

Ecological Site Description—Rangeland

Very Shallow, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
 MLRA: 60B – Pierre Shale Plains, East
 R058AE017MT, R060BE586MT

Site Name: Very Shallow (Vs), 10–14 inches Mean Annual Precipitation (MAP)

Site Number: R058AE017MT, R060BE586MT

Major Land Resource Areas: 58A – Northern Rolling High Plains, North Part
 60B – Pierre Shale Plains, North Part

Rangeland Resource Units: 58AE – Sedimentary Plains, East
 60BE – Pierre Shale Plains, East

1. Physiographic Features: This ecological site can occur on most upland positions including ridgetops, escarpments and shoulders of hills. It often occurs in complex with other ecological sites. This site occurs on slopes ranging from nearly level to very steep. It occurs on all exposures, and aspect sometimes becomes significant on steeper slopes. Variations in plant community composition and production can result due to aspect. Outcroppings of bedrock are characteristic and the amount tends to increase as slopes increase.

Elevation (feet): 1,900–3,500

Landform: ridge, shoulders of hills

Slope (percent): 2–70

Depth to Water Table (inches): greater than 60

Flooding: none

Ponding: none

Runoff Class: low to medium

Aspect: all, can be significant

2. Climatic Features: MLRAs 58A and 60B are considered to have a continental climate characterized by cold winters, hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature are typical. The climate is the result of this MLRA's location in the geographic center of North America. There are few natural barriers on the northern Great Plains and the winds move freely across the plains and account for rapid changes in temperature. Seasonal precipitation is often limiting for plant growth. Annual fluctuations in species composition and total production are typical depending on the amount and timing of rainfall. See Climatic Data Sheet MLRA 58A, east and 60B, for more details (Section II of the NRCS Field Office Technical Guide). For local climate station information, refer to <http://www.wcc.nrcs.usda.gov>.

Frost-free period (32⁰ F)-days: 105–145

Freeze-free period (28⁰ F)-days: 125–170

Mean annual precipitation (MAP): 10–14 inches

3. Influencing Water Features: None

4. Associated sites: Mainly Shallow and Silty-Steep. It is also sometimes associated with Silty and Shallow Clay sites.

5. Similar sites: Gravel, Shallow.

The Gravel site differs mainly in depth or texture.

The Shallow site differs by having a deeper soil profile over the root restricting layer, and having significantly more production.

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6. Soils: These soils are typically less than 10 inches deep to hard rock or soft beds of decomposed siltstone, sandstone, or shale. Soils that characterize this ecological site can include deep fragmental soils. Few roots penetrate deeper than 10 inches. Surface textures are variable. Cracks in the bedrock may allow deeper root penetration and have taller grasses, shrubs, or stunted trees. These soils are very droughty, having a total water holding capacity of 2 inches or less.

Parent material (kind): alluvium, residuum, colluvium

Parent material (origin): porcelanite, mixed sedimentary rock or soft beds, volcanics

Surface textures: loam, sandy loam, silt loam, clay loam

Surface texture modifiers: channery, very channery, gravelly, very gravelly

Fragments on the surface ≤ 3 " (% cover): 0–3

Fragments on the surface >3 " (% cover): 0–T

Subsurface Fragments ≤ 3 " (% volume): 15–70

Subsurface Fragments >3 " (% volume): 0–10

Depth (inches): mainly less than 10, sometimes deeper

Soil surface permeability (inches per hour): highly variable, mainly moderate to rapid

Available Water Holding Capacity to 40" (inches): less than 2

Drainage Class: excessive

Salinity/Electrical Conductivity (mmhos/cm): non-saline (0–2)

Sodium Absorption Ratio (SAR): negligible

Reaction (pH) (1:1 water): neutral to moderately alkaline (6.6–8.4)

6a. Representative Soils: Listed below are soils and map units which characterize this site in various counties. (Reference MT-165, Soil Interpretive Rating Report).

COUNTIES	TYPICAL SOILS	MAP UNIT
Big Horn	Wibaux channery loam	Wr
Carter	Kirby channery loam	176D, 276F
Custer	Kirby channery loam	612F
Custer	Kirby very channery loam	943F
Dawson	Ringling channery loam	Lr
Fallon	Kirby channery loam	176D, 276F
Garfield	Kirby channery loam	377D, 377E
McCone	Kirby very channery loam	33, 167
Musselshell	Hinterland loam	50B, C, D
Musselshell	Rentsac fine sandy loam	89C, 189E
Prairie	Kirby channery loam	25, 99
Rosebud	Kirby very channery loam	9, 10, 108
Treasure	Wibaux stony loam	Wr

7. Plant Community and Species Composition: The physical aspect of this site is that of a sparse grassland that is typically dominated by medium and tall grasses and sedges with a scattered shrub cover. Approximately 60–70% of the annual production is from grasses and sedges, 1–5% from forbs, and 15–25% is from shrubs and half-shrubs. The canopy cover of shrubs is 20–25%.

TABLE 7a.—Major Plant Species Composition, lists plant species composition and production by dry weight for the Historic Climax (HCPC) or Potential Plant Community (PPC) for this site. The Historic Climax or Potential Plant community has been determined by the study of rangeland relict areas, exclosures, or areas protected from excessive grazing. Total annual production has been derived from several data sources, and has been adjusted to represent a typical annual moisture cycle for the site. Reference for plant species names and symbols: USDA–NRCS PLANTS Database at <http://plants.usda.gov>.

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7a. Major Plant Species Composition – Historic Climax/Potential Plant Community

Common Name	Plant Symbol	Plant Group	Percent Comp.	Group Max. %	Mean Annual Precipitation (MAP) (inches)				
					10	11	12	13	14
					(lbs./acre)	(lbs./acre)	(lbs./acre)	(lbs./acre)	(lbs./acre)
Grasses and Sedges 60–70%					176	280	385	438	490
Bluebunch wheatgrass	PSSP6	2	30-50		75-125	120-200	165-275	188-312	210-350
Little bluestem	ANSC10	1	20-30		50-75	80-120	110-165	125-188	140-210
Sideoats grama	BOCU	3	5-15		12-38	20-60	28-82	31-94	35-105
Plains muhly	MUCU3	3	5-10		12-25	20-40	28-55	31-62	35-70
Needleandthread	HECOC8	10	5-10		12-25	20-40	28-55	31-62	35-70
Prairie sandreed	CALO	5	0-10		0-25	0-40	0-55	0-62	0-70
Threadleaf sedge	CAFI	12	1-5}	10	2-25 No more than 12 for any one	4-40 No more than 20 for any one	5-55 No more than 28 for any one	6-62 No more than 31 for any one	7-70 No more than 35 for any one
Prairie junegrass	KOMA	12	1-5}						
Sandberg bluegrass	POSE	12	1-5}						
Blue grama	BOGR2	15	1-5}						
Western wheatgrass	PASM	14	1-5}						
Other native grasses	2GP		0-5}						
Forbs 1–5%									
Black samson	ECAN2	21	1-5}	5	2-12 No more than 12 for Any one	4-20 No more than 20 for Any one	5-28 No more than 28 for any one	6-31 No more than 31 for any one	7-35 No more than 35 for any one
Scurfpea spp.	PSORA2	23	0-5}						
Purple prairieclover	DAPU5	21	1-5}						
White prairieclover	DACA7	21	1-5}						
Milkvetch spp.	ASTRA	24	1-5}						
Hairy goldenaster	HEVI4	23	1-5}						
Hood's phlox	PHHO	28	1-5}						
Buckwheat spp.	ERIOG	23	1-5}						
Green sagewort	ARDR4	19	0-5}						
Primrose spp.	OECM5	23	1-5}						
Penstemon spp.	PENST	28	1-5}						
Other native forbs	2FP		0-5}						
Shrubs and Half-shrubs 15–25%									
Skunkbush sumac	RHTR	33	1-10}	25	2-62 No more than 25 for any one	4-100 No more than 40 for any one	5-137 No more than 55 for any one	6-156 No more than 62 for any one	7-175 No more than 70 for any one
Winterfat	KRLA2	35	1-10}						
Yucca	YUGL	37	0-10}						
Fringed sagewort	ARFR4	38	1-10}						
Prairie rose	ROAR3	38	1-10}						
Green Rabbitbrush	CHVI8	36	0-10}						
Rubber Rabbitbrush	ERNAN5	36	0-10}						
Wyoming big sagebrush	ARTRW8	37	0-10}						
Shadscale	ATCO	37	0-10}						
Rocky Mtn. juniper	JUSC2	37	0-10}						
Creeping juniper	JUHO2	38	0-10}						
Other native shrubs	2SB		0-10}						
Broom snakeweed	GUSA2	37	0-T						
Plains pricklypear	OPPO	38	0-T						
Total Annual Production (lbs./acre)			100%		250	400	550	625	700

7b. Plant Group Descriptions: Plant functional groups are based on: season of growth, growth form, stature, type of root system, and ecological response to disturbance. Refer to Field Office Technical Guide (FOTG) Section II for a complete description of plant groups.

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8. Total Annual Production: Total annual production is a measurement of the total aboveground production (dry weight) of all major plant species that occur on the site during a single growth year, regardless of accessibility to grazing animals. This information is listed at the bottom of TABLE 7a.—Major Plant Species Composition. Average production values are listed for each incremental inch of precipitation for the site.

9. Cover and structure: The following table shows the approximate amounts of basal cover, canopy cover, and plant heights for this site in the Historic Climax or Potential Plant Community.

COVER TYPE	BASAL COVER (%)	CANOPY COVER (%)	AVERAGE HEIGHT (inches)
Cryptogams	T – 1	0 – T	0.25
Grasses/ sedges	5 – 10	15 – 20	24
Forbs	1 – 4	1 – 5	18
Shrubs	1 – 5	15 – 25	24
Litter	10 – 15		
Coarse fragments	10 – 15		
Bare ground	40 – 50		

10. Ecological Dynamics: This site developed under Northern Great Plains climatic conditions, which included the natural influence of large herbivores and occasional fire. The plant community upon which interpretations are primarily based is the Historic Climax Plant Community (HCPC) or Potential Plant Community. This community is described as a reference to understand the original potential of this site, and is not always considered to be the management goal for every acre of rangeland. The following descriptions should enable the landowner or manager to better understand which plant communities occupy their land, and assist with setting goals for vegetation management. It can also be useful to understand the environmental and economic values of each plant community.

This site is considered moderately resilient to disturbance as it has only moderate soil limitations for plant growth. Changes may occur to the Historic Climax Plant Community due to management actions and/or climatic conditions. Under continued adverse impacts, a moderate decline in vegetative vigor and composition will occur. Under favorable vegetative management treatments, this site can more readily return to the Historic Climax Plant Community (HCPC).

Continual adverse impacts to the site over a period of years results in a departure from the HCPC, with a decrease of the taller, more palatable species such as **bluebunch wheatgrass, little bluestem, sideoats grama, and plains muhly**, and an increase in **sedges, needleandthread, creeping juniper, and green sawwort**.

Plants that are not a part of the climax community that are most likely to invade are **annual grasses and forbs**.

10a. Major Plant Community Types: Following are descriptions of several plant communities that may occupy this site.

Plant Community 1: Tall and Medium Grasses/ Forbs/ Shrubs: This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC) or Potential Plant Community (PPC) for this site. This plant community is dominated by tall and medium cool and warm season grasses (**bluebunch wheatgrass, little bluestem, sideoats grama, and plains muhly**). A few forbs occur in small percentages. **Skunkbush sumac** is the predominant shrub that occurs. Annual production is low on this site due to low available water for plant growth.

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This plant community is well adapted to the Northern Great Plains climatic conditions. The diversity in plant species and the presence of tall, deep-rooted perennial grasses allows for moderately high drought tolerance, considering the limited available water holding capacity of the site. Individual species can vary greatly in production depending on growing conditions (timing and amount of precipitation and temperature). Plants on this site have strong, healthy root systems that allow production to increase significantly with favorable precipitation. Abundant plant litter is available for soil building and moisture retention. Plant litter is properly distributed with very little movement off-site and natural plant mortality is very low. This plant community provides for soil stability and a functioning hydrologic cycle.

Plant Community 2: Medium and Short Grasses/ Low and Medium Shrubs and Half-shrubs: Slight variations in the historical climax plant community result in a community where **needleandthread** increases slightly, **bluebunch wheatgrass and little bluestem**, decrease slightly, and short grasses and forbs may increase slightly.

Grass biomass production and litter become reduced on the site as the taller grasses disappear, increasing evaporation and reducing moisture retention. Additional open space in the community can result in undesirable invader species. This plant community provides for moderate soil stability.

Plant Community 3: Short Grasses/ Low and Medium Shrubs and Half-shrubs: With continued heavy disturbance over time Community 2 tends to shift to one dominated by short grasses and less palatable medium grasses, (**threadleaf sedge, needleandthread**), and half shrubs **green and fringed sagewort, and creeping juniper**.

Plant Community 4: Short Grasses/ Half-shrubs/ Biennials and Annuals: With continued heavy disturbance over time Community 3 the plant community tends to become dominated by short grasses, annual grasses and forbs, and half shrubs. Bare ground increases substantially and forbs and soil erosion will occur, typically resulting in a significant amount of erosion "pavement". Species that tend to dominate the site include **threadleaf sedge, blue grama, red and Fendler's threeawn, green and fringed sagewort, broom snakeweed, and annuals**.

Plant communities 3 and 4 are less productive than Plant Communities 1 or 2. The lack of litter and short plant heights result in higher soil temperatures, poor water infiltration rates, and high evaporation, which gives short grasses a competitive advantage over the cool and warm season tall and medium grasses. This community has lost many of the attributes of a healthy rangeland, including good infiltration, minimal erosion and runoff, nutrient cycling and energy flow.

These communities will respond positively to improved grazing management, but significant economic inputs and time would be required to move them toward a higher successional stage and a more productive plant community.

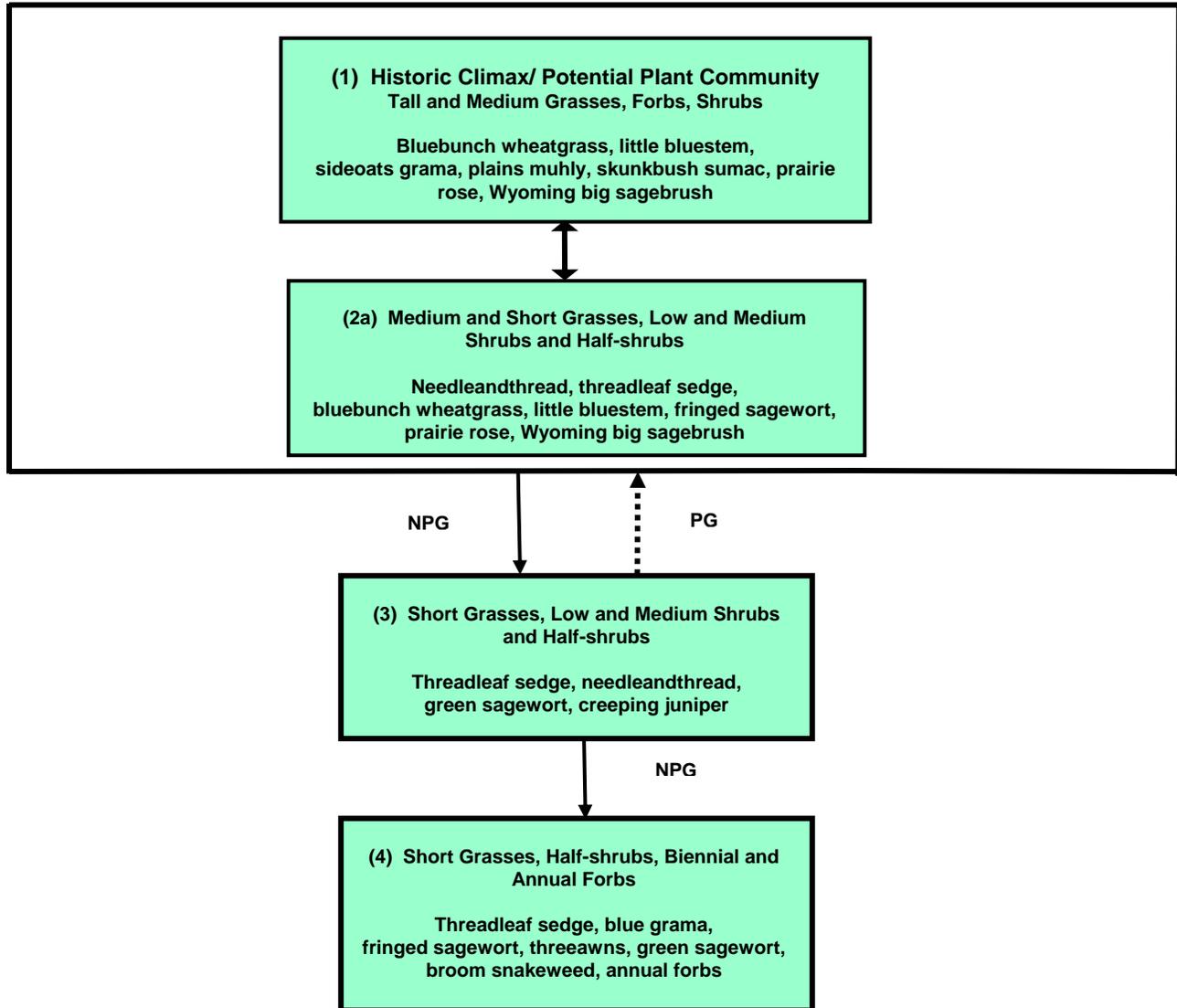
10b. Plant Communities and Transitional Pathways (State and Transition Model): Transitions in plant community composition occur along a gradient that is not linear. Many processes are involved in the changes from one community to another. Changes in climate, elevation, soils, landform, fire patterns and frequency, and grazing all play a role in determining which of the plant communities will be expressed. The following model outlines the various plant communities that may occur on this site and provides a diagram of the relationship between plant community and type of use or disturbance.

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Plant Communities and Transitional Pathways (diagram)



Smaller boxes within a larger box indicate that these communities will normally shift among themselves with slight variations in precipitation and other disturbances. Moving outside the larger box indicates the community has crossed a threshold (heavier line) and will require intensive treatment to return to Community 1 or 2. Dotted lines indicate a reduced probability for success.

NOTE: Not all species present in the community are listed in this table. Species listed are representative of the plant functional groups that occur in the community.

PG = Prescribed Grazing: Use of a planned grazing strategy to balance animal forage demand with available forage resources. Timing, duration, and frequency of grazing are controlled and some type of grazing rotation is applied to allow for plant recovery following grazing.

NPG = Non-Prescribed Grazing: Grazing which has taken place that does not control the factors as listed above, or animal forage demand is higher than the available forage supply.

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15. Plant Growth Curves: Growth of native cool-season plants begins in April and continues to the end of June. Native warm-season plants begin growth about mid May and continue to about the end of August. Green up of cool-season plants can occur in September through October when adequate soil moisture is present. The following tables show the approximate percentage of total growth by month that is expected to occur in various plant communities on this site for a "typical" moisture year.

Growth Curve Number: MT0811

Growth Curve Description: Includes all eastern sedimentary plains sites in the 10 – 14" p.z. with droughty upland soils, having mainly cool season plants.

Totals for Each Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	5	25	35	30	5	0	0	0	0	0

Cumulative Totals by Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	5	30	65	95	100	0	0	0	0	0

Growth Curve Number: MT0813

Growth Curve Description: Includes all low condition sites in eastern sedimentary plains sites, by short grasses.

Totals for Each Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	0	25	25	25	10	10	5	0	0	0

Cumulative Totals by Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	0	25	50	75	85	95	100	0	0	0

Growth Curve Number: MT0814

Growth Curve Description: Includes all low condition sites in eastern sedimentary plains sites including 10% or more shrubs.

Totals for Each Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	0	5	25	40	15	10	5	0	0	0

Cumulative Totals by Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	0	5	30	70	85	95	100	0	0	0

12. Livestock Grazing Interpretations: There are very limited amounts of suitable forage for livestock grazing on this site. The site may not produce shelter but the landform that it is in provides good shelter most of the time. The steeper slopes may also limit livestock travel and result in poor grazing distribution, especially in areas away from water. Management objectives should include maintenance or improvement of the vegetation community. Short grazing periods and adequate re-growth after grazing are recommended for plant recovery. Season long use of this site can be detrimental, causing an increase in bare ground and altering the plant community over time.

Whenever Plant Community 2 occurs (medium and short grasses), grazing management strategies need to be implemented to avoid further deterioration. This community is still stable, productive, and healthy provided it receives proper management. This community will respond fairly quickly to improved grazing management including increased growing season rest of key forage plants. Grazing management alone can usually move this community back to one more similar to potential if a good seed source of the taller grasses still exists.

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Plant Communities 3 or 4 have significantly reduced forage production (200–350 lbs./acre). Once this site is occupied by either Plant Communities 3 or 4, it will be more difficult to restore it to a community that resembles the potential with grazing management alone. Often, when this site is in this condition, there is a significant amount of erosion pavement/bare ground present.

Communities 3 and 4 have lost many of the attributes of a healthy rangeland, including good infiltration, minimal erosion and runoff, nutrient cycling and energy use. Additional growing season rest is often necessary for re-establishment of the desired species and to restore the stability and health of the site.

Mechanical treatment to improve site health is not feasible due to the shallow soils and steep slopes.

12a. Calculating Safe Stocking Rates: Proper stocking rates should be incorporated into a grazing management strategy that protects the resource, maintains or improves rangeland health, and is consistent with management objectives. Safe stocking rates will be based on useable forage production, and should consider ecological condition and trend of the site, and past grazing use history.

Calculations used to determine an safe stocking rate are based on the amount of useable forage available, taking into account the harvest efficiency of the animal and the grazing strategy to be implemented. Average annual production must be measured or estimated to properly assess useable forage production and stocking rates.

12b. Guide to Safe Stocking Rates: The following charts provide a guide for determining an safe stocking rate. Animal Unit Month (AUM) figures are based on averages of forage production from data collected for this site over several years. The characteristic plant communities and production values listed may not accurately reflect the productivity of a specific piece of land, hence this table should not be used without on-site information as to current forage productivity of the site. Adjustments to stocking rates for each range unit must be made based on topography, slope, distance to livestock water, and other factors which effect livestock grazing behavior.

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12c. Stocking Rate Guide:

Major Plant Community Dominant Plant Species	MAP	Total Production (pounds/ac)	Cattle			Sheep		
			Forage Production	AUM/ac	Ac/AUM	Forage Production	AUM/ac	Ac/AUM
1. Tall and Medium Grasses, Forbs, Shrubs (HCPC/PPC) <i>Bluebunch wheatgrass, little bluestem, sideoats grama, plains muhly, skunkbush sumac</i> (S.I. >70%)	13–14"	625 – 700	525 – 600	.17 – .19	5.3 – 5.9	550 – 650	.17 – .21	4.8 – 5.9
	10–12"	250 – 550	200 – 450	.06 – .14	7.1 – 16.7	225 – 500	.07 – .16	6.25 – 14.3
2. Medium and Short Grasses, Half-shrubs <i>Needleandthread, threadleaf sedge, bluebunch wheatgrass, little bluestem</i> (S.I. 45–70%)	13–14"	500 – 600	375 – 500	.12 – .16	6.25 – 8.3	400 – 550	.13 – .17	5.9 – 7.7
	10–12"	200 – 500	150 – 425	.05 – .13	7.7 – 20.0	150 – 450	.05 – .14	7.1 – 20.0
3. Short Grasses, Shrubs, and Half-shrubs <i>Threadleaf sedge, needleandthread, green sagewort, creeping juniper</i> (S.I. 25–40%)	10–14"	200 – 525	100 – 350	.03 – .11	9.1 – 33.3	125 – 400	.04 – .13	7.7 – 25.0
4. Short Grasses, Half-shrubs, Forbs, Annuals <i>Threadleaf sedge, blue grama, fringed sagewort, green sagewort, threeawns, annual forbs</i> (S.I. < 30%)	10–14"	125 – 350	50 – 200	.01 – .04	25.0–100.0	60 – 250	.01 – .05	20.0 – 100.0

Stocking rates are calculated from average forage production values using a 25% Harvest Efficiency factor for preferred and desirable plants, and 10% Harvest Efficiency for less desirable species. AUM calculations are based on 790 pounds per animal unit month (AUM) for a 1,000-pound cow with calf up to 4 months. No adjustments have been made for site grazability factors, such as steep slopes, site inaccessibility, or distance to drinking water.

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12d. Plant Forage Preferences for Cattle and Sheep

Legend: P=Preferred D=Desirable U=Undesirable E=Emergency
N=Nonconsumed T=Toxic Blank=Unknown or no data

Winter (W) = Jan., Feb., March; Spring (SP) = April, May, June;
Summer (SU) = July, Aug., Sept.; Fall (F) = Oct., Nov., Dec.

PLANT NAME	Cattle				Sheep			
	W	SP	SU	F	W	SP	SU	F
Western wheatgrass	P	D	D	P	D	D	D	D
Little bluestem	P	P	P	P	U	D	D	U
Bluebunch wheatgrass	P	D	P	P	D	D	D	D
Sideoats grama	P	P	P	P	D	D	P	D
Needleandthread ^{1/}	D	D	D	D,T	D	D	D	D
Sandberg bluegrass	D	D	D	D	D	D	D	D
Threadleaf and Needleleaf sedge	D	P	P	D	D	P	P	D
Prairie junegrass	D	D	D	D	D	P	D	D
Plains muhly	D	D	D	D	D	D	D	D
Blue grama	D	D	D	D	D	P	P	D
Threeawns	N	U	N	N	N	U	N	N
Tumblegrass	N	U	N	N	N	U	N	N
Cheatgrass ^{2/}	U	D	N	N	U	P	U	U
Black samson	N	D	D	D	D	P	P	D
Prairieclover spp.	N	D	D	D	D	D	D	D
Dotted gayfeather	N	P	P	P	D	P	D	D
Milkvetch spp. ^{3/}	N	D,T	D,T	D,T	D,T	P,T	D,T	D,T
American vetch	N	P	P	D	N	P	P	D
Prairie coneflower	N	D	D	D	D	D	D	D
Wild onion	N	P	P	N	N	P	P	N
Hood's phlox	N	N	N	N	U	U	U	U
Pussytoes spp.	N	N	N	N	U	U	U	U
Wild parsley	N	D	D	U	N	D	D	U
Green sagewort	N	N	N	N	N	N	N	N
Scarlet globemallow	N	D	D	D	N	D	D	D
Two-grooved poisonvetch	N	T	T	T	N	T	T	T
White point loco	N	T	T	T	T,N	T,N	T,N	T,N
Low larkspur	N	N,T	N,T	N	N	D,T	D,T	N
Death camas	N	T	T	N	N	T	T	N
Winterfat	P	P	P	P	P	D	D	P
Prairie rose	N	N	N	N	D	D	D	D
Silver sagebrush	D	D	D	D	D	D	D	D
Green and Rubber rabbitbrush	U	U	U	U	U	U	U	U
Wyoming big sagebrush	N	N	N	N	P	D	D	P
Rocky Mtn. Juniper	N	N	N	N	U	N	N	N
Fringed sagewort	N	N	N	N	U	U	U	U
Yucca	N	N	N	N		D	D	
Broom snakeweed ^{4/}	N	N	N	U	U	U	U	U
Plains pricklypear ^{5/}	N	N	N	N	U	U	U	U

^{1/} The awns and sharp seeds of needleandthread can harm livestock when dry.

^{2/} Not a native plant, but a common invader.

^{3/} Some species of milkvetch are poisonous.

^{4/} Broom snakeweed can be poisonous, but this is not usually a problem in Montana because plants die back in winter and do not have green leaves in early spring.

^{5/} The spines can be injurious to livestock.

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13. Wildlife Interpretations. The following is a description of habitat values for the different plant communities that may occupy the site:

Plant Community 1 and 2: Tall Grasses/Forbs/Shrubs (HCPC or PPC): The combination of vegetative diversity, slope variation and a tendency to occur in a complex with other ecological sites can produce significant wildlife habitat values. Steep south and west-facing slopes are often valuable as mule deer and elk winter range. The diversity of warm and cool season grasses and variety of shrubs and half-shrubs presents a long period of high nutrition for grazers and mixed feeders, even though the community is not highly productive. Rock outcrops and scattered junipers provide perch sites for raptors such as red-tailed and ferruginous hawks and golden eagles. Ground-nesting bird habitat values are generally low. Common nighthawks and mountain plovers may nest on the open, rocky surface. Songbirds such as rock wrens, chipping sparrows and spotted towhees may be found in this community. Small mammals are generally seed-eaters like deer mice, pocket mice and kangaroo rats.

Plant Community 3: Short Grasses/ Low and Medium Shrubs and Half-shrubs: The reduction/loss of warm season mid-grasses, bluebunch wheatgrass and desirable shrubs significantly degrades nutritive quality for ungulates. Loss of vegetative structural diversity results in relatively low songbird and small mammal habitat value. Their prey base for raptors and mammalian predators is reduced.

Plant Community 4: Short Grasses/ Half shrubs/ Biennials and Annuals: Wildlife habitat values are very limited in this community with the loss of plant species and structural diversity. Deer mice may make use of seed production from annual grasses and forbs.

Ecological Site Description—Rangeland

Very Shallow, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
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13a. Plant Preferences for Antelope and Deer:

Legend: P=Preferred D=Desirable U=Undesirable E=Emergency
N=Nonconsumed T=Toxic Blank=Unknown or no data

Winter (W) = Jan., Feb., March; Spring (SP) = April, May, June;
Summer (SU) = July, Aug., Sept.; Fall (F) = Oct., Nov., Dec.

PLANT NAME	Antelope				Deer			
	W	SP	SU	F	W	SP	SU	F
Perennial grasses	P	P	P	P	D	P,D	D	D
Red threeawn	N	N	N	N	N	N	N	N
Annual grasses	N	P,D	N	D	N	P,D	N	D
Sedges	D	P	P	P	D	P	P	P
Black samson	P	P	P	P	D	D	D	D
Prairieclover spp.	P	P	P	P	P	P	P	P
Dotted gayfeather	D	P	D	D	D	P	P	P
Milkvetch spp.	D	P	P	D	D	D	D	D
Scurfpea spp.	N	D	D	D	D	D	D	D
Hairy goldenaster	E	E	E	E	E	E	E	E
Goldenrod spp.	D	P	P	P	D	D	D	D
American licorice	P	P	D	D	D	P	D	D
Prairie coneflower	D	P	P	D	D	P	D	D
American vetch	P	P	P	P	D	P	P	P
Hood's phlox	U	U	U	U	U	U	U	U
Wild parsley	U	D	U	U	U	D	U	U
Green sagewort	N	N	N	N	N	N	N	N
Scarlet globemallow	D	D	D	D	D	D	D	D
Twogrooved poinsonvetch	N, T	N, T	N, T	N, T	N, T	N, T	N, T	N, T
White point loco	N, T	N, T	N, T	N, T	N, T	N, T	N, T	N, T
Death camas	N, T	N, T	N, T	N, T	N, T	N, T	N, T	N, T
Green sagewort	N	N	N	N	N	N	N	N
Larkspur spp.	N, T	N, T	N, T	N, T	N, T	N, T	N, T	N, T
Winterfat	P	P	P	P	P	P	P	P
Prairie rose	U	U	U	U	E	D	E	E
Silver sagebrush	D	D	P	D	P	P	D	P
Wyoming big sagebrush	P	P	P	P	P	P	D	D
Rabbitbrush spp.	D	D	D	D	D	D	D	D
Rocky Mtn. Juniper	N	N	N	N	D	D	D	D
Fringed sagewort	D	U	U	D	D	U	U	D
Plains pricklypear	N	N	N	N	N	N	N	N
Broom snakeweed	N	N	D	N	D	D	P	P
Yucca								

14. Hydrology Data: The soils associated with this ecological site are generally in Hydrologic Soil Group A. The infiltration rates for these soils are highly variable, requiring an on-site evaluation. The runoff potential for this site is low to moderate, depending on slope and ground cover/health. Runoff curve numbers generally range from 54 to 73.

The hydrologic condition of this site has a significant affect on runoff. The hydrologic condition considers the effects of cover, including litter, and management on infiltration. Good hydrologic condition indicates that the site usually has a lower runoff potential.

Sites in low similarity (Plant Communities 3 and 4) are generally considered to be in less than good hydrologic condition. Sites in low similarity may have a high percentage of cover, but from shallow rooted species (e.g., threadleaf sedge). The deep root systems of the potential vegetation will help maintain or increase infiltration rates and reduce runoff.

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Erosion is minor for sites in high similarity. Rills and gullies should not be present. Water flow patterns, if present, will be barely observable. Plant pedestals are essentially non-existent. Plant litter remains in place and is not moved by erosion. Soil surfaces should not be compacted or crusted.

For arid and semi-arid rangelands, good hydrologic conditions exist if cover (grass, litter, and brush canopy) is greater than 70%. Fair conditions exist when cover is between 30 and 70%, and poor conditions exist when cover is less than 30%. (Reference: Engineering Field Manual, Chapter 2 and Montana Supplement 4).

15. Recreation and Natural Beauty: This site provides recreational opportunities for big game and upland bird hunting, and hiking. The forbs have flowers that appeal to photographers. This site provides valuable open space and visual aesthetics. It supports sparse vegetation and recreational access is often difficult.

16. Wood Products: None

Authors: Original: REL, AJN, 1983 Revised: JVF, REL, RSN, MJR, SKW, SVF, POH, 2003

Supporting Data for Site Development:

NRCS–Production & Composition Record for Native Grazing Lands (Range-417): 6
BLM–Soil & Vegetation Inventory Method (SVIM) Data: 4
NRCS–Range Condition Record (ECS-2): 20
NRCS–Range/Soil Correlation Observations & Soil 232 notes: 9

Field Offices where this site occurs within the state:

Baker	Forsyth	Jordan	Terry
Broadus	Glendive	Miles City	Wibaux
Circle	Hardin	Roundup	
Ekalaka	Hysham	Sidney	

Site Approval: This site has been reviewed and approved for use:

Rhonda Sue Noggles
State Rangeland Management Specialist

06/30/03
Date

Ecological Site Description—Rangeland

Very Shallow, 10–14" MAP

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**Very Shallow 10-14"
Sedimentary Plains, east
Plant Community 1
HCPC /PPC**



**Very Shallow 10-14"
Sedimentary Plains, east
Plant Community 1
HCPC /PPC**



**Very Shallow 10-14"
Sedimentary Plains, east
Plant Community 1
HCPC /PPC
Rosebud County**

Ecological Site Description—Rangeland

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Very Shallow 10-14"
Sedimentary Plains, east
Plant Community 1
HCPC /PPC



Very Shallow 10-14"
Sedimentary Plains, east
Plant Community 1
HCPC /PPC
Rosebud County



Very Shallow 10-14"
Sedimentary Plains, east
Plant Community 1

Ecological Site Description—Rangeland

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**Very Shallow 10-14"
Sedimentary Plains, east
Plant Community 1
Good litter cover**



**Very Shallow 10-14"
Sedimentary Plains, east
Plant Community 2
Custer County**



**Very Shallow 10-14"
Sedimentary Plains, east
Plant Community 2**

Ecological Site Description—Rangeland

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**Very Shallow 10-14"
Sedimentary Plains, east
Plant Community 2
Steep slopes**



**Very Shallow 10-14"
Sedimentary Plains, east
Plant Community 2 to 3**



**Very Shallow 10-14"
Sedimentary Plains, east
Plant Community 3
Powder River County**