua gracilis	BOGR2	3	250 - 375	10 - 15
WARM-SEASON MID-GRASSES			**4**	**250 - 375**	**10 - 15**
big bluestem	Andropogon gerardii	ANGE	4	125 - 250	5 - 10
little bluestem	Schizachyrium scoparium	SCSCS	4	125 - 250	5 - 10
MISCELLANEOUS GRASSES/GRASS-LIKES			**5**	**375 - 500**	**15 - 20**
buffalograss	Buchloe dactyloides	BUDA	5	0 - 125	0 - 5
Indian ricegrass	Achnatherum hymenoides	ACHY	5	0 - 125	0 - 5
prairie junegrass	Koeleria macrantha	KOMA	5	0 - 125	0 - 5
Sandberg bluegrass	Poa secunda	POSE	5	0 - 125	0 - 5
sideoats grama	Bouteloua curtipendula	BOCU	5	0 - 125	0 - 5
threadleaf sedge	Carex filifolia	CAFI	5	0 - 125	0 - 5
threeawns	Aristida spp.	ARIST	5	0 - 125	0 - 5
perennial grasses/grass-likes (native)		2GRAM	5	0 - 125	0 - 5
FORBS			**6**	**125 - 250**	**5 - 10**
American vetch	Vicia americana	VIAM	6	0 - 125	0 - 5
cudweed sagewort	Artemisia ludoviciana	ARLU	6	0 - 125	0 - 5
fringed sagewort	Artemisia frigida	ARFR4	6	0 - 125	0 - 5
hairy goldaster	Heterotheca villosa	HEVI4	6	0 - 125	0 - 5
milkvetches	Astragalus spp.	ASTRA	6	0 - 125	0 - 5
penstemons	Penstemon spp.	PENST	6	0 - 125	0 - 5
prairie coneflower	Ratibida columnifera	RACO3	6	0 - 125	0 - 5
scarlet globemallow	Sphaeralcea coccinea	SPCO	6	0 - 125	0 - 5
western ragweed	Ambrosia psilostachya	AMPS	6	0 - 125	0 - 5
other perennial forbs (native)		2FP	6	0 - 125	0 - 5
SHRUBS			**7**	**125 - 250**	**5 - 10**
roses	Rosa spp.	ROSA5	7	0 - 125	0 - 5
silver sagebrush	Artemisia cana	ARCA13	7	0 - 125	0 - 5
western snowberry	Symphoricarpos occidentalis	SYOC	7	0 - 125	0 - 5
other shrubs and half-shrubs (native)		2SHRUB	7	0 - 125	0 - 5
TREES					
plains cottonwood	Populus deltoides ssp. monilifera	PODEM	8	125 - 375	5 - 15
boxelder	Acer negundo	ACNE2	9	0 - 125	0 - 5
green ash	Fraxinus pennslvanica	FRPE	10	0 - 125	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 table shown above has 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 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.

Diverse Age Class – Plains Cottonwood, Mid-grasses, Shrubs Plant Community

This plant community is the interpretive plant community for this site and is considered to be the Historic Climax Plant Community (HCPC). This site evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. Historically, fires likely occurred infrequently. This plant community can be found on areas that are grazed and where the grazed plants receive adequate periods of rest during the growing season in order to recover.

The potential vegetation is about 65-85% grasses, 5-10% forbs, and 5-10% shrubs. The site is highly variable with a diverse mix of mid to tall grasses, forbs, shrubs and trees. Trees can make up 5-15% of the total annual production. This can equate to 10-30% canopy cover. The major grasses include western wheatgrass, needleandthread, blue grama, green needlegrass, little bluestem, and big bluestem. Various species of shrubs and trees typically occur due to the water table within reach of the woody plants. These can include species such as roses, silver sagebrush, western snowberry, plains cottonwood, boxelder, and green ash. In addition, numerous other species of grasses can occur, along with a wide variety of forbs, because of the position of this site on the landscape and the microclimate produced by the shrubs and trees. Plant diversity is very high.

The total annual production (lb./ac., air-dry weight) of this plant community during an average year is:

	LOW	RV	HIGH
GRASS/GRASSLIKE	1480	1850	2220
FORB	160	200	240
SHRUB	160	200	240
TREE	200	250	300
TOTAL	2000	2500	3000

The following is the growth curve of this plant community expected during an average year:
Growth Curve Number:
Growth Curve Name:
Growth Curve Description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	13	25	35	10	5	10	0	0	0

(monthly percentages of total annual growth)

This plant community is stable and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high dry tolerance. This is a sustainable plant community in terms of site and soil stability, watershed function, and biologic integrity.

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

- Frequent and severe defoliation, during the growing season, will move this plant community towards the *Single Age Class – Plains Cottonwood, Reduced Mid-grasses Plant Community.* Over a period of years, plant species less tolerant to frequent and severe defoliation will begin to decrease, and those more tolerant will begin to increase. Continuous browsing and trampling will not allow tree seedlings to become established.

- If the water table is lowered significantly, due to down-cutting of a stream for example, seedlings of woody species will not be able to become established. At this point, the potential of the site has changed, and it has become an upland site. The Loamy Ecological Site Description should then be used, from that time on, to make management decisions.

Single Age Class – Plains Cottonwood, Reduced Mid-grasses Plant Community

This plant community typically develops, over a period of several years, under frequent and severe defoliation during the growing season. It is dominated by sod-forming grasses, with only remnants of mid-grasses remaining. The dominant grasses are blue grama and western wheatgrass. Green needlegrass, little bluestem, and big bluestem are nearly absent. Palatable shrubs and trees are heavily browsed, oftentimes having a hedged appearance. No new tree seedlings occur. Only cottonwoods that have reached "escape height" (out of reach of the browsers) remain.

Compared to the Historic Climax Plant Community, blue grama and threadleaf sedge have increased. Western wheatgrass and needleandthread have been somewhat reduced. Green needlegrass, little bluestem, and big bluestem have been greatly reduced. Palatable forbs and shrubs have decreased. Virtually all tree seedlings have been eliminated. Plant diversity is moderate.

The total annual production (air-dry weight) is about 1,750 pounds per acre during an average year, but it can range from about 1,400 pounds per acre in unfavorable years to about 2,100 pounds per acre in above average years.

The following is the growth curve of this plant community expected during an average year:
Growth Curve Number:
Growth Curve Name:
Growth Curve Description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	1	9	20	30	20	15	5	0	0	0

(monthly percentages of total annual growth)

This plant community is still stable and can be relatively resistant to change depending on the degree to which the sod has formed. Changes in grazing management can usually affect the plant composition fairly quickly as long as remnants of mid to tall grasses still occur and the water table has not been lowered significantly.

Soil erosion is low due partly to the level topography. Infiltration is somewhat reduced because of the sod-bound condition.

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

- Prescribed grazing will move this plant community towards the *Diverse Age Class – Plains Cottonwood, Mid-grasses, Shrubs Plant Community (HCPC).* Grazing should be deferred to allow recovery of mid and tall grasses, and the degree of browsing of the woody species (especially the cottonwood seedlings) must be monitored closely and controlled.

- Continued frequent and severe defoliation, throughout the growing season, will move this plant community towards the *Decadent Plains Cottonwood, Sod-bound Short-grasses, Bare Ground Plant Community.* Mid to tall grasses are eliminated and the few remaining cottonwoods become decadent and begin to die.

Decadent Plains Cottonwood, Sod-bound Short-grasses, Bare Ground Plant Community
This plant community develops under long-term frequent and severe defoliation. It has become sod-bound. Mid to tall grasses have been eliminated. The dominant grass is blue grama. Other grasses include threadleaf sedge, buffalograss, and threeawns. The palatable forbs and shrubs have been nearly eliminated. Remaining trees are decadent and are beginning to die.

Compared to the Historic Climax Plant Community, blue grama, threadleaf sedge, buffalograss, threeawns, and fringed sagewort have increased. Western wheatgrass and needleandthread have been greatly reduced. Green needlegrass, little bluestem, big bluestem, and palatable perennial forbs have been virtually eliminated. Plant diversity is very low.

The total annual production (air-dry weight) is about 1,250 pounds per acre during an average year, but it can range from about 1,400 pounds per acre in unfavorable years to about 900 pounds per acre in above average years.

The following is the growth curve of this plant community expected during an average 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	0	5	40	30	20	5	0	0	0

(monthly percentages of total annual growth)

Even with the best range management, this plant community is extremely resistant to change. This is because of the sod-bound condition and the fact that many of the plant species have been removed from the plant community. Oftentimes, a seed source is not readily available.

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

- Flooding followed by very long-term prescribed grazing will move this plant community towards the *Diverse Age Class – Plains Cottonwood, Mid-grasses, Shrubs Plant Community.* A timely flood event can result in germination of cottonwood seeds. The cottonwood seedlings can become established, if the grazing and degree of browsing is closely monitored and controlled. It could take generations to reestablish the mid and tall grasses, forbs, and shrubs, depending on the availability of a seed source. Pasture planting may be an option to return this site to a productive condition in a realistic time frame.

- Continued frequent and severe defoliation along with invasion of introduced plants and noxious weeds can move this plant community to the *Russian Olive, Kentucky Bluegrass, Smooth Brome, Noxious Weeds Plant Community*.

Russian Olive, Kentucky bluegrass, Smooth Brome, Noxious Weeds Plant Community
This plant community develops under very long-term frequent and severe defoliation, in conjunction with invasion of introduced plants and/or noxious weeds. Physical impact such as trampling, soil compaction, and trailing typically contribute to this transition. The plant composition is made up introduced grasses, annuals, noxious weeds, and a few species of native forbs and grasses that are very tolerant to frequent and severe defoliation. The site may also be invaded with introduced trees.

The dominant grasses typically include Kentucky bluegrass, smooth bromegrass, threeawn, blue grama, buffalograss, and threadleaf sedge. Annual grasses such as cheatgrass and sixweeks fescue have invaded. The dominant perennial forbs include curlycup gumweed and hairy goldaster. Major shrubs include broom snakeweed, pricklypear cactus, and green sagewort. Noxious weeds, such as leafy spurge, Canada thistle, and hound's tongue may have invaded the site. Introduced trees, such as Russian olive and tamarix may invade and eventually dominate the site.

This plant community is so highly variable, in both species composition and production, that the average annual production cannot be estimated.

The following is the growth curve of this plant community expected during an average year:
Growth Curve Number:
Growth Curve Name:
Growth Curve Description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	20	35	25	10	5	0	0	0

(monthly percentages of total annual growth)

This plant community is very resistant to change because of the lack of native species and the amount of introduced plants and weeds present. Smooth bromegrass and Kentucky bluegrass can eventually dominate the site due to their rhizomatous growth form and their resistance to heavy grazing. Once this occurs, it is nearly impossible to change the plant composition in a reasonable timeframe.

Soil erosion is low due partly to the level topography. Infiltration is somewhat reduced because of the sod-bound condition.

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

- There are few options when this plant community occurs. They include:
  1. Convert the site to pastureland by planting either introduced or native species.
  2. Manage for the plants that are present and that most closely meet your goals and objectives. This would include, at a minimum, prescribed grazing and pest management to control the noxious weeds.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

Diverse Age Class – Plains Cottonwood, Mid-Grasses, Shrubs community:
The predominance of grasses plus high forb diversity in this community favors large grazers. Trees and shrubs provide suitable thermal and escape cover for mule deer. White-tailed and black-tailed jackrabbit, badger, and coyote commonly use this community. This community also provides habitat for a wide array of smaller mammals, so diverse prey populations are available for raptors such as ferruginous and Swainson's hawks. Birds such as western kingbird, western meadowlark, lark bunting, and grasshopper sparrow will utilize this community for nesting and foraging. The overstory of large cottonwoods provides habitat for a variety of birds ranging from raptors to neo-tropical migrants.

Single Age Class – Plains Cottonwood, Reduced Mid-Grasses 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. The overstory of large cottonwoods provides habitat for a variety of birds ranging from raptors to neo-tropical migrants.

Decadent Plains Cottonwood, Sod- bound Short-grasses, Bare Ground community: This plant community may still 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. The overstory of large cottonwoods still provides some habitat for a variety of birds ranging from raptors to neo-tropical migrants.

Russian Olive, Kentucky bluegrass, Smooth brome, Noxious weeds community: This community has low habitat value for most wildlife species.

Animal Preferences (Quarterly - 1,2,3,4) for commonly occuring plants in MLRA 67 North

Common Name	Scientific Name	Symbol	Cattle	Sheep	Horses	Antelope	Deer	Elk
GRASSES/GRASSLIKES								
alkali bluegrass	Poa juncifolia	POJU	UDUD	NDNU	UDUD	UDUU	UDUU	DPDD
alkali cordgrass	Spartina gracilis	SPGR	UDPU	UPDU	UPDU	UUDU	UUDU	UDPU
alkali muhly	Muhlenbergia asperifolia	MUAS	UUDU	UUDU	UUDU	UUDU	UUDU	UUDU
alkali sacaton	Sporobolus airoides	SPAI	UDPU	UPDU	UPDU	UUDU	UUDU	UDPU
Baltic rush	Juncus balticus	JUBA	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
basin wildrye	Leymus cinereus	LECI4	DPDD	UPDU	DPDD	UDUU	UDUU	DPDD
big bluestem	Andropogon gerardii	ANGE	UDPD	UDDU	UDPD	UUDU	UUDU	UDPD
blowout grass	Redfieldia flexuosa	REFL	UUDU	UUDU	UUDU	UUDU	UUDU	UUDU
blue grama	Bouteloua gracilis	BOGR2	UDPU	UDPU	UDPU	UUDU	UUDU	UUDU
bluebunch wheatgrass	Pseudoroegneria spicata	PSSP6	DPDD	UPDD	DPDD	UDUU	UDUU	DPDD
bluegrasses	Poa spp.	POA	UPUU	UPND	UPUU	UPND	UPND	UPUU
bluejoint reedgrass	Calamagrostis canadensis	CACA4	UPDU	UDUU	UPDU	UDUU	UDUU	UPDU
buffalograss	Buchloe dactyloides	BUDA	UDPU	UDPU	UDPU	UUDU	UUDU	UUDU
bulrush	Scirpus spp.	SCIRP	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
Canada wildrye	Elymus canadensis	ELCA4	UDUU	NUNN	UDUU	NUNN	NUNN	UDUU
Fendler's threeawn	Aristida purpurea var. fendleriana	ARPUF	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
foxtail barley	Hordeum jubatum	HOJU	NDNN	NDNN	NDNN	NDNN	NDNN	NDNN
green needlegrass	Nassella viridula	NAVI4	DPPD	UPDU	DPPD	UDUU	UDUU	DPPD
hairy grama	Bouteloua hirsuta	BOHI2	UDPU	UDPU	UDPU	UUDU	UUDU	UUDU
Indian ricegrass	Achnatherum hymenoides	ACHY	DPPD	UPDU	DPPD	UDUU	UDUU	DPPD
Indiangrass	Sorghastrum nutans	SONU2	UDPD	UDDU	UDPD	UUDU	UUDU	UDPD
inland saltgrass	Distichlis spicata	DISP	NUUN	NUUN	NUUN	NUUN	NUUN	NUUN
little bluestem	Schizachyrium scoparium	SCSC	UDPU	UPDU	UPDU	UUDU	UUDU	UDPU
muhly	Muhlenbergia spp.	MUHLE	UUDU	UUDU	UUDU	UUDU	UUDU	UUDU
Nebraska sedge	Carex nebrascensis	CANE2	UDUD	UPND	UDUD	UPND	UPND	UDUD
needleandthread	Hesperostipa comata ssp. comata	HECOC8	DPDD	UPDU	DPDD	UDUU	UDUU	DPDD
northern reedgrass	Calamagrostis stricta ssp. inexpansa	CASTI3	UPDU	UDUU	UPDU	UDUU	UDUU	UPDU
Nuttall's alkaligrass	Puccinellia nuttalliana	PUNU2	DPUD	NPND	DPUD	UDUU	UDUU	DPPD
panicgrass	Dichanthelium wilcoxianum	DIWI5	UUDU	NUNN	UUDU	NUNN	NUNN	UUDU
plains bluegrass	Poa arida	POAR3	NPUN	NPUN	NPUN	NDUN	NDUN	NPUN
plains muhly	Muhlenbergia cuspidata	MUCU3	UUDU	UUDU	UUDU	UUDU	UUDU	UUDU
plains reedgrass	Calamagrostis montanensis	CAMO	UPDU	UDUU	UPDU	UDUU	UDUU	UPDU
prairie cordgrass	Spartina pectinata	SPPE	UDPD	UDDU	UDPD	UUDU	UUDU	UDPD
prairie junegrass	Koeleria macrantha	KOMA	UDUU	NDNU	UDUU	UDUU	UDUU	UDUU
prairie sandreed	Calamovilfa longifolia	CALO	UDPU	UDUU	UDDU	UUDU	UUDU	UUDU
reed canarygrass	Phalaris arundinacea	PHAR3	UDUU	NUNN	UDUU	NUNN	NUNN	UDUU
rushes	Juncus spp.	JUNCU	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
sand bluestem	Andropogon hallii	ANHA	UDPD	UDDU	UDPD	UUDU	UUDU	UDPD
sand dropseed	Sporobolus cryptandrus	SPCR	NUUN	NUUN	NUUN	NUUN	NUUN	NUUN
sand lovegrass	Eragrostis trichodes	ERTR3	UDPU	UUDU	UDDU	UUDU	UUDU	UDDU
sand paspalum	Paspalum setaceum	PASE5	NUUN	NUUN	NUUN	NUUN	NUUN	NUUN
Sandberg bluegrass	Poa secunda	POSE	NPUN	NPUN	NPUN	NDUN	NDUN	NPUN
sandhill muhly	Muhlenbergia pungens	MUPU2	UUDU	UUDU	UUDU	UUDU	UUDU	UUDU
sedge	Carex spp.	CAREX	UDUD	UPND	UDUD	UPND	UPND	UDUD
sideoats grama	Bouteloua curtipendula	BOCU	UDPU	UPDU	UPDU	UUDU	UUDU	UUDU
slender wheatgrass	Elymus trachycaulus ssp. trachycaulus	ELTRT	DPDD	UPDD	DPDD	UDUU	UDUU	DPDD
spikerush	Eleocharis spp.	ELEOC	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
switchgrass	Panicum virgatum	PAVI2	UDPD	UDDU	UDPD	UUDU	UUDU	UDPD
thickspike wheatgrass	Elymus lanceolatus ssp. lanceolatus	ELLAL	DPDD	UPDD	DPDD	UDUU	UDUU	DPDD
threadleaf sedge	Carex filifolia	CAFI	UDUD	UPND	UDUD	UPND	UPND	UDUD
threeawn	Aristida spp.	ARIST	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
western wheatgrass	Pascopyrum smithii	PASM	DPDD	UPDD	DPDD	UDUU	UDUU	DPDD
FORBS								
American licorice	Glycyrrhiza lepidota	GLLE3	NNNN	NUUN	NNNN	NUUN	NUUN	NUUN
American vetch	Vicia americana	VIAM	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
arrowgrass	Triglochin spp.	TRIGL	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
aster	Aster spp.	ASTER	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
biscuitroot	Lomatium spp.	LOMAT	UDUU	UDDU	UDUU	UDDU	UDDU	UDDU
blue-eyed grass	Sisyrinchium spp.	SISYR	UUDU	UUPU	UUDU	UUDU	UUDU	UUDU
breadroot	Pediomelum spp.	PEDIO2	NUUN	UDUU	NUUN	UDUU	UDUU	UDUU
broadleaf cattail	Typha latifolia	TYLA	UUDU	UUUU	UUDU	UUUU	UUDU	UUDU
buckwheat	Eriogonum spp.	ERIOG	NNNN	UUUU	NNNN	UUUU	UUUU	UUUU
bush morningglory	Ipomoea leptophylla	IPLE	UUUU	UUUU	NNNN	UUUU	UUUU	UUUU
cinquefoil	Potentilla spp.	POTEN	NNNN	UUUU	NNNN	UUUU	UUUU	UUUU
cudweed sagewort	Artemisia ludoviciana	ARLU	UUUU	UUDU	UUUU	UUDU	UUDU	UUDU
curlycup gumweed	Grindelia squarrosa	GRSQ	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
deathcamas	Zigadenus venenosus	ZIVE	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
dotted gayfeather	Liatris punctata	LIPU	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
evening primroses	Oenothera spp.	OENOT	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
false boneset	Brickellia eupatorioides	BREU	NDUN	NDUN	NNNN	NDUN	NDUN	NDUN
fringed sagewort	Artemisia frigida	ARFR4	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
goldenrod	Solidago spp.	SOLID	NUNN	NUNN	NNNN	NUNN	NUNN	NUNN

Animal Preferences (Quarterly - 1,2,3,4) for commonly occuring plants in MLRA 67 North

green sagewort	Artemisia campestris	ARCA12	NNNN	NUUN	NNNN	NUUN	NUUN	NNNN
greenthread	Thelesperma spp.	THELE	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
groundsel	Senecio spp.	SENEC	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
hairy goldaster	Heterotheca villosa	HEVI4	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
heath aster	Symphyotrichum ericoides	SYER	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
iris	Iris spp.	IRIS	NUUN	NUUN	NNNN	NUUN	NUUN	NUUN
ironweed	Vernonia spp.	VERNO	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
Lambert crazyweed	Oxytropis lambertii	OXLA3	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
larkspur	Delphinium spp.	DELPH	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
lemon scurfpea	Psoralidium lanceolatum	PSLA3	NNNN	NUUN	NNNN	NUUN	NUUN	NUUN
Maximilian sunflower	Helianthus maximiliani	HEMA2	UDPU	UDPU	UDPU	UDPU	UDPU	UDPU
milkvetch	Astragalus spp.	ASTRA	UDUU	UDUU	UDUU	UDUU	UDUU	UDUU
nailwort	Paronychia spp.	PARON	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
Pennsylvania smartweed	Polygonum pensylvanicum	POPE2	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
penstemons	Penstemon spp.	PENST	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
perennial sunflowers	Helianthus spp.	HELIA3	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
phlox	Phlox spp.	PHLOX	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
poison hemlock	Conium maculatum	COMA2	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
prairie clovers	Dalea spp.	DALEA	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
prairie coneflower	Ratibida columnifera	RACO3	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
purple prairie clover	Dalea purpurea	DAPU5	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
Pursh seepweed	Suaeda calceoliformis	SUCA2	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
pussytoes	Antennaria spp.	ANTEN	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
rush skeletonplant	Lygodesmia juncea	LYJU	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
sandwort	Arenaria spp.	ARENA	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
scarlet gaura	Gaura coccinea	GACO5	NNNN	NUUN	NNNN	NUUN	NUUN	NNNN
scarlet globemallow	Sphaeralcea coccinea	SPCO	UUDU	UDDU	UUDU	UPPU	UDDD	UDDD
scurfpea	Psoralidium spp.	PSORA2	NNNN	NUUN	NNNN	NUUN	NUUN	NUUN
showy peavine	Lathyrus polymorphus	LAPO2	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
silky prairie clover	Dalea villosa	DAVI	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
slimflower scurfpea	Psoralidium tenuiflorum	PSTE5	NNNN	NUUN	NNNN	NUUN	NUUN	NUUN
spiderworts	Tradescantia spp.	TRADE	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
stiff sunflower	Helianthus pauciflorus	HEPA19	UDPU	UDPU	UDPU	UDPU	UDPU	UDPU
swamp smartweed	Polygonum hydropiperoides	POHY2	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
tenpetal blazingstar	Mentzelia decapetala	MEDE2	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
veiny dock	Rumex venosus	RUVE2	NNNN	NUUN	NNNN	NUUN	NUUN	NUUN
water hemlock	Cicuta spp.	CICUT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
western ragweed	Ambrosia psilostachya	AMPS	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
western yarrow	Achillea millefolium	ACMI2	NUUN	NUUN	NNNN	NUUN	NUUN	NUUN
white prairie clover	Dalea candida	DACA7	UPPU	UPPU	UPPU	UPPU	UPPU	UPPU
whiteflower gilia	Ipomopsis longiflora ssp. longiflora	IPLOL	NUUN	NUUN	NNNN	NUUN	NUUN	NUUN
wild onion	Allium textile	ALTE	UDUU	UDUU	UDUU	UDUU	UDUU	UDUU
wild strawberry	Fragaria virginiana	FRVI	NNNN	NUUN	NNNN	NUUN	NUUN	NUUN
woollywhite hymenopappus	Hymenopappus tenuifolius	HYTE2	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
TREES, SHRUBS, AND HALF-SHRUBS								
antelope bitterbrush	Purshia tridentata	PUTR2	PDDD	PDDD	DDUD	PDDP	PDPP	PDDP
Arkansas rose	Rosa arkansana	ROAR3	UDDU	UDDU	NUUN	UDDU	UDDU	UDDU
big sagebrush	Artemisia tridentata	ARTR2	UNUU	DUUD	UNNU	PPPP	PUDP	DUUU
boxelder	Acer negundo	ACNE2	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
brittle cactus	Opuntia fragilis	OPFR	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
broom snakeweed	Gutierrezia sarothrae	GUSA2	NNNN	UUUU	NNNN	UUUU	UUUU	UUUU
fourwing saltbush	Atriplex canescens	ATCA2	PDDP	PDDP	PDDP	PDDP	PDDP	PDDP
Gardner's saltbush	Atriplex gardneri	ATGA	PDDP	PDDP	DUUD	PDDP	PDDP	PDDP
greasewood (Toxic in large amounts)	Sarcobatus vermiculatus	SAVE4	DUUD	DUUD	DUUD	DUUD	DUUD	DUUD
green ash	Fraxinus pennsylvanica	FRPE	UUUU	UUUU	UUUU	UDDU	UDDU	UUUU
green rabbitbrush	Chrysothamnus viscidiflorus	CHVI8	DUUD	DUUD	UNNU	PUDD	PUDD	DUUD
leadplant	Amorpha canescens	AMCA6	UPDU	UPDU	UDDU	UPDU	UPDU	UPDU
plains cottonwood	Populus deltoides ssp. monilifera	PODEM	DUDD	DUDD	DUDD	DUDD	DUDD	DUDD
plains pricklypear	Opuntia polyacantha	OPPO	NNNN	NNNN	NNNN	NNNN	NNNN	NNNN
ponderosa pine	Pinus ponderosa var. scopulorum	PIPOS	UTTU	UNNU	UNNU	UNNU	UNNU	UNNU
Rocky Mountain juniper	Juniperus scopulorum	JUSC2	UNNU	UNNU	UNNU	UNNU	DUUD	UNNU
rose	Rosa spp.	ROSA5	UDDU	UDDU	NUUN	UDDU	UDDU	UDDU
rubber rabbitbrush	Ericameria nauseosa	ERNA10	UUUU	DUUD	UUUU	UDDU	DUUD	DUUU
sand sagebrush	Artemisia filifolia	ARFI2	UNNU	UNNU	UNNU	UNNU	UNNU	UNNU
silver buffaloberry	Shepherdia argentea	SHAR	DUUU	DUUU	UUUU	UUUU	PUDP	DUUU
silver sagebrush	Artemisia cana	ARCA13	DUUD	DUUD	UNNU	PPPP	PDDP	DUUD
skunkbush sumac	Rhus trilobata	RHTR	DUUD	DUUD	UUUU	DUUD	DUUD	DUUD
spreading buckwheat	Eriogonum effusum	EREF	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
true mountainmahogany	Cercocarpus montanus	CEMO2	DDDD	PDDD	DDDD	UNNU	PDDP	PDDD
western sandcherry	Prunus pumila var. besseyi	PRPUB	DUUD	DUUD	DUUD	DUUD	PUDP	PUUP
western snowberry	Symphoricarpos occidentalis	SYOC	UUUU	UUUU	UUUU	UUUU	DUDD	DUUU
willows	Salix spp.	SALIX	PUDP	PUDP	DUUD	UUUU	PUDP	PUDP
winterfat	Krascheninnikovia lanata	KRLA2	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP
yucca	Yucca glauca	YUGL	DUUD	DUUD	UUUU	DUUD	DUUD	DUUD

Animal Community – Grazing Interpretations

The following tables list suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions; however, *continuous grazing is not typically recommended.* 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 the following stocking rate 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.

Plant Community 15-17" Precipitation	**Production (lbs./acre)**	**Carrying Capacity (AUM/acre)**
Diverse Age Class-Plains Cottonwood, Mid-Grasses, Shrubs (HCPC)	2500	0.7
Single Age Class-Plains Cottonwood, Reduced Mid-Grasses	1750	0.5
Decadent Plains Cottonwood, Sod-bound Short-grasses, Bare Ground	1250	0.3
Russian olive, Kentucky bluegrass, Smooth Brome, Noxious Weeds	(Highly Variable)	

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangelands in this area provide yearlong forage under prescribed grazing for cattle, sheep, horses and other herbivores. During the dormant period, livestock may need supplementation based on reliable forage analysis.

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 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, hiking, photography, bird watching and other opportunities. The wide varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

Limited value for campfire and fireplace wood.

Other Products

None noted.

Supporting Information

Associated Sites

(R067XY122WY) – Loamy 12-17 ” P.Z.

Similar Sites

(R067XY152WY) – Sandy Lowland 12-17” P.Z. has more needleandthread and bluestems with less western wheatgrass and green needlegrass

Inventory Data References (narrative)

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

Inventory Data References

Data Source	Number of Records	Sample Period	State	County
SCS-RANGE-417	110	1963 -1987	WY	Platte & others

State Correlation

This site has been correlated with Wyoming, Colorado, and Nebraska.

Type Locality

Field Offices

Wyoming: Cheyenne, Douglas, Lusk, Torrington, Wheatland
Nebraska: Bridgeport, Harrisburg, Kimball, Oshkosh, Scottsbluff, and Sidney
Colorado: Greeley, Sterling

Relationship to Other Established Classifications

Other References

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

Site Description Approval

_____ _____
State Range Management Specialist Date

_____ _____
State Range Management Specialist Date

_____ _____
State Range Management Specialist Date