

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
 MLRA: 60B – Pierre Shale Plains, East
 R058AE016MT, R060BE569MT

Site Name: Gravel (Gr), 10–14 inches Mean Annual Precipitation (MAP)

Site Number: R058AE016MT, R060BE569MT

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 outwash fans, hilltops, hills, plains and terrace escarpments. It often occurs in a complex with other ecological sites. This site occurs on all exposures and aspect can sometimes be significant. Variations in plant composition and production can occur due to aspect.

Elevation (feet): 1,900–3,500

Landform: outwash fans, hilltops, hills, plains, terrace escarpments

Slope (percent): 0–70

Depth to Water Table (inches): greater than 60

Flooding: none

Ponding: none

Runoff Class: low to negligible

Aspect: all

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: Silty, Silty–Steep, Sandy–Steep, and Shallow.

5. Similar sites: Sands, Very Shallow and Shallow to Gravel.

Sands sites have few coarse fragments, and are significantly more productive.

Very Shallow sites typically have a restrictive layer at less than 10 inches.

Shallow to Gravel sites are typically silt loams, loams and sandy loams less than 20 inches deep over gravels or a layer with 35% or more gravels.

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT

6. Soils: These are moderately deep to very deep droughty soils formed in sand and gravel deposits. They typically have greater than 15% pebbles and gravels in the upper part of the soil, and 50% or more pebbles, gravels, and cobbles in the lower part, often within 12 inches of the surface.

- Parent material (kind):** sandy and gravelly alluvium
- Parent material (origin):** glacialfluvial deposits
- Surface textures:** loam, sandy loam, loamy sand
- Surface texture modifiers:** gravelly, very gravelly, extremely gravelly
- Subsurface Fragments ≤ 3" (% volume):** 15–50
- Subsurface Fragments >3" (% volume):** 5–25
- Depth (inches):** greater than 20
- Soil surface permeability (inches per hour):** moderate (0.6–2.0) to rapid (6.0–20.0)
- 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: Soil map unit components which characterize this site in various counties: (See MT-165, Soil Interpretive Rating Report).

COUNTIES	TYPICAL SOILS	MAP UNIT
Big Horn	Tinsley gravelly loam, gravelly sandy loam	Cx, TCa
Big Horn	Terrace escarpments gravelly loam	CY, TCa
Custer	Tinsley very gravelly sandy loam	949E
Dawson	Tinsley gravelly sandy loam	Tg, Tm
Garfield	Tinsley very gravelly sandy loam	176F
Prairie	Tinsley very gravelly sandy loam	122
Prairie	Wabek gravelly sandy loam	129
Richland	Tinsley gravelly sandy loam, gravelly loamy sand	TeF
Rosebud	Tinsley very gravelly sandy loam	175
Treasure	Hilly Gravelly Land	Hw

7. Plant Community and Species Composition: The physical aspect of this site is that of a sparse grassland that is typically dominated by grasses and sedges with scattered shrub cover. Approximately 70–80% of the annual production is from grasses and sedges, 5–10% from forbs, and 5–10% 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>.

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT

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 70-80%					200	320	440	501	560
Bluebunch wheatgrass *	PSSP6	2	20-50		50-125	80-200	110-275	125-312	140-350
Little bluestem	ANSC10	1	20-50		50-125	80-200	110-275	125-312	140-350
Plains muhly	MUCU3	3	10-15		25-38	40-60	55-82	62-94	70-105
Needleandthread	HECOC8	10	5-10		12-25	20-40	28-55	31-62	35-70
Sideoats grama	BOCU	3	0-15		0-38	0-60	0-82	0-94	0-105
Sand dropseed	SPCR	9	1-5		2-12	4-20	6-28	6-31	7-35
Prairie sandreed	CALO	5	0-5		0-12	0-20	0-28	0-31	0-35
Threadleaf sedge	CAFI	12	1-5}	10	2-25	4-40	6-55	6-62	7-70
Blue grama	BOGR2	15	1-5}		No more than 12 for any one	No more than 20 for any one	No more than 28 for any one	No more than 31 for any one	No more than 35 for any one
Prairie junegrass	KOMA	12	1-5}						
Other native grasses	2PG		0-5}						
Red threeawn	ARPUL	11	0-T	T	T	T	T	T	T
Forbs 5–10%					25	40	55	62	70
Black samson	ECAN2	21	1-5}	10	2-25 No more than 12 for any one	4-40 No more than 20 for any one	6-55 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
Scurfpea spp.	PSORA	23	0-5}						
Purple prairieclover	DAPU5	21	1-5}						
Hairy goldenaster	HEVI4	23	0-5}						
Dotted gayfeather	LIPU	21	1-5}						
Hood's phlox	PHHO	28	0-5}						
Biscuitroot spp.	LOMAT	24	1-5}						
Goldenrod spp.	SOMI	19	0-5}						
White milkwort	POAL4	23	0-5}						
Aster spp.	ASTER	19	0-5}						
Green sagewort	ARDR4	19	0-5}						
Common sagewort	ARCO	19	0-5}						
Other native forbs	2FP		0-5}						
White point loco**	OXSE	24	0-T						
Death camas**	ZIGAD	32	0-T	T	T	T	T	T	
Shrubs and Half-shrubs 5–10%					25	40	55	62	70
Winterfat	KRLA2	35	1-5}	10	2-25 No more than 12 for any one	4-40 No more than 20 for any one	6-55 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 rose	ROAR3	38	1-5}						
Silver sagebrush	ARCA13	36	1-5}						
Fringed sagewort	ARFR4	38	1-5}						
Rocky Mountain juniper	JUSC2	37	0-5}						
Creeping juniper	JUHO2	38	0-5}						
Yucca	YUGL	37	1-5}						
Other native shrubs	2SB		1-5}						
Broom snakeweed	GUSA2	37	0-T	T	T	T	T	T	
Plains pricklypear	OPPO	38	0-T	T	T	T	T	T	
Total Annual Production (lbs./acre)			100%		250	400	550	625	700

* The percentage of this species tends to increase in the western part of this range resource unit.

** These species are poisonous to some grazing animals during at least some portion of their life cycle.

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT

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.

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	30 – 40		
Coarse fragments	60-70		
Bare ground	5 -10		

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 moderate to severe 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, and plains muhly** and an increase in **needleandthread, threadleaf sedge, green sagewort, and yucca**.

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

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, needleandthread, and plains muhly**). A few forbs occur in small percentages. **Yucca, prairie rose and Wyoming big sagebrush** are the predominant shrubs that occur, along with **creeping and Rocky Mountain juniper**. Annual production is low on this site due to low available water for plant growth.

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT

Plant Community 2: Medium and Short Grasses/ Medium Shrubs and Half-shrubs: Slight variations in the historical climax plant community result in a community dominated by medium and short grasses, with more half-shrubs and shrubs. Species that tend to dominate include **needleandthread**, with lesser amounts of **bluebunch wheatgrass** and **little bluestem**. **Threadleaf sedge, green and fringed sagewort, and yucca** become more prevalent.

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/ Shrubs and Half-shrubs: With continued adverse impacts to Plant Community 2, the plant community tends to become dominated by species such as **threadleaf sedge, needleandthread, green and fringed sagewort, and Hood's phlox**.

Plant Community 4: Half-shrubs/ Short grasses/ Annual Grasses and Forbs: With adverse disturbances to Plant 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, broom snakeweed, green and fringed sagewort, red threeawn, 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.

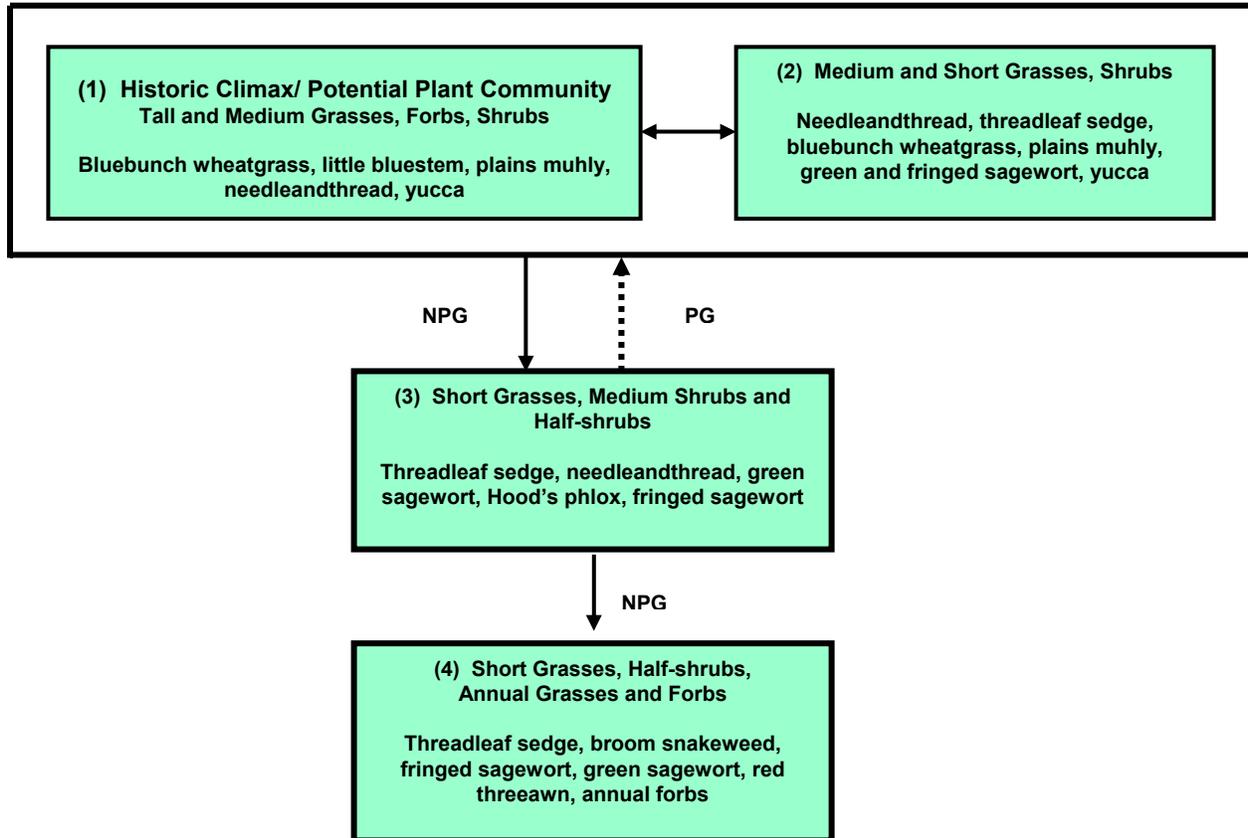
10b. Plant Communities and Transitional Pathways (State and Transition Model): Transitions in plant community composition occur along a gradient that is not linear. Many processes are involved in the changes from one community to another. Changes in climate, elevation, soils, landform, fire patterns 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.

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT

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.

11. 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.

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT

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, dominated 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

12. Livestock Grazing Interpretations: There are limited amounts of suitable forage for livestock grazing on this site. On the steeper slopes livestock travel may be limited which can 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.

Plant Communities 3 and 4 have severely reduced forage production for livestock (< 300 pounds per acre). It may not be feasible to improve the site when the dominant community type is similar to 3 or 4. Often, when this site is in this condition, there is a significant amount of erosion pavement and bare ground present. Community 4 has lost most of the attributes of healthy rangeland, including good infiltration, minimal erosion and runoff, nutrient cycling and energy use.

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 initial 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.

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT

12b. Guide to Safe Stocking Rates: The following charts provide a guide for determining an initial 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.

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, plains muhly, needleandthread, yucca</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 and Shrubs <i>Needleandthread, threadleaf sedge, bluebunch wheatgrass, plains muhly, yucca</i> (S.I. 50–70%)	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, fringed sagewort, Hood's phlox</i> (S.I. 30–50%)	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, Annuals <i>Threadleaf sedge, broom snakeweed, fringed sagewort, green sagewort, red threeawn, annual forbs</i> (S.I. < 30%)	10-14"	125 – 350	50 – 200	.01 – .04	25 – 100	60 – 250	.01 – .05	20 – 100

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.

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT

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;
Summer (SU) = July, Aug., Sept.;

Spring (SP) = April, May, June;
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
Thickspike wheatgrass	P	P	P	P	P	P	P	P
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
Prairie sandreed	D	D	D	D	D	D	D	D
Sand dropseed	D	D	D	D	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
Red threeawn	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
Creeping juniper	N	N	N	N	U	N	N	N
Rocky Mountain 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	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.

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT

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

Plant Community 1: Tall and Medium Grasses/ Forbs/ Shrubs (HCPC or PPC): The scattered, “wolfy” warm and cool season grasses in this community are often not used by grazing animals without treatments such as fire or crowd grazing by cattle and bison. The diversity and abundance of forbs and half-shrubs favors selective feeders like pronghorn, whitetails and mule deer. The open, pebbly surface may attract nesting mountain plovers and common nighthawks on relatively level sites.

Plant Community 2: Medium and Short Grasses/ Medium Shrubs and Half-shrubs: Pronghorn, whitetails and mule deer feed on forbs and half-shrubs to some extent. Mountain plovers and common nighthawks will nest on the pebbly surface.

Plant Community 3 and 4: Short Grasses/ Shrubs and Half-shrubs/ Annuals: These communities have very low overall wildlife habitat value. Mountain plovers and common nighthawks may nest on the pebbly surface.

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT

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
Two-grooved 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
Winterfat	P	P	P	P	P	P	P	P
Creeping juniper	N	N	N	N	D	D	D	D
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 Mountain juniper	N	N	N	N	D	D	D	D
Yucca	N	N	N	N	N	N	N	N
Fringed sagewort	D	U	U	D	D	U	U	D
Green sagewort	N	N	N	N	N	N	N	N
Plains pricklypear	N	N	N	N	N	N	N	N
Broom snakeweed	N	N	D	N	D	D	P	P

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT

14. Hydrology Data: The soils associated with this ecological site are generally in Hydrologic Soil Group A. The infiltration rates for these soils will normally be rapid to very rapid. The runoff potential for this site is low, depending on slope and ground cover/health. Runoff curve numbers generally range from 49 to 79.

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%.

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.

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. (Reference: Engineering Field Manual, Chapter 2 and Montana Supplement 4).

15. Recreation and Natural Beauty: This site supports sparse vegetation and recreational access is often difficult. The forbs have flowers that appeal to photographers. This site provides valuable open space and visual aesthetics.

16. Wood Products: None

17. Site Documentation:

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): 4

BLM–Soil & Vegetation Inventory Method (SVIM) Data: 5

NRCS–Range Condition Record (ECS-2): 10

NRCS–Range/Soil Correlation Observations & Soil 232 notes: 18

Field Offices where this site occurs within the state:

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

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

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT



**Gravel 10-14,
Sedimentary Plains, east
Plant Community 1
HCPC /PPC**



**Gravel 10-14,
Sedimentary Plains, east
Plant Community 1
HCPC /PPC
Dawson County**



**Gravel 10-14,
Sedimentary Plains, east
Plant Community 1
HCPC /PPC
Powder River County**

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT



Gravel 10-14,
Sedimentary Plains, east
Plant Community 1
HCPC /PPC
Bluebunch wheatgrass



Gravel 10-14,
Sedimentary Plains, east
Plant Community 2
Prairie County



Gravel 10-14,
Sedimentary Plains, east
Plant Community 2
Prairie County

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT



**Gravel 10-14,
Sedimentary Plains, east
Plant Community 2
Needleandthread**



**Gravel 10-14,
Sedimentary Plains, east
Plant Community 2
Custer County**



**Gravel 10-14,
Sedimentary Plains, east
Plant Community 3
Threadleaf sedge**

Ecological Site Description—Rangeland

Gravel, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE016MT, R060BE569MT



**Gravel 10-14,
Sedimentary Plains, east
Plant Community 3
Green sagewort**



**Gravel 10-14,
Sedimentary Plains, east
Plant Community 3**



**Gravel 10-14,
Sedimentary Plains, east
Plant Community 3
Prairie County**