

## United States Department of Agriculture Natural Resources Conservation Service

### Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Shallow Porous Clay (SwPC) 15-17” Northern Plains Precipitation Zone

**Site ID:** 058BY264WY

**Major Land Resource Area:** 58B – Northern Rolling High Plains

### Physiographic Features

This site occurs on gently to moderately rolling lands.

**Landform:** Hill slopes and Ridges

**Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	3400	4600
<b>Slope (percent):</b>	3	60
<b>Water Table Depth (inches):</b>	none within 60	
<b>Flooding:</b>		
<b>Frequency:</b>	none	none
<b>Duration:</b>	none	none
<b>Ponding:</b>		
<b>Depth (inches):</b>	0	0
<b>Frequency:</b>	none	none
<b>Duration:</b>	none	none
<b>Runoff Class:</b>	very high	very high

### Climatic features

Annual precipitation ranges from 15-17 inches per year. Wide fluctuations may occur in yearly precipitation and result in more drought 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 “Echeta 2 NW” climate station:

Site Type: Rangeland  
MLRA: 58B – Northern Rolling High Plains

**Shallow Porous Clay 15-17” P.Z.  
R058BY264WY**

Frost-free period (32 °F): 70-142 days; (5 yrs. out of 10, these days will occur between June 7 – September 16)

Freeze-free period (28 °F): 106-154 days; (5 yrs. out of 10, these days will occur between May 14 – September 23)

Mean annual precipitation: 15.82 inches

Mean annual air temperature: 45.2 °F (30.0°F Avg. Min. - 60.4°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: “Recluse 14 NNW “

## Influencing Water Features

<b>Wetland Description:</b>	<b><u>System</u></b>	<b><u>Subsystem</u></b>	<b><u>Class</u></b>	<b><u>Sub-class</u></b>
None	None	None	None	None

**Stream Type:** None

## Representative Soil Features

The soils of this site are shallow (less than 20” to bedrock), well drained, and are rapidly permeable. The soils are formed from acid material weathered from shale and contain many small shale fragments. Soil texture is clay. Soil blowing is a severe hazard.

Major Soil Series correlated to this site include: Grummit

Other Soil Series correlated to this site in MLRA 58B include:

**Parent Material Kind:** alluvial and residuum

**Parent Material Origin:** acid shale,

**Surface Texture:** clay loam

**Surface Texture Modifier:** none

**Subsurface Texture Group:** shaly clay

**Surface Fragments ≤ 3” (% Cover):** 0

**Surface Fragments > 3” (%Cover):** 0

**Subsurface Fragments ≤ 3” (% Volume):** 40

**Subsurface Fragments > 3” (% Volume):** 0

	<b><u>Minimum</u></b>	<b><u>Maximum</u></b>
<b>Drainage Class:</b>	well drained	well drained
<b>Permeability Class:</b>	moderately permeable	moderately permeable
<b>Depth (inches):</b>	10	20
<b>Electrical Conductivity (mmhos/cm) ≤20”:</b>	0	4
<b>Sodium Absorption Ratio ≤20”:</b>	0	5
<b>Soil Reaction (1:1 Water) ≤20”:</b>	5.6	7.8
<b>Soil Reaction (0.1M CaCl<sub>2</sub>) ≤20”:</b>	NA	NA
<b>Available Water Capacity (inches) ≤30”:</b>	2.8	5.1
<b>Calcium Carbonate Equivalent (percent) ≤20”:</b>	0	5

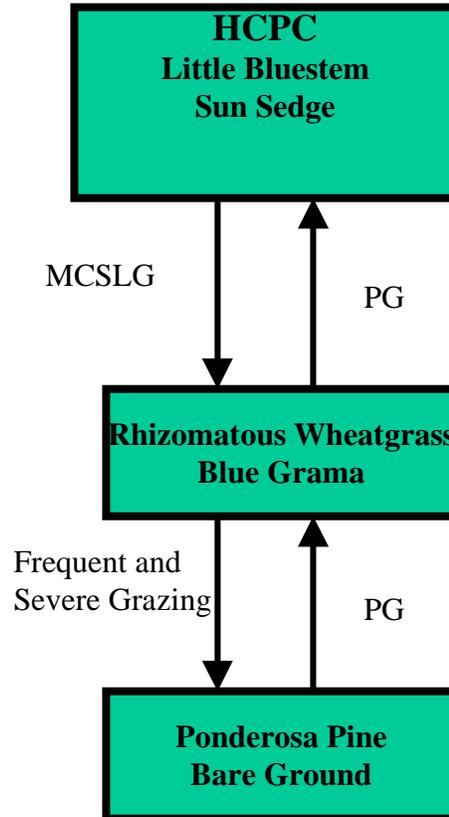
## **Plant Communities**

### **Ecological Dynamics of the Site:**

As this site deteriorates, species such as sedges, forbs, and blue grama will increase. Perennial grasses such as little bluestem, big bluestem, and rhizomatous wheatgrass will decrease in frequency and production. Dunes may form due to lack of ground cover.

The Historic Climax Plant Community (description follows the plant community diagram) has been determined by study of rangeland relic areas, or areas protected from excessive disturbance. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical accounts have also been used.

The following is a State and Transition Model Diagram that illustrates the common plant communities (states) that can occur on the site and the transitions between these communities. The ecological processes will be discussed in more detail in the plant community narratives following the diagram.



**BM** - Brush Management (fire, chemical, mechanical)

**Freq. & Severe Grazing** - Frequent and Severe Utilization of the Cool-season Mid-grasses during the Growing Season

**GLMT** - Grazing Land Mechanical Treatment

**LTPG** - Long-term Prescribed Grazing

**MCSLG** - Moderate, Continuous Season-long Grazing

**NU, NF** - No Use and No Fire

**PG** - Prescribed Grazing (proper stocking rates with adequate recovery periods during the growing season)

**VLTPG** - Very Long-term Prescribed Grazing (could possibly take generations)

**Na** - Moderate Sodium in Soil

PLANT COMMUNITY DYNAMICS  
REFERENCE PLANT COMMUNITY

COMMON NAME/ GROUP NAME	SCIENTIFIC NAME	SCIENTIFIC SYMBOL	Grp	Allowable Annual Production			% Comp (MAX.)
				lbs./acre			
				below normal 700	normal 1000	above normal 1200	
<b>GRASSES/GRASSLIKES</b>							
<b>RHIZOMATOUS WHEATGRASSES:</b>							
thickspike wheatgrass	Elymus lanceolatus	ELLAL	1	105	150	180	15%
western wheatgrass	Pascopyrum smithii	PASM	1	105	150	180	15%
<b>OTHER GRASSES</b>							
little bluestem	Schizachyrium scoparium	SCSC	2	280	400	480	40%
sun sedge	Carex inops ssp. heliophila	CAINH2	3	210	300	360	30%
big bluestem	Andropogon gerardii	ANGE	4	105	150	180	15%
<b>MISCELLANEOUS GRASSES/GRASSLIKES*</b>							
sideoats grama	Bouteloua curtipendula	BOCU	5	35	50	60	5%
blue grama	Bouteloua gracilis	BOGR2	5	35	50	60	5%
threadleaf sedge	Carex filifolia	CAFI	5	35	50	60	5%
needleleaf sedge	Carex duriuscula	CADU6	5	35	50	60	5%
prairie sandreed	Calamoviifa longifolia	CALO	5	35	50	60	5%
<b>FORBS</b>							
<b>MISCELLANEOUS FORBS*</b>							
American vetch	Vicia americana	VIAM	6	140	200	240	20%
prairie coneflower	Ratibida columnifera	RACO3	6	35	50	60	5%
asters	Asters	ASTER	6	35	50	60	5%
biscuitroots	Lomatium spp.	LOMAT	6	35	50	60	5%
breadroot scurfpea	Pediemelum esculentum	PEES	6	35	50	60	5%
western yarrow	Achillea lanulosa	ACHIL	6	35	50	60	5%
rosy pussytoes	Antennaria rosea	ANRO2	6	35	50	60	5%
milkvetches	Astragalus	ASTRA	6	35	50	60	5%
scarlet gaura	Gaura coccinea	GACO5	6	35	50	60	5%
purple prairie clover	Dalea purpurea	DAPU5	6	35	50	60	5%
white prairie clover	Dalea candida	DACA7	6	35	50	60	5%
bluebells	Mertensia	MERTE	6	35	50	60	5%
wild onion	Allium textile	ALTE	6	35	50	60	5%
prairie thermopsis	Thermopsis rhombifolia	THRHA	6	35	50	60	5%
stemless goldenweed	Haplopappus acaulis	HAAC	6	35	50	60	5%
twogrooved milkvetch	Astragalus bisulcatus	ASBI2	6	35	50	60	5%
hawksbeard	Crepis acuminata	CRAC2	6	35	50	60	5%
sulphur flower buckwheat	Eriogonum umbellatum	ERUM	6	35	50	60	5%
<b>TREES, SHRUBS &amp; HALF-SHRUBS</b>							
juniper	Juniperus scopulorum	JUSC2	7	35	50	60	5%
ponderosa pine	Pinus ponderosa	PIPO	8	35	50	60	5%
leadplant	Amorpha canescens	AMCA6	9	35	50	60	5%
bur oak	Quercus macrocarpa	QUMA2	10	35	50	60	5%

\* Common native perennials are listed. Other native perennials may also be counted but no species in the group may be counted for more than 5%.

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors.

**Plant Community Narratives**

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities”. According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities (DPC’s) will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

**Little bluestem/Sun sedge Plant Community**

The interpretive plant community for this site is the Historic Climax Plant Community. This state evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. Potential vegetation is about 70% grasses or grass-like plants, and 20% forbs and 10% woody plants. A mix of warm and cool season midgrasses dominates the state. The major grasses include sun sedge, rhizomatous wheatgrasses, big bluestem, and little bluestem. Other grasses occurring in this state include threadleaf sedge, blue grama, sideoats grama, and prairie sandreed. Forbs occurring in this plant community are cudweed sagewort, fringed sagewort, prairie thermopsis, scurpeas, and western yarrow. Lead plant, bur oak, ponderosa pine, and juniper may occur in this state.

The total annual production (air-dry weight) of this state is about 1000 pounds per acre, but it can range from about 700 lbs./acre in unfavorable years to about 1200 lbs./acre in above average years.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number:

Growth curve name:

Growth curve description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	10	25	40	10	5	5	5	0	0

(Monthly percentages of total annual growth)

This state is stable and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought resistance. This is a sustainable plant community (site/soil stability, watershed function, and biologic integrity).

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

- Moderate, continuous season-long grazing will convert the plant community to the *Rhizomatous Wheatgrass/blue grama Vegetation State*.
- Frequent and severe grazing will convert the plant community to the *Ponderosa Pine/Bare Ground Vegetation State*.

**Rhizomatous Wheatgrass/Blue Grama Plant Community**

Historically, this plant community evolved under grazing by bison. Currently, it is found under moderate, season-long grazing by livestock. Vegetation is about 60% grass, 20% forbs, and 20% woody plants.

Dominant grasses include rhizomatous wheatgrasses, blue grama, sun sedge, and cheatgrass. Grasses of secondary importance include sideoats grama and threadleaf sedge. Forbs commonly found in this plant community include Louisiana sagewort (cudweed), western yarrow, hairy goldaster, prairie thermopsis, biscuitroot, wild onion, and scarlet globemallow. Fringed sagewort is commonly found. Plains pricklypear and winterfat can also occur. Lead plant, bur oak, ponderosa pine, and juniper may occur in this state.

When compared to the Historical Climax Plant Community, rhizomatous wheatgrasses, and blue grama have increased. Prairie sandreed and little bluestem have decreased. Production of cool-season grasses has also been reduced. Cheatgrass (downy brome) has invaded the state. Bare ground has also increased.

The total annual production (air-dry weight) of this state is about 700 pounds per acre, but it can range from about 500 lbs./acre in unfavorable years to about 900 lbs./acre in above average years.

The following is the growth curve expected during a normal year:

Growth curve number:

Growth curve name:

Growth curve description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	15	30	30	10	5	5	5	0	0

(Monthly percentages of total annual growth)

This state is unstable and subject to wind erosion. The biotic integrity of this plant community is usually intact. However, it can be at risk depending on how far a shift has occurred in plant composition toward blue grama, and cheatgrass. The watershed is usually functioning. However, it can become at risk when cheatgrass and bare ground increases.

Transitional pathways leading to other plant communities are as follows:

- Prescribed grazing will result in a plant community very similar to the *Historic Climax Plant Community*.
- Frequent and Severe grazing, will result in a *Ponderosa Pine/Bare Ground Vegetative State*.

**Ponderosa Pine/Bare ground Plant Community**

This plant community is the result of frequent and severe grazing. Ponderosa pine, juniper, bur oak, cactus, and cheatgrass dominate it. Vegetation is about 50% grass, 20% forbs and 30% woody plants.

When compared to the historic climax plant community there are few perennial grasses left and the dominant forbs are cudweed sagewort, fringed sagewort, western yarrow, cactus, and prairie thermopsis. Cheatgrass and red threeawn are the main grasses. Much bare ground is present.

Where severe erosion has created clay dunes they may be dominated by prairie sandreed and prairie cordgrass.

The total annual production (air-dry weight) of this state is about 500 pounds per acre, but it can range from about 300 lbs./acre in unfavorable years to about 700 lbs./acre in above average years.

The following is the growth curve expected during a normal year:

Growth curve number:

Growth curve name:

Growth curve description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	15	30	30	10	5	5	5	0	0

(Monthly percentages of total annual growth)

This community has lost some of its value for grazing wildlife and livestock. The stability is lacking due to the dominance of annual vegetation. It is susceptible to excessive erosion and excessive runoff due to the bare ground.

Transitional pathways leading to other plant communities are as follows:

- Prescribed grazing for the long-term, where there are some remnants of perennial grasses, may improve this state to near *Historic Climax Plant Community*. The woody overstory will persist until removed by fire.

## Ecological Site Interpretations

### Animal Community – Wildlife Interpretations

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

**Rhizomatous Wheatgrass/Blue grama:** This plant community may be useful for the same large grazers that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. Good grasshopper habitat equals good foraging for birds.

**Ponderosa Pine/Bare Ground:** This plant community has a low level of diversity. Due to the dominance of annual grasses feed for large mammals is limited. Cheatgrass does provide some early spring grazing. Areas of bare ground may provide leks for birds such as sage grouse. Trees on this state may provide thermal protection and escape cover for deer and other mammals.

**Animal Preferences (Quarterly - 1,2,3,4) for commonly occurring plants in MLRA 58B, 15-17 inch Northern Plains**

COMMON NAME/ GRASSES/GRASSLIKES	SCIENTIFIC NAME	SCI. SYMBOL	Cattle	Sheep	Horses	Mule Deer	Antelope
alkali bluegrass	Poa secunda ssp. junceaefolia	POSEJ	DDDD	PPPP	DDDD	PPPP	PPPP
alkali cordgrass	Spartina gracilis	SPGR	DDDD	UUUU	DDDD	UUUU	UUUU
alkali sacaton	Sporobolus airoides	SPA1	PPPP	DDDD	PPPP	DDDD	DDDD
Baltic rush	Juncus balticus	JUBA	DDDD	UUUU	DDDD	UUUU	UUUU
basin wildrye	Leymus cinereus	LEC4	PPPP	PPPP	PPPP	DDDD	DDDD
bearded wheatgrass	Elymus caninus	ELCA	PPPP	DDDD	PPPP	DDDD	DDDD
big bluestem	Andropogon gerardii	ANGE	PPPP	PPPP	PPPP	DDDD	DDDD
blue grama	Bouteloua gracilis	BOGR2	DDDD	DDDD	DDDD	DDDD	DDDD
bluebunch wheatgrass	Pseudoroegneria spicata	PSSP6	PPPP	PPPP	PPPP	DDDD	DDDD
bluejoint reedgrass	Calamagrostis canadensis	CACA4	PPPP	DDDD	PPPP	UUUU	UUUU
bottlebrush squirreltail	Elymus elymoides	ELELE	DDDD	DDDD	DDDD	UUUU	UUUU
buffalograss	Buchloe dactyloides	BUDA	DDDD	DDDD	DDDD	DDDD	DDDD
Canada wildrye	Elymus canadensis	ELCA4	PPPP	PPPP	PPPP	DDDD	DDDD
Canby bluegrass	Poa canbyi (syn. to Poa secunda)	POCA (POSE)	PPPP	PPPP	PPPP	PPPP	PPPP
Cusick's bluegrass	Poa cusickii	POCU3	PPPP	PPPP	PPPP	PPPP	PPPP
Fendler threeawn	Aristida purpurea	ARPUL	UUUU	UUUU	UUUU	UUUU	UUUU
green needlegrass	Nassella viridula	NAV14	PPPP	PPPP	PPPP	PPPP	PPPP
hairly grama	Bouteloua hirsuta	BOH12	DDDD	DDDD	DDDD	DDDD	DDDD
Indian ricegrass	Achnatherum hymenoides	ACHY	PPPP	PPPP	PPPP	PPPP	PPPP
inland saltgrass	Distichlis spicata	DISP	UUUU	UUUU	UUUU	UUUU	UUUU
inland sedge	Carex interior	CAIN11	DDDD	DDDD	DDDD	UUUU	UUUU
little bluestem	Schizachyrium scoparium	SCSC	PPPP	PPPP	PPPP	DDDD	DDDD
mat muhly	Muhlenbergia richardsonis	MURI	UUUU	UUUU	UUUU	UUUU	UUUU
Nebraska sedge	Carex nebraskensis	CANE2	PPPP	PPPP	PPPP	DDDD	DDDD
needleandthread	Hesperostipa comata	HECO26	PPPP	PPPP	PPPP	PPPP	PPPP
needleleaf sedge	Carex duriuscula	CADU6	UUUU	UUUU	UUUU	UUUU	UUUU
northern reedgrass	Calamagrostis stricta	CAST13	PPPP	DDDD	PPPP	UUUU	UUUU
Nuttall's alkaligrass	Puccinellia nuttalliana	PUNU2	PPPP	PPPP	PPPP	PPPP	PPPP
plains muhly	Muhlenbergia cuspidata	MUCU3	DDDD	DDDD	DDDD	UUUU	UUUU
plains reedgrass	Calamagrostis montanensis	CAMO	DDDD	DDDD	DDDD	DDDD	DDDD
prairie cordgrass	Spartina pectinata	SPPE	PPPP	DDDD	PPPP	UUUU	UUUU
prairie junegrass	Koeleria macrantha	KOMA	DDDD	DDDD	DDDD	DDDD	DDDD
prairie sandreed	Calamovilfa longifolia	CALO	PPPP	DDDD	PPPP	UUUU	UUUU
sand bluestem	Andropogon halli	ANHA	PPPP	DDDD	PPPP	UUUU	UUUU
sand dropseed	Sporobolus cryptandrus	SPCR	DDDD	DDDD	DDDD	UUUU	UUUU
Sandberg bluegrass	Poa secunda	POSE	DDDD	DDDD	DDDD	DDDD	DDDD
sideoats grama	Bouteloua curtipendula	BOCU	PPPP	PPPP	PPPP	DDDD	UUUU
slender wheatgrass	Elymus trachycaulus	ELTR7	PPPP	DDDD	PPPP	DDDD	DDDD
spike sedge	Carex nardina	CANA2	DDDD	DDDD	DDDD	UUUU	UUUU
sun sedge	Carex inops ssp. heliophila	CAINH2	PPPP	DDDD	PPPP	UUUU	UUUU
thickspike wheatgrass	Elymus lanceolatus	ELLAL	DDDD	DDDD	DDDD	DDDD	DDDD
threadleaf sedge	Carex filifolia	CAFI	DDDD	DDDD	DDDD	DDDD	PPPP
tufted hairgrass	Deschampsia caespitosa	DECA18	PPPP	PPPP	PPPP	DDDD	DDDD
western wheatgrass	Pascopyrum smithii	PASM	DDDD	DDDD	DDDD	DDDD	DDDD
<b>FORBS</b>							
American licorice	Glycyrrhiza lepidota	GLLE3	UUUU	UUUU	UUUU	UUUU	UUUU
American vetch	Vicia americana	VIAM	PPPP	PPPP	PPPP	PPPP	PPPP
arrowgrass	Triglochin spp.	TRIGL	T	T	T	T	T
asters	Asters	ASTER	UUUU	UUUU	UUUU	UUUU	UUUU
biscuitroots	Lomatium spp.	LOMAT	DDDD	DDDD	UUUU	DDDD	DDDD
bluebells	Mertensia	MERTE	DDDD	PPPP	DDDD	DDDD	DDDD
blue-eyed grass	Sisyrinchium spp.	SISYR	DDDD	PPPP	DDDD	DDDD	DDDD
breadroot scurfpea	Pediemelum esculentum	PEES	DDDD	DDDD	DDDD	DDDD	DDDD
cattail, broad-leaf	Typha latifolia	TYLA	DDDD	UUUU	DDDD	UUUU	UUUU
cattail, narrow-leaf	Typha angustifolia	TYAN	DDDD	UUUU	DDDD	UUUU	UUUU
fringed sagewort	Artemisia frigida	ARFR4	UUUU	UUUU	UUUU	UUUU	UUUU
green sagewort	Artemisia dracuncululus	ARDR4	UUUU	UUUU	UUUU	UUUU	UUUU
hawksbeard	Crepis acuminata	CRAC2	UUUU	PPPP	UUUU	DDDD	DDDD
horsetails	Equisetum spp.	EQUIS	UUUU	UUUU	UUUU	UUUU	UUUU
iris	Iris spp.	IRIS	UUUU	UUUU	UUUU	UUUU	UUUU
milkvetches	Astragalus	ASTRA	DDDD	DDDD	DDDD	DDDD	DDDD
poison hemlock	Conium maculatum	COMA2	T	T	T	T	T
prairie coneflower	Ratibida columnifera	RACO3	DDDD	PPPP	DDDD	PPPP	PPPP
prairie thermopsis	Thermopsis rhombifolia	THRHA	UUUU	UUUU	UUUU	UUUU	UUUU
purple prairie clover	Dalea purpurea	DAPU5	PPPP	PPPP	PPPP	PPPP	PPPP
Pursh seepweed	Suaeda calceoliformis	SUCA2	UUUU	UUUU	UUUU	UUUU	UUUU
rosy pussytoes	Antennaria rosea	ANRO2	UUUU	UUUU	UUUU	UUUU	UUUU
scarlet gaura	Gaura coccinea	GACO5	UUUU	UUUU	UUUU	UUUU	UUUU
stemless goldenweed	Haplopappus acaulis	HAAC	UUUU	UUUU	UUUU	UUUU	UUUU
sulphur flower buckwheat	Eriogonum umbellatum	ERUM	UUUU	UUUU	UUUU	UUUU	UUUU
twogrooved milkvetch	Astragalus bisulcatus	ASBI2	T	T	T	T	T
water hemlocks	Cicuta spp.	CICUT	T	T	T	T	T
western yarrow	Achillea lanulosa	ACHIL	UUUU	UUUU	UUUU	UUUU	UUUU
white prairie clover	Dalea candida	DACA7	PPPP	PPPP	PPPP	PPPP	PPPP
wild onion	Allium textile	ALTE	DDDD	DDDD	DDDD	DDDD	DDDD
woodyaster	Xylorhiza spp.	XYLOR	T	T	T	T	T
<b>TREES, SHRUBS &amp; HALF-SHRUBS</b>							
big sagebrush	Artemisia tridentata	ARTR2	UUUU	DDDD	UUUU	DDDD	DDDD
birdfoot sagebrush	Artemisia pedatifida	ARPE6	UUUU	UUUU	UUUU	UUUU	UUUU
black greasewood	Sarcobatus vermiculatus	SAVE4	DDDD	DDDD	UUUU	DDDD	DDDD
bur oak	Quercus macrocarpa	QUMA2	UUUU	DDDD	UUUU	PPPP	DDDD
fourwing saltbush	Atriplex canescens	ATCA2	PPPP	PPPP	PPPP	PPPP	PPPP
Gardners saltbush	Atriplex gardneri	ATGA	PPPP	PPPP	DDDD	PPPP	PPPP
green rabbitbrush	Chrysothamnus viscidiflorus	CHV18	DDDD	DDDD	DDDD	DDDD	DDDD
junipers	Juniperus scopulorum	JUSC2	UUUU	UUUU	UUUU	DDDD	UUUU
leadplant	Amorpha canescens	AMCA6	PPPP	PPPP	PPPP	PPPP	PPPP
plains cottonwood (sprouts)	Populus deltoides	PODEM	DDDD	DDDD	DDDD	DDDD	DDDD
ponderosa pine (abortion in cattle)	Pinus ponderosa	PIPO	UUUU	UUUU	UUUU	UUUU	UUUU
rubber rabbitbrush	Ericameria nauseosa	ERNA10	UUUU	DDDD	UUUU	DDDD	DDDD
silver sagebrush	Artemisia cana	ARCAC5	DDDD	DDDD	DDDD	PPPP	PPPP
silverberry	Eleagnus commutata	ELCO	UUUU	UUUU	UUUU	DDDD	UUUU
skunkbush sumac	Rhus trilobata	RHTR	DDDD	DDDD	DDDD	DDDD	DDDD
western snowberry	Symphoricarpos occidentalis	SYOC	UUUU	UUUU	UUUU	DDDD	UUUU
wildrose	Rosa woodsii var. woodsii	ROWOW	DDDD	DDDD	UUUU	DDDD	DDDD
willows	Salix L.	SALIX	PPPP	PPPP	DDDD	PPPP	UUUU
winterfat	Krascheninnikovia lanata	KRLA2	PPPP	PPPP	PPPP	PPPP	PPPP
yucca	Yucca glauca	YUGL	DDDD	DDDD	DDDD	DDDD	DDDD

**N = not used; U = undesirable; D = desirable; P = preferred; T = toxic**

## Animal Community – Grazing Interpretations

The following table lists suggested stocking rates for cattle under continuous season-long grazing under normal growing conditions. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using this information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity. If distribution problems occur, stocking rates must be reduced to maintain plant health and vigor.

Plant Community	Production (lb./ac)	Carrying Capacity* (AUM/ac)
Historic Climax Plant Community	700-1200	.3
Rhizomatous wheatgrass/Blue grama	500-900	.2
Ponderosa Pine/Bare Ground	300-700	.1

\* - Continuous, season-long grazing by cattle under average growing conditions.

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage for cattle, sheep, or horses. During the dormant period, the forage for livestock use needs to be supplemented with protein because the quality does not meet minimum livestock requirements.

## Hydrology Functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group D. Infiltration is rapid during the initial stage of a rainfall event. The soil then becomes sealed and runoff becomes excessive. 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 be present. Water flow patterns may be distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses. Litter typically falls in place, and signs of movement are not common. Chemical and physical crusts are rare to non-existent. Cryptogamic crusts are present, but only cover 1-2% of the soil surface.

## Recreational Uses

This site provides hunting opportunities for upland game species. The wide variety of plants which bloom from spring until fall have an esthetic value that appeals to visitors.

## Wood Products

No appreciable wood products are present on the site.

Site Type: Rangeland  
MLRA: 58B – Northern Rolling High Plains

**Shallow Porous Clay 15-17” P.Z.  
R058BY264WY**

## Other Products

None noted.

## Supporting Information

### Associated Sites

Shallow Clayey	058BY258WY
Clayey	058BY204WY

### Similar Sites

- () –Porous Clay 15-17”Northern Plains P. Z. 058BY232WY  
[Higher production, deeper soils]
- () – Dense Clay 15-17” Northern Plains P.Z. 058BY210WY  
[Higher production]

### Inventory Data References (narrative)

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel was also used. Those involved in developing this site include: Glen Mitchell, Range Management Specialist, NRCS; Chuck Ring, Range Management Specialist, NRCS; and Everet Bainter, Range Management Specialist. Other sources used as references include: USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

### Inventory Data References

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
SCS-RANGE-417		1971-1994	WY	Campbell & others
Ocular estimates		1990-1999	WY	Campbell & others

### State Correlation

. This site occurs entirely within Wyoming.

### Type Locality

### Field Offices

Gillette, Lusk, Newcastle, Sundance

### Relationship to Other Established Classifications

### Other References

Site Type: Rangeland  
MLRA: 58B – Northern Rolling High Plains

**Shallow Porous Clay 15-17” P.Z.  
R058BY264WY**

## Site Description Approval

\_\_\_\_\_  
State Range Management Specialist

\_\_\_\_\_  
Date

## Ecological Reference Worksheet

Author(s)/participant(s): \_\_\_\_\_

Contact for lead author: \_\_\_\_\_ Reference site used? Yes/No

Date: 4/05 MLRA: 58B Ecological Site: R058BY264WY Shallow Porous Clay (SwPC) 15-17"NP

This *must* be verified based on soils and climate (see Ecological Site Description). Current plant community *cannot* be used to identify the ecological site.

**Indicators.** For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for **each** community within the reference state, when appropriate & (3) cite data. Continue descriptions on separate sheet.

**1. Number and extent of rills:** Due to the wide slope range associated with this site, the number and extent of rills will vary from none on sites with slopes of < 9% to common on slopes > 25%.

**2. Presence of water flow patterns:** Due to the wide slope range associated with this site, water flow patterns will vary from barely observable on sites with slopes of < 9% from broken and irregular in appearance to continuous on slopes > 25%.

**3. Number and height of erosional pedestals or terracettes:** Not evident on slopes < 9%. Erosional pedestals will be present with terracettes present at debris dams on slopes > 9%.

**4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are *not* bare ground):** Bare ground is 25 to 40%.

**5. Number of gullies and erosion associated with gullies:** Active gullies restricted to concentrated water flow patterns.

**6. Extent of wind scoured, blowouts and/or depositional areas:** None.

**7. Amount of litter movement (describe size and distance expected to travel):** Little to no plant litter movement occurs on slopes < 9%. Litter movement does occur on slopes > 25%.

**8. Soil surface (top few mm) resistance to erosion (stability values are averages – most sites will show a range of values for both plant canopy and interspaces, if different):** Plant cover and litter is at 60% or greater of soil surface and maintains soil surface integrity. Stability class anticipated to be 5 or greater.

**9. Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness for both plant canopy and interspaces, if different):** Use soil series description for depth and color of A-horizon.

**10. Effect of plant community composition (relative proportion of different functional groups) & spatial distribution on infiltration & runoff:** Plant canopy, very slow to slow infiltration rates, the amount of bare ground, and steepness of slopes results in a naturally high runoff rate on slopes > 25%, even in HCPC.

**11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** No compaction layer would be expected except for the naturally occurring rooting restriction (bedrock or decomposing shale) at 10 to 20 inches.

**12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: >>, >, = to indicate much greater than, greater than, and equal to):** mid-stature, warm season grasses >> shrubs = forbs > mid-stature, cool season rhizomatous grass = short stature grasses/grasslikes

**13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very low.

**14. Average percent litter cover (20 to 30 %) and depth ( 0.25 to 0.5\_ inches).** Litter cover is in contact with soil surface.

**15. Expected annual production (this is TOTAL above-ground production, not just forage production):**  
1000 lbs/acre

**16. Potential invasive (including noxious) species (native and non-native). List species which characterize degraded states and which, after a threshold is crossed, “can, and often do, continue to increase regardless of the management of the site and may eventually dominate the site”:** Blue grama, buffalo grass, greasewood, rabbitbrush, broom snakeweed.

**17. Perennial plant reproductive capability:** No limitations.